IRIA 2019
72nd Annual Conference of India Radiological & Imaging Association

17th - 20th January 2019
PGIMER
Chandigarh, India

Venue:
Postgraduate Institute of Medical Education and Research
Sector-12, Chandigarh - 160012
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Dear Colleagues,

I am very honoured to welcome you in Chandigarh from January 17-20, 2019 on the occasion of the 72nd Annual Conference of the Indian Radiological and Imaging Association being hosted by Chandigarh Chapter of IRIA (ChIRIA). This is a unique opportunity since this is for the first time the ChIRIA is hosting this prestigious conference since its inception as a separate chapter around five years back only.

Chandigarh, also known as the “City Beautiful” is picturesquely located in the foothills of the Shivaliks. Chandigarh is a Union Territory which serves as the capital to the neighbouring states of Punjab and Haryana. It is one of the early planned cites in post-independent India and is internationally renowned for its modern architecture and urban design. The venue of the conference is the Postgraduate Institute of Medical Education and Research (PGIMER) which is located in the north-western part of the city in Sector 12. Founded in 1962, it is designated as one of the Institutes of National Importance by the Government of India. It has a rich legacy in education and research and has the honour of having produced several Padma Shri awardees, beside many national and international academic awardees. Also known as the Mecca of learning in north India, with its imposing architecture and sprawling green campus, PGIMER offers a unique academic environment to share, learn and disseminate the latest advances in the various fields of radiological sciences.

The Scientific Committee has worked hard to ensure that the conference meets the expectations of the resident doctors as well as practising radiologists. The faculty of the conference has been drawn from amongst the distinguished leading radiologists from all over India and abroad. A great academic fiesta is assured with a combination of education and science, innovation and clinical practice, experience of the old masters and exuberance of the young speakers. This Annual Meeting of IRIA has always been an opportunity for members of the society to meet old colleagues and friends, exchange opinions and keep abreast of the latest advances. We plan to have various scientific sessions including didactic lectures, tutorials, as well as interactive hands-on workshops in a friendly atmosphere. For the industry, it is a showcase in front of which about two thousand delegates will stop. A “Run for the Girl Child” at Sukhna Lake is planned during the conference for the delegates and city residents to raise public awareness. I assure you of an unmatched associated cultural and gastronomic feast in the evenings during the conference days showcasing the local culture and traditions.

I am convinced that IRIA 2019 will be another success for the central IRIA as well as ChIRIA and I look forward to welcoming you in the city beautiful!

Dr. M.S. Sandhu
Patron, IRIA 2019.
Professor and Head,
Department of Radiodiagnosis and Imaging,
PGIMER, Chandigarh
Dear Colleague,

It is with great pleasure that I invite you to join me in Chandigarh, from January 17-20, 2019 on the occasion of the 72nd Annual Conference of the Indian Radiological and Imaging Association being hosted by Chandigarh Chapter of IRIA (ChIRIA). The venue of the conference is the Postgraduate Institute of Medical Education and Research (PGIMER), which is designated as one of the Institutes of National Importance by the Government of India. The meeting is planned to cover a broad range of topics that will be of interest to both practicing radiologists as well as radiologists-in-training. Indian Radiologists will be joined by an international faculty and together they will share their insights into both common and uncommon imaging issues of interest to radiologists practicing in India and from around the world.

Various programs have been prepared including plenary lectures and special focused sessions related to various super specialties in radiology, as well as exhibitions and social programs. The latest achievements, experience and knowledge will be shared, and we expect lively discussions in various sessions. I am sure that IRIA 2019 will help all members of IRIA and participants to solidify our friendship as well as professional collaboration.

I look forward to sharing knowledge and good times with you in Chandigarh, “The City Beautiful”.

Prof. Paramjeet Singh
Organizing Chairman IRIA 2019
Dear Colleagues and Friends,

I am delighted to welcome you to the 72nd Annual Conference of the Indian Radiological and Imaging Association being hosted by Chandigarh Chapter of IRIA (ChIRIA) from January 17-20, 2019 in Chandigarh, “The City Beautiful”.

ChIRIA is proud to host this prestigious this national annual event for the Indian Radiological and Imaging Association. The aim is to promote scientific collaborations, professional rapport, exchanges of knowledge and friendship amongst the practicing radiologists as well as radiologists-in-training from India and abroad. We aim to achieve our objectives via various Scientific Sessions and interactive workshops related to different specialties in the field of Radiology.

I would like to take this opportunity to thank everyone in the organising committee, invited faculty and sponsors for the kind support and contributions towards the Conference.

Please enjoy all that Chandigarh has to offer. I believe you will leave with beautiful memories to take home, clarity in your knowledge and friendship in your heart.

Prof. Akshay Kumar Saxena
Organizing Secretary IRIA 2019
History of IRIA

The ‘Indian Radiological Association’ took its birth in 1931 in Calcutta with late Dr. Ajit Mohan Bose as founder President and Dr. Subodh Mitra as founder Secretary. The first meeting was held on 21st April, 1931 in Calcutta and Capt. M. Mukherjee, Dr.K.B. Ghosh and Dr. Moitra attended the meeting. In April 1932, the Eighth session of Indian Medical Association was held and the Indian Radiological Association met as the Radiological section of I.M.A. under the chairmanship of Dr. M.D.Joshi and during his speech, DR. Joshi stressed the need for sound radiological education in India. In 1934, once again the radiologists met at a sectional meeting of the Conference of IMA, held at Bombay with Dr. K. P. Mody in the Chair.

In March 1937, the Indian Radiological Association was registered under Act XXI of 1860, with the Registrar of Joint Stock Companies, Bengal Registration No. 6644 (1936-37) with a total membership strength of 24. During the war years, the activities of the association declined and came almost to standstill, but in 1940, there were sincere attempts to revive the Association and to hold the First Indian Congress of Radiology at Calcutta. Somehow, this attempt was not a success; yet, due to the vigorous and ceaseless efforts of Dr.P.Rama Rao, Dr.Santhan Krishnan Pillai and Dr.K.M. Rai of Madras, the activities were once again resumed and it was indeed the rebirth (re-incarnation) of the Association.

The first Annual Congress of Radiology was held in 1946 at Madras under the Presidentship of Dr.M.D.Joshi and Secretary Dr.P.Rama Rao. At that time there were 130 members of the association. Gradually, there was extension of the Association to other states and a wide network of state branches and chapters was formed. As the country gained independence in 1947, there was a spurt in the scientific activities in all fields and radiology was not to lag behind. Postgraduate diplomas and degrees were started gradually in all the medical colleges in the country.

Official Publication

Indian Journal of Radiology was born in 1947, year of India’s independence, under Joint Editorship of Dr. P. Rama Rao and Dr. K. Manjunath Rai. Excellent scientific papers and material were published and circulated to all the members. Subsequently, it was under Editor-in-Chief of Dr. K. P. Modi, Dr. K. M. Rai, Dr. A. N. Menon, Dr. M. L. Aggarwal, Dr. M. G. Varadharajan, Maj. Gen. S. K. Dhawan, AVSM, Dr. M. S. Joshi and Dr.Om J.Tavri. Joint Editor and Secretary were Dr. R. F. Sethna, Dr.M.V.Shetty, Dr.L.R. Parthasarathy, Prof. O.P.Bhardwaj, Dr. P. C. Rajaram, Dr. M.S. Joshi, Dr. Om J Tavri and Dr. Suren V. Kothari and Dr.Bhavin Jankharia. Our IJRI has won many awards for excellence in medical printing awarded by Govt. of India and rated as best Journal amongst all medical Journals in India. Our Journal got international Code No. ISSN-0970-2016 and new guidelines to authors were prepared and given and it is printed in Mumbai. Every year four issues are published by IJRI.

Memorial Medals & Awards

Another landmark in Indian Radiological Association was the introduction of ‘Sir Jagadish Chandra Bose Memorial Oration’ in the year 1948; a contribution to the advancement of Medical Radiology. Late Dr.
Barceley, popularly known as “Father of British Radiology” was the first Orator in the year 1951. This oration was instituted after the cherished memory of one of the renowned Indian Bio-physics and the first honorary member of the association ‘Sir Jagadish Chandra Bose’. Every year, it is to be delivered at the Annual Congress of Radiology and is awarded to a renowned Radiologist.

In 1968, During 21st Annual Congress the Indian Radiological Association at Bangalore, a resolution moved by Dr. L. H. Athale to institute an oration in the name of ‘Dr. Diwan Chand Aggarwal Memorial Oration’. He contributed immensely to the association and was the President in the year 1957. The members of family of late Dr. Diwan Chand Aggarwal created an Endowment for the oration. It was started in the year 1969 and Dr. A. N. K. Menon of Madras delivered first Oration. Since then, many eminent Radiologists from India and all over the world delivered this oration.

In 1977, during 30th Annual Congress of IRIA at Chandigarh ‘Dr.K.M. Rai Memorial Oration’ was instituted by the family members of late Dr.K.M.Rai. Due to his efforts, IRA got rebirth in 1946 and conducted 1st Annual Congress of Radiology at Madras and spurt of scientific activities in radiology started again. He was instrumental in starting Journal (IJR) in 1947 and was Associate Editor of the same. He was President of IRA in the year 1953. Dr. O. P. Bhardwaj of New Delhi delivered first Oration in the year 1978.

In 1980 Dr. Ashoke Mukherjee Award started was by IRA instituted by the family members of late Dr.Ashoke Mukherjee to encourage young Radiologist to take up new investigation and research in Radiology in India. Competitive scientific original work was selected and presented in Annual Congress by young radiologists and Committee appointed by President selects the paper and award is given to the radiologists every year on presentation. Dr. Pramod Kolwadker of Nagpur was the first recipient of this award in the year 1979.

IRA also started Traveling Fellowship for young radiologists to do advance training in reputed institution in India in the name of Late Prof. P. K. Haldar and M/s German Remedies in 1982. M/s German Remedies increased the Corpus out of STAR programme in India and now both Traveling fellowships are awarded by ICRI.

Indian College of Radiology

It was established as a teaching (academic) wing of the Association in 1976 by Late Prof. P.K.Haldar and Dr. K.N.Kamdar. Prof. P.K.Haldar was the first Founder Chairman of the college followed by Dr. K.N.Kamdar. During initial period of six years activities were mainly confirmed to day’s teaching programme (C.M.E.) prior to the Annual Congress of IRA. In 1981, with Prof. Arcot Gajaraj becoming the Chairman, academic activities were given impetus and an attempt was made to organize as many C.M.E. programmes as possible throughout the year in different parts of the country so that interest in imaging is created for post-graduates as well as the Clinicians. Dr.Samir Banerjee, Secretary of the College and Dr. G.R.Jankhania, Treasurer has improved administrative and academic activities of the College. In 1984, under Chairmanship of Dr.G.R.Jankhania, it became mandatory to conduct four to six CME programmes prior to Annual Congress. In 1986, at Jaipur, Convocation was held to award fellowship of ICR to the Founder Members of the College.

Under Chairmanship of Dr. Samir Banerjee, a new chapter started and linked with Royal College of Radiologists, London, U.K. and a team from R.C.R., U. K. visited India and delivered one-day C.M.E. session at Hyderabad (1990) and at Pune (1991). It was in that period few centres in India got recognized for F.R.C.R. Training in India and young Radiologists were given opportunity to visit reputed institution and hospitals in U.K. to learn new techniques in Radiology and Imaging.
Prof. N G. Gadekar-Key Note Address (Memorial Oration) and Prof. Mihir Mitter Memorial Oration were instituted under the umbrella of ‘Indian College of Radiology & Imaging’ in 1988 & 1998 respectively. These orations are awarded to the Radiologists of the country who have excellence in academics as well as in teaching and developing the science of Imaging. Dr. Harnam Singh Mid-Term Teaching Session was introduced with the donation from Dr. Harnam Singh, 2 days mid term CME is named after him. Recently Prof. V.P. Lakhanpal Gold Medal has been introduced for the best academic contribution in the field of Radiology and Imaging.

Dr. Mukund Rahalkar, Secretary of the College, took keen interest in improving quality of CME Programmes including Film Reading Sessions. Prof. Kakarla Subba Rao, Chairman of ICRI for six years further improved quality and quantity of the teaching sessions and conducted in small places all over India. Under his Chairmanship, a Text Book on ‘Diagnostic Radiology’ in two volumes was published by contribution from Indian authors ably assisted by Prof. S.K. Bhargava. It was released during 50th Annual Congress of IRIA at Guwahati, Assam in 1997. College is doing excellent job in conducting CME programmes all over India and establishing its office in IRIA House under Chairmanship of Prof. S. Bhadury and Secretary Dr. Bharat Parekh. College has started News Bulletin for better communication, publishing up-dates on new imaging modalities, forthcoming CME Programmes, views from readers. Many more Awards were introduced in the college by present team of office bearers. Prof. J.M. Pinto Award, Onco Imaging Award, Best Research Paper Award, Dr. Rao Award instituted by Dr. Prasanna Rao. Every year theme is given by ICRI selected by Executive Committee and approved by General Body, ICRI. Credit hours for CME is prepared by ICRI recommended by Prof. Kakarla Subbarao and approved by ICRI and IRIA.

**The Change in the name of Association**

It was felt rightly that there has been tremendous change in the modalities of Imaging all over the world and our Association must effectively reflect by naming a name which will speak for itself. Therefore, the Indian Radiological Association became The Indian Radiological & Imaging Association. The Journal and the College were also renamed accordingly IJRI and ICRI.

**Membership of IRIA**

The membership, which was stagnant for many years at 1500 to 1600, an effort was made to increase membership and convert Annual Membership to Life Membership by former Secretary General Dr. Anand Abkari. For the last eight years, membership drive to enroll new Life Members and convert existing members were undertaken. More than 4,000 new life members were enrolled and existing members were converted to Life Members taking total membership to 10,500. This was achieved by the excellent work done by state chapter Secretaries and Presidents and ably assisted by Secretaries of City Chapters. Life Membership Certificate was issued to all the Life Members by Central Office.

**State Branches and City Chapters**

Now almost every State has State Branches to conduct scientific activities and coordinate with Central Office. Members of Defense, Railway and Central Services are enrolled directly. Many City Chapters are formed for academic purpose to improve academic standards and educate the radiologists and post-graduate students. More and more activities are held in all major cities and also in districts and smaller towns.
IRIA HEAD QUARTERS: at C-5, QUTAB INSTITUTIONAL AREA NEW DELHI-110 016 IRIA started constructing its building in 1993 and completed in 1995 which was inaugurated by 5th May 1995 by Prof. J. S. Bajaj in Qutab Institutional Area, New Delhi. The land was allotted by DDA about 898.3 sq. meters and three storied building constructed with cellar for accommodating Central Library, Central Office and Seminar Rooms, Guest Rooms, Office of ICRI and records rooms of the Association. The land was allotted to IRIA in 1980 by Delhi Development Authority recommended by Director General, Health Services, with the efforts of Late Dr. Satyapal Aggarwal and Dr. O. P. Bhardwaj and building was constructed with donations from 6th AOCR in 1991. Building was constructed by the Building Committee with its Chairman Dr. Sudeshan K. Aggarwal and Dr. O. P. Bhardwaj, Dr. Santosh Chawla, Dr. S.K.Bhargava, Dr. R. Goulhatia, Dr. Veena Chowdhury, Dr. R. N. Bagga, Dr. S. S. Doda, Dr. M. S. Joshi, Dr. A. Gajaraj, Dr. Manoroma Berry as its members and President and Secretary General, IRIA are its ex-officio members. Local Building Management committee looks after day to day affairs of IRIA House.

A Central Library is established in IRIA House, New Delhi under the supervision and guidance of Dr.Col.C.S.Pant, VSM and generous support from RSNA and Radiology Outreach Foundation, U. S. A., Central Office, IRIA is equipped with study material for students and PGs with all the infrastructure.

IRIA publishes three issues of News Bulletin from Central Office edited by Secretary General of IRIA. It gives excellent information about activities, forthcoming programmes, minutes of various meeting and informative articles about equipment purchase, service contract, tax structures and news from industry and C.I.I. (Medical Equipment Division).

Affiliation of International Societies

IRIA has been a member of International Society of Radiology since 1950 and member of Asian and Oceanian Society of Radiology and regularly pays its membership subscription. IRIA and ICRI has formulated curriculum and syllabus for MD (RD) and DMRD and submitted to MCI for recommendation to all the universities and medical colleges in India. IRIA has had a glorious background and is looking ahead for playing its role in the advancement of radiology and imaging throughout Asia and SAARC countries. We have a mission and responsibility being the 2nd largest country in the world to contribute effectively the future growth of specialty in the region.
### Organizing Committee

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<tr>
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<tr>
<td>Dr. Jagat Ram</td>
<td>Dr. M S Sandhu</td>
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<tr>
<td>Director, PGIMER</td>
<td>Professor and Head Department of Radio Diagnosis &amp; Imaging PGIMER, Chandigarh</td>
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<th>Organizing Co-Chairperson</th>
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<tr>
<td>Dr. Bhupendra Ahuja</td>
<td>Dr. Suman Kochhar</td>
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<td>Dr. Paramjeet Singh</td>
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<th>Joint Organizing Secretaries</th>
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<tr>
<td>Dr. C. Amarnath</td>
<td>Dr. Gurdeep Singh</td>
<td>Dr. Sanjeev Sodhi</td>
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<td>Dr. Akshay Kumar Saxena</td>
<td>Dr. Amit Jain</td>
<td>Dr. Mahesh Prakash</td>
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### Local Committees

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<td>Accommodation Committee</td>
<td>Dr. Rahatdeep Singh Brar, Dr. Ajit Pal Chhabra</td>
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<td>Accompanying Persons Programme Committee</td>
<td>Dr. Purabi Mandal, Dr. Narinder Kaur, Dr. Harneet</td>
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<tr>
<td>Audio-Visual Committee</td>
<td>Dr. Anupam Lal, Dr. Samir Vyas</td>
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<tr>
<td>Catering Committee</td>
<td>Dr. Rameshwar Gupta, Dr. Chirag Kamal Ahuja, Dr. Lokesh Singh</td>
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<tr>
<td>Cultural Committee</td>
<td>Dr. Mandeep Garg, Dr. Tejinder Kaur, Dr. Shweta Mittal</td>
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<tr>
<td>Public relations and Media</td>
<td>Dr. Ajay Gulati, Dr. Monica Chhabra, Dr. Varinder Garg</td>
</tr>
<tr>
<td>Reception &amp; Stage Committee</td>
<td>Dr. Rupinder Singh, Dr. Ladbans Kaur, Dr. Purnima Aggarwal, Dr. Anindita Sinha, Dr. Sandhya Dhankhar, Dr. Tulika Singh, Dr. Vanita Gupta</td>
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<tr>
<td>Registration Committee</td>
<td>Dr. Baljit Kaur, Dr. Vikas Mittal, Dr. Anmol Bhan</td>
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<td>Scientific Committee</td>
<td>Dr. Suman Setia, Dr. Naveen Kalra, Dr. Vivek Gupta</td>
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<tr>
<td>Scientific Papers &amp; Poster Committee</td>
<td>Dr. Mandeep Kang, Dr. Ravinder Kaur, Dr. Naveen Kalra, Dr. Vivek Gupta</td>
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<tr>
<td>Souvenir &amp; Mementos Committee</td>
<td>Dr. Raman Nijhawan, Dr. Veenu Singla, Dr. Nidhi Prabhakar</td>
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<tr>
<td>Transport Committee</td>
<td>Dr. Karam Singh, Dr. Ajay Kumar, Dr. Ujjwal Gorsi</td>
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### List of Office Bearers of IRIA (2018-19)

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<tbody>
<tr>
<td>President</td>
<td>Dr. Mohanan K</td>
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<tr>
<td>President Elect</td>
<td>Dr. Hemant Patel</td>
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<tr>
<td>Immediate Past President</td>
<td>Dr. Bhupendra Ahuja</td>
</tr>
<tr>
<td>Secretary General</td>
<td>Dr. C. Amarnath</td>
</tr>
<tr>
<td>Vice President</td>
<td>Dr. Umesh Krishnamurthy</td>
</tr>
<tr>
<td>Vice President</td>
<td>Dr. Ashok Kumar Mandal</td>
</tr>
<tr>
<td>Treasurer</td>
<td>Dr. Pushpraj Bhatele</td>
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<tr>
<td>Joint Secretary</td>
<td>Dr. Kesavadas C.</td>
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<tr>
<td>Joint Secretary</td>
<td>Dr. L. Murali Krishna</td>
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### List of Office Bearers of ICRI (2018-19)

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<tr>
<td>Chairman</td>
<td>Dr. Jayaraj Govindaraj</td>
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<tr>
<td>Immediate Past Chairman</td>
<td>Dr. Deepak Patkar</td>
</tr>
<tr>
<td>Secretary</td>
<td>Dr. V.N. Varaprasad</td>
</tr>
<tr>
<td>Vice Chairperson</td>
<td>Dr. Milind Gune</td>
</tr>
<tr>
<td>Vice Chairperson</td>
<td>Dr. H.T. Narayana</td>
</tr>
<tr>
<td>Treasurer</td>
<td>Dr. Palle Lalitha</td>
</tr>
<tr>
<td>Joint Secretary</td>
<td>Dr. Rajesh Sharma</td>
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<tr>
<td>Joint Secretary</td>
<td>Dr. Tapan Dhibar</td>
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<tr>
<th>Position</th>
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<tbody>
<tr>
<td>Editor-in-chief</td>
<td>Dr. (Brig.) Chander Mohan</td>
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<tr>
<td>Joint Editor</td>
<td>Dr. Ashu Seith Bhalla</td>
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<tr>
<th>Role</th>
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<tbody>
<tr>
<td>Patron</td>
<td>Dr. Sudha Suri</td>
</tr>
<tr>
<td>Immediate Past President</td>
<td>Dr. Mandeep Kang</td>
</tr>
<tr>
<td>Vice President</td>
<td>Dr. Ravinder Kaur</td>
</tr>
<tr>
<td>Joint Secretary</td>
<td>Dr. Rahatdeep Singh Brar</td>
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<tr>
<td>President</td>
<td>Dr. Suman Setia</td>
</tr>
<tr>
<td>General Secretary</td>
<td>Dr. Kushaljit Singh Sodhi</td>
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<tr>
<td>Vice President</td>
<td>Dr. Amit Jain</td>
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<td>Dr. Manavjit Singh Sandhu</td>
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## International Faculty

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<td>Dr. Sudhir Sachar</td>
<td>Amalapuram</td>
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<tr>
<td>Dr. Suman Kochar</td>
<td>Chandigarh</td>
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<tr>
<td>Dr. Sumer Sethi</td>
<td>New Delhi</td>
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<tr>
<td>Dr. Sunil Kumar</td>
<td>Lucknow</td>
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<td>Dr. Sunil Puri</td>
<td>New Delhi</td>
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<tr>
<th>First Name</th>
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<tbody>
<tr>
<td>Dr. Sunitha Dachepalli (Maddula)</td>
<td>Guntur</td>
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<tr>
<td>Dr. Suresh Saboo</td>
<td>Jalna</td>
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<tr>
<td>Dr. Suresh Thakur</td>
<td>Shimla</td>
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<td>Dr. Suvro Roy Chaudhury</td>
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<tr>
<td>Dr. Suyash Kulkarni</td>
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<tr>
<td>Dr. Tarvinder Bir Singh Buxi</td>
<td>Gurgaon</td>
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<tr>
<td>Dr. TR Kapilamoorthy</td>
<td>Trivandrum</td>
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<tr>
<td>Dr. Tulika Singh</td>
<td>Chandigarh</td>
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<tr>
<td>Dr. Uddandam Rajesh</td>
<td>Pune</td>
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<td>Dr. Ujjwal Gorsli</td>
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<tr>
<td>Dr. Uma Debi</td>
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<tr>
<td>Dr. Varaprasad Vemuri</td>
<td>Vijayawada</td>
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<tr>
<td>Dr. Vasantha Kumar V.</td>
<td>New Delhi</td>
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<tr>
<td>Dr. Veenu Singla</td>
<td>Chandigarh</td>
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<td>Dr. Vidur Mahajan</td>
<td>New Delhi</td>
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<tr>
<td>Dr. Vijay Kumar</td>
<td>BANGALORE</td>
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<td>Dr. Vikas Bhatia</td>
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<tr>
<td>Dr. Vivek Gupta</td>
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<tr>
<td>Yuva bala kumaran</td>
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### Day 1 - 17-01-2019

<table>
<thead>
<tr>
<th>Timing</th>
<th>Session</th>
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<tr>
<td>08:00Hrs onwards</td>
<td>Registration</td>
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<tr>
<td>Day 1 - Hall A - BHARGAVA AUDITORIUM - Session- I - IRIA AWARDS &amp; ORATIONS</td>
<td>Dr. Jayaraj Govindaraj, Dr. V. N. Varaprasad</td>
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<tr>
<td>08:30-08:45Hrs</td>
<td>Onco Imaging Innovative Research Paper Award - The role of MRI-TRUS fusion biopsy in diagnosis of prostate cancer: a prospective cohort study</td>
<td>Dr. Chandan J. Das, New Delhi</td>
</tr>
<tr>
<td>08:45-09:20Hrs</td>
<td>Dr. N.G. Gadekar Memorial Oration - Imaging of Congenital Ear malformations</td>
<td>Dr. Jyoti Kumar, New Delhi</td>
</tr>
<tr>
<td>09:20-09:55Hrs</td>
<td>Dr. Mihir Mitter Memorial Oration - Clinical Perspective of ASRM and the new ESHRE &amp; ESGE classification of Mullerian Duct Anomalies</td>
<td>Dr. J. Devimeenal, Chennai</td>
</tr>
<tr>
<td>09:55-10:30Hrs</td>
<td>Tea Break</td>
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<tr>
<td>10:30-11:00Hrs</td>
<td>INAUGURATION &amp; AWARD CEREMONY OF ICRI</td>
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<tr>
<td>11:00-12:10Hrs</td>
<td>Day 1 - Session II - RECENT ADVANCES IN ULTRASOUND: PART -1</td>
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<td></td>
<td>Dr. H.T. Narayana, Dr. Milind Gune</td>
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<tr>
<td>11:00-11:30Hrs</td>
<td>Ultrasound vs MRI in evaluation of Peripheral Nerves</td>
<td>Dr. Mahesh Prakash, Chandigarh</td>
</tr>
<tr>
<td>11:30-11:50Hrs</td>
<td>USG Prostate: Special attention to evaluation of CA Prostate</td>
<td>Dr. Bhupendra Ahuja, Agra</td>
</tr>
<tr>
<td>11:50-12:10Hrs</td>
<td>MRI Prostate: Special attention to evaluation of CA Prostate</td>
<td>Dr. Hemant Patel, Ahmedabad</td>
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<tr>
<td>12:10-12:50Hrs</td>
<td>Day 1 - Session II - RECENT ADVANCES IN ULTRASOUND: PART -2</td>
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<td>Dr. Rajesh Sharma, Dr. Tapan Dhibar</td>
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<tr>
<td>12:10-12:30Hrs</td>
<td>Aneuploidy in the Fetus</td>
<td>Dr. Neelam Jain, Jamshedpur</td>
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<tr>
<td>12:30-12:50Hrs</td>
<td>What is new in Foetal Ultrasound</td>
<td>Dr. Rijo Mathew, Kochi</td>
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<tr>
<td>12:50-13:30Hrs</td>
<td>Day 1 - Session III - DR. S. K. SHARMA ULTRASOUND SYMPOSIUM (THEME: MUSCULOSKELETAL ULTRASOUND)</td>
<td>Dr. Amit Disawal, Dr. Sikander Shaikh</td>
</tr>
<tr>
<td>13:00-13:30Hrs</td>
<td>Musculoskeletal Ultrasound – Do’s and do Not’s</td>
<td>Dr. Aditya Daftary, Mumbai</td>
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<tr>
<td>13:30-14:30Hrs</td>
<td>Ultrasound of Rotator cuff</td>
<td>Dr. Amit Karat, Pune</td>
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<tr>
<td>14:30-15:00Hrs</td>
<td>Lunch</td>
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<tr>
<td>14:30-15:50Hrs</td>
<td>Day 1 - Session IV - MSK ULTRASOUND</td>
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<td>Dr. Palle Lalitha, Dr. Rajendra Solanki</td>
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# IRIA 2019

**72nd Annual Conference of India Radiological & Imaging Association**  
January 17-20, 2019 | PGIMER, Chandigarh, India

<table>
<thead>
<tr>
<th>Time</th>
<th>Session/Activities</th>
<th>Speaker(s)</th>
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<tbody>
<tr>
<td>14:30-14:50Hrs</td>
<td>Ultrasound of Wrist</td>
<td>Dr. J.P.Singh, Delhi</td>
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<tr>
<td>14:50-15:10Hrs</td>
<td>Elbow Ultrasonography</td>
<td>Dr. P.M.Venkata Sai, Chennai</td>
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<tr>
<td>15:10-15:30Hrs</td>
<td>Ultrasound in Rheumatoid Arthritis</td>
<td>Dr. Raghav Agarwal, Delhi</td>
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<td>15:30-15:50Hrs</td>
<td>Ultrasound Guided Injections</td>
<td>Dr. Deep Narayan Srivastava, Delhi</td>
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<td>15:50-16:15Hrs</td>
<td>Tea Break</td>
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<td>16:15-17:15Hrs</td>
<td>Day 1 - Session V - DR. SUREN KOTHARI FILM READING SESSION</td>
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<td>Moderator: Dr. A. Anbarasu</td>
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<td>Dr. Palle Lalitha, Dr. Rajendra Solanki</td>
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<td>Panelists: Dr. Karthik Ganesan, Dr. Anuradha Chandramohan, Dr. Ankur Goyal, Dr. Saurav Sarawgi</td>
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<td>17:15-17:45Hrs</td>
<td>ICRI General Body Meeting</td>
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<tr>
<td>18:00-19:30Hrs</td>
<td>Inauguration of 72nd Annual Conference of IRIA</td>
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<tr>
<td>20:00-22:30Hrs</td>
<td>Dinner at Rock Garden, Chandigarh</td>
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## Day 2 - 18-01-2019

<table>
<thead>
<tr>
<th>Time</th>
<th>Day 2 - Hall-A - Session-I - IRIA Awards &amp; Orations</th>
<th>Speaker(s)</th>
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<tbody>
<tr>
<td>08:30-11:30Hrs</td>
<td>Day 2 - Hall-A - Session-I - IRIA Awards &amp; Orations</td>
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<tr>
<td>08:30-08:45Hrs</td>
<td>Dr. Ashok Mukherjee Award 2019 - Assessment of Collateral Status using Multiphasic CT Angiography in the Acute Anterior circulation Ischemic stroke; its correlation with Clinical and Radiologic outcomes.</td>
<td>Dr. Adhithyan Rajendran, Trivandurum</td>
</tr>
<tr>
<td>08:45-09:00Hrs</td>
<td>Dr. Ashok Mukherjee Award 2019 - Preoperative evaluation of squamous cell carcinoma tongue (T1-T3): Is Ultrasound enough? Correlation with Magnetic Resonance Imaging and Histopathological staging</td>
<td>Dr. Smita Manchanda, New Delhi</td>
</tr>
<tr>
<td>09:00-09:15Hrs</td>
<td>Dr. Ashok Mukherjee Award 2019 - Comparison of 68 GA PSMA and Whole Body Diffusion Weighted MR Imaging of High Risk Prostate Cancer</td>
<td>Dr. L. Murali Krishna, Chennai</td>
</tr>
<tr>
<td>09:15-09:30Hrs</td>
<td>Dr. Kishore Taori Gold Medal for best competitive paper 2019 - Contrast enhanced Ultrasound for differentiation of pancreatic carcinoma from mass forming chronic pancreatitis</td>
<td>Dr. Pankaj Gupta, Chandigarh</td>
</tr>
<tr>
<td>09:30-09:45Hrs</td>
<td>Dr. Kishore Taori Gold Medal for best competitive paper 2019 - Compressed sense Magnetic Resonance Imaging of Brain for reduction of time of Acquisition and its comparison with Conventional Magnetic Resonance Imaging of Brain regarding image quality</td>
<td>Dr. Nirmala Ray, Chandigarh</td>
</tr>
<tr>
<td>09:45-10:20Hrs</td>
<td>Sir J.C. Bose Memorial Oration 2019 - Imaging of Musical Networks in the Brain</td>
<td>Dr. N. Chidambaranathan, Chennai</td>
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<tr>
<td>10:20-10:55Hrs</td>
<td>Dr. Diwan Aggarwal Memorial Oration 2019 - Hepatocellular Carcinoma- Diagnosis, Treatment &amp; Beyond</td>
<td>Dr. Shivanand G, New Delhi</td>
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<tr>
<td>Time</td>
<td>Event</td>
<td>Speaker(s)</td>
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<tr>
<td>10:55-11:30Hrs</td>
<td>Dr. M.L. Aggarwal Memorial Oration 2019 - Emergency Interventional Radiology</td>
<td>Dr. Shyamkumar N.K., Vellore</td>
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<tr>
<td>11:30-11:45Hrs</td>
<td>Tea Break</td>
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<tr>
<td>11:45-13:00Hrs</td>
<td>Day 2 - Session - II - IRIA MEETS NEIGHBOURING SOCIETIES</td>
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<td></td>
<td>Dr. K. Mohanan, Dr. C. Amarnath</td>
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<tr>
<td>11:45-12:00Hrs</td>
<td>Radiology In India</td>
<td>Dr. Hemant Patel, Ahmedabad, India</td>
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<tr>
<td>12:00-12:30Hrs</td>
<td>Accuracy of Computer Aided Diagnosis CAD in predicting the Malignancy in Thyroid Nodules</td>
<td>Prof. Dr. Swoyam Prakash Pandit, President, NRA</td>
</tr>
<tr>
<td>12:30-13:00Hrs</td>
<td>General Issues faced by Radiologists as a professional and Ethical Dilemmas</td>
<td>Dr Mohanan K, Kochi</td>
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<tr>
<td>13:00-14:00Hrs</td>
<td>Lunch</td>
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<tr>
<td>14:00-15:00Hrs</td>
<td>Day 2 - Hall-A : FETAL IMAGING</td>
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<td>Dr. K. Mohanan, Dr. C. Amarnath, Dr. Rajeev Singh, Dr. D Ramesh</td>
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<tr>
<td>14:00-14:20Hrs</td>
<td>Prediction of Viability of early pregnancy</td>
<td>Dr. Sunitha Pradeep, Pondicherry</td>
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<td>14:20-14:40Hrs</td>
<td>11-14 weeks Scan</td>
<td>Dr. Ladbans Kaur, Chandigarh</td>
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<tr>
<td>14:40-15:00Hrs</td>
<td>Genetic Markers: Prudence to be applied</td>
<td>Dr. Bhupendra Ahuja, Agra</td>
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<tr>
<td>15:00-15:20Hrs</td>
<td>TIFFA – FIRADS</td>
<td>Dr. Rijo Mathew, Cochin</td>
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<tr>
<td>15:20-15:40Hrs</td>
<td>Fetal Brain Imaging : anterior Complex</td>
<td>Dr. Neelam Jain, Jamshedpur</td>
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<td>15:40-16:00Hrs</td>
<td>Foetal spine imaging</td>
<td>Dr. Saneej Kanhirat, Kozhikode</td>
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<td>16:00-16:20Hrs</td>
<td>Basics of Foetal Echo</td>
<td>Dr. Sandhya Dhankhar, Chandigarh</td>
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<td>16:20-16:40Hrs</td>
<td>Fetal Genito Urinary tract</td>
<td>Dr. Shilpa Satarkar, Aurangabad</td>
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<td>16:40-17:00Hrs</td>
<td>Technology Update</td>
<td>GE Healthcare</td>
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<td>17:00-17:30Hrs</td>
<td>Tea Break</td>
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<td>17:30-19:30Hrs</td>
<td>GBM of IRIA</td>
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<td>19:30-22:30Hrs</td>
<td>Dinner at Gymkhana Club, Saketri Road, Panchkula</td>
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<tr>
<td>11:40-17:00Hrs</td>
<td>Day 2 - Hall-B : HEAD &amp; NECK IMAGING</td>
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<td>Chairpersons: Dr. Harsh Mahajan, Dr. Arunima Gupta, Dr. Prakash Lalchandani, Dr. Kirti Chaturvedi</td>
<td>Dr. David Yousem, USA</td>
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<td>Incidentalomas of Thyroid: What next?</td>
<td>Dr. Alka Asmita Singhal, New Delhi</td>
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<td>Sonography of Parathyroid</td>
<td>Dr. Rajani Gorantla, Vijayawada</td>
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<td>Sonography of Salivary Glands</td>
<td>Dr. M. Sunitha, Guntur</td>
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<td></td>
<td>Ocular Ultrasound in vitreo-retinal Diseases</td>
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<td>13:00-14:00Hrs</td>
<td>Lunch</td>
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<tr>
<td>14:00-14:20Hrs</td>
<td>CTA of the head and neck—from acquisition to interpretation</td>
<td>Dr. Deepak Takhtani, USA</td>
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<tr>
<td>14:20-14:40Hrs</td>
<td>Neck Lesions: pattern approach for the diagnosis and differential</td>
<td>Dr. Vikas Bhatia, Chandigarh</td>
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<tr>
<td>14:40-15:00Hrs</td>
<td>Vascular Lesions of Head &amp; Neck: Role of Interventional Radiology</td>
<td>Dr. Ajay Kumar, Chandigarh</td>
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<td>15:00-15:20Hrs</td>
<td>CT and MRI of Sinusitis: Essentials of preoperative reporting</td>
<td>Dr. Rajendra Solanki, Ahmedabad</td>
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<tr>
<td>15:20-15:40Hrs</td>
<td>Temporal bone anatomy: The secrets</td>
<td>Dr. Amarnath C, Chennai</td>
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<td>15:40-16:00Hrs</td>
<td>Congenital malformations of the ear:The key is in the pattern</td>
<td>Dr. David Yousem, USA</td>
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<td>16:00-16:20Hrs</td>
<td>Imaging of perineural spread in head and neck tumors</td>
<td>Dr. Gaurang Shah, USA</td>
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<tr>
<td>16:20-16:40Hrs</td>
<td>Orbital lesions: How much can we see?</td>
<td>Dr. Parveen Gulati, New Delhi</td>
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<tr>
<td>16:40-17:00Hrs</td>
<td>Imaging of laryngeal neoplasms</td>
<td>Dr. Jyoti Kumar, New Delhi</td>
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<td>17:00-17:30Hrs</td>
<td>Tea Break</td>
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<td>17:30-19:30Hrs</td>
<td>GBM of IRIA</td>
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<td>19:30-22:30Hrs</td>
<td>Dinner at Gymkhana Club, Saketri Road, Panchkula</td>
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<tr>
<td>11:40-17:00Hrs</td>
<td>Day 2 - Hall-C : WOMEN’S IMAGING</td>
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<tr>
<td>11:40-12:00Hrs</td>
<td>Systematic Evaluation of Mammogram</td>
<td>Dr. Sangeeta Saxena, Kota</td>
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<tr>
<td>12:00-12:20Hrs</td>
<td>Learning Curves in Breast Imaging</td>
<td>Dr. SMRIIti Hari</td>
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<tr>
<td>12:20-12:40Hrs</td>
<td>Breast Tomosynthesis: Current status</td>
<td>Dr. Roopa Ananthashivam, Bengaluru</td>
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<tr>
<td>12:40-13:00Hrs</td>
<td>Breast MRI- Protocol &amp; Interpretations</td>
<td>Dr. Victoria Mango, USA</td>
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<tr>
<td>13:00-14:00Hrs</td>
<td>Lunch</td>
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<td>14:00-14:20Hrs</td>
<td>Breast Interventions- Finer Tips</td>
<td>Dr. Veenu Singla, Chandigarh</td>
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<tr>
<td>14:20-14:40Hrs</td>
<td>Case based review – Breast Imaging</td>
<td>Dr. Jyoti Arora, Delhi</td>
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<td>14:40-15:00Hrs</td>
<td>Imaging in endometriosis : Current Status</td>
<td>Dr. Mahak Sood, Ahmedabad</td>
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<td>15:00-15:20Hrs</td>
<td>Fetal MRI : An Approach to practice</td>
<td>Dr.Tulika Singh, Chandigarh</td>
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<td>15:20-15:40Hrs</td>
<td>Imaging in Pelvic Inflammatory Disease</td>
<td>Dr. Jyotsna Sen, Rohtak</td>
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<tr>
<td>15:40-16:00Hrs</td>
<td>MR Guided HIFU in Uterine pathology</td>
<td>Dr. Shrinivas B Desai, Mumbai</td>
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<td>16:00-16:20Hrs</td>
<td>Imaging in gynaecological malignancies</td>
<td>Dr. Veenu Singla, Chandigarh</td>
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<tr>
<td>Time</td>
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<td>16:20-16:40Hrs</td>
<td>Imaging in Female Infertility – The Ovarian Factor</td>
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<td>16:40-17:00Hrs</td>
<td>Uterine Anomalies</td>
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<td>17:00-17:30Hrs</td>
<td>Tea Break</td>
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<td>17:30-19:30Hrs</td>
<td>GBM of IRIA</td>
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<td>19:30-22:30Hrs</td>
<td>Dinner at Gymkhana Club, Saketri Road, Panchkula</td>
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<tr>
<td>Day 2 - Hall-D: CONVENTIONAL RADIOLOGY</td>
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<td>11:40-13:00Hrs</td>
<td>Chairpersons: Sudha Suri, Sudha Kataria, Rakesh Kochhar, Sudheer Saxena</td>
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<tr>
<td>11:40-12:00Hrs</td>
<td>Good Old Chest- X rays- Are their days over?</td>
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<td>12:00-12:20Hrs</td>
<td>Caveats in Skeletal Trauma</td>
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<td>12:20-12:40Hrs</td>
<td>Relevance of Barium Studies in Present Era</td>
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<td>12:40-13:00Hrs</td>
<td>Relevance of Chest radiographs in evaluation of congenital heart diseases in the present era</td>
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<td>13:00-14:00Hrs</td>
<td>Lunch</td>
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<tr>
<td>14:00-17:00Hrs</td>
<td>Chairpersons: Brig (Dr) Samar Chatterji, Radhesh Lalam, James Griffith, Sameer Aggarwal</td>
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<tr>
<td>14:00-14:20Hrs</td>
<td>Systemic approach to Bone Tumors</td>
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<td>14:20-14:40Hrs</td>
<td>Benign Bone Tumors</td>
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<td>14:40-15:00Hrs</td>
<td>Malignant Bone Tumors</td>
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<td>15:00-15:20Hrs</td>
<td>Approach to soft Tissue Tumors</td>
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<td>15:20-15:40Hrs</td>
<td>Imaging features of Benign soft Tissue Tumors</td>
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<td>15:40-16:00Hrs</td>
<td>Role of MRI in malignant soft Tissue Tumors</td>
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<td>16:00-16:20Hrs</td>
<td>MRI of Brachial Plexus</td>
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<td>16:20-16:40Hrs</td>
<td>Bone and soft tissue infections</td>
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<td>16:40-17:00Hrs</td>
<td>Imaging of Bone Marrow</td>
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<td>17:00-17:30Hrs</td>
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<td>19:30-22:30Hrs</td>
<td>Dinner at Gymkhana Club, Saketri Road, Panchkula</td>
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<td>Day 2 - Hall-D: MSK IMAGING</td>
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<td>11:40-17:00Hrs</td>
<td>Chairpersons: Sarveeep Dhatt, Navneet Sharma, Ashish Bhatta, M.K. Mittal</td>
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<td>11:40-12:00Hrs</td>
<td>Spine trauma-report what really matters</td>
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<td>11:40-13:00Hrs</td>
<td>Systemic approach to Bone Tumors</td>
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<td>12:00-12:20Hrs</td>
<td>Caveats in Skeletal Trauma</td>
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<td>12:20-12:40Hrs</td>
<td>Relevance of Barium Studies in Present Era</td>
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<td>12:40-13:00Hrs</td>
<td>Relevance of Chest radiographs in evaluation of congenital heart diseases in the present era</td>
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<td>13:00-14:00Hrs</td>
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<td>Chairpersons: Brig (Dr) Samar Chatterji, Radhesh Lalam, James Griffith, Sameer Aggarwal</td>
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<td>Bone and soft tissue infections</td>
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<td>Imaging of Bone Marrow</td>
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<td>12:00-12:20</td>
<td>Good, Bad and Ugly of tubes and lines in chest</td>
<td>Dr. Narainder Gupta</td>
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<td>12:20-12:40</td>
<td>Lines &amp; tubes in critically sick patients</td>
<td>Dr. Ram Kishore Reddy</td>
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<td>12:40-13:00</td>
<td>Scrotal and penile emergencies</td>
<td>Dr. Rammohan V.S.V</td>
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<td>Chairpersons: Dr. Sanjeev Sodhi, Dr. Suman Kocchar, Dr. Savita Kumari, Dr. L.Kaman</td>
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<td>14:00-14:20</td>
<td>Unconscious patient-imaging approach and diagnoses</td>
<td>Dr. Pramod Lonikar</td>
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<td>14:20-14:40</td>
<td>Traumatic Brain Injury-key imaging findings and recent advances</td>
<td>Dr. Rahatdeep Singh Brar</td>
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<td>14:40-15:00</td>
<td>Split bolus acquisition technique in blunt abdominal trauma</td>
<td>Dr. Mohd. Khalid</td>
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<td>15:00-15:20</td>
<td>Blunt versus penetrating trauma - Imaging approach</td>
<td>Dr. Atin Kumar</td>
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<td>15:20-15:40</td>
<td>Bowel and mesenteric injuries</td>
<td>Dr. Rajesh Sharma</td>
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<td>Imaging of intestinal obstruction</td>
<td>Dr. Lalendra Uperti</td>
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<td>16:00-16:20</td>
<td>Imaging of adnexal torsion-pears and Pitfalls</td>
<td>Dr. Anjali Agrawal</td>
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<td>16:20-16:40</td>
<td>Acute GI bleed-imaging approach and interventions</td>
<td>Dr. Rammurti</td>
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<td>16:40-17:00</td>
<td>Imaging of necrotizing fascitis</td>
<td>Dr. Ajay Kumar Singh</td>
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<td>GBM of IRIA</td>
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<td>11:40-13:00</td>
<td>Day 2 - Hall-F : ONCO IMAGING</td>
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<td>Chairpersons: Brig (Dr) Giriraj Singh, Dr. B.R.Mittal, Dr. Baljinder Singh, Dr. Pankaj Malhotra</td>
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<td>11:40-12:00</td>
<td>Nano Imaging</td>
<td>Dr. Sikander Shaikh</td>
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<td>12:00-12:20</td>
<td>New Tracers in PET CT</td>
<td>Dr. Murali Krishna</td>
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<td>12:20-12:40</td>
<td>Peritoneal carcinomatosis index</td>
<td>Dr. Gaurav Goswami</td>
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<td>12:40-13:00</td>
<td>RECIST 1.1: What the radiologist needs to Know</td>
<td>Dr. Saifullah khan</td>
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<td>13:00-14:00</td>
<td>Lunch</td>
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<td>14:00-16:20</td>
<td>Day 2 - Hall-F : PUBLICATIONS &amp; JOURNALISM</td>
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<td>14:00-14:20</td>
<td>Chairpersons: Dr. Chander Mohan, Dr. Ashu Bhalla, Dr. Naveen Kalra, Dr. Aman Sharma</td>
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<td>14:00-14:20</td>
<td>How to plan a research study and carry it out</td>
<td>Dr. Ashu Seith Bhalla</td>
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<td>14:20-14:40</td>
<td>Article submission to IJRI: Do’s &amp; Don’ts</td>
<td>Dr. Chander Mohan</td>
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<td>14:40-15:00</td>
<td>How to convert my thesis into a publishable manuscript?</td>
<td>Dr. Ashu Seith Bhalla</td>
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<td>15:00-15:20Hrs</td>
<td>Biostatistics: How much is required?</td>
<td>Dr. R. Subramaniam, Doha</td>
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<td>15:20-15:40Hrs</td>
<td>Being a reputed reviewer: what do I need to do?</td>
<td>Dr. George Koshy, Vellore</td>
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<td>15:40-16:00Hrs</td>
<td>How to improve the impact factor of a Journal</td>
<td>Dr. Hans Blickmann, USA</td>
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<td>16:00-16:20Hrs</td>
<td>How to read &amp; Critique a research paper</td>
<td>Dr. Nitin Ghonge, New Delhi</td>
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Moderator: Dr. Ashu Seith Bhalla  
Panelists: Dr. Chander Mohan, Dr. Kushaljit S. Sodhi

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<tr>
<td>16:20-17:00Hrs</td>
<td>Interactive Session with Delegates</td>
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17:00-17:30Hrs  Tea Break

17:30-19:30Hrs  GBM of IRIA

19:30-22:30Hrs  Dinner at Gymkhana Club, Saketri Road, Panchkula

Day 2 - Hall-G: BASIC RADIOLOGY AND SOCIAL RADIOLOGY SESSION

11:40-13:00Hrs  Chairpersons: Dr. Suman Setia, Dr. Rajesh Kapoor, Dr. B.Nagi, Dr. Vanita Gupta

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<th>Time</th>
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<tr>
<td>11:40-12:00Hrs</td>
<td>Role of plain radiography and MRI in evaluation of bone tumours</td>
<td>Dr. Purnima Aggarwal, Chandigarh</td>
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<tr>
<td>12:00-12:20Hrs</td>
<td>emPOWER Engineering in Radiologist</td>
<td>Mr. Niranjan, Kochi</td>
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<td>12:20-12:40Hrs</td>
<td>Paranasal Sinuses</td>
<td>Dr. Sohan Singh, AMRitsar</td>
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<td>12:40-13:00Hrs</td>
<td>Gadolinium MRI contrast agents safety overview: from NSF to brain deposition</td>
<td>Dr. Kohkan Shamsi, USA</td>
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13:00-14:00Hrs  Lunch

Day 2 - Hall-G: BASIC RADIOLOGY AND SOCIAL RADIOLOGY SESSION

14:00-17:00Hrs  Chairpersons: Dr. J S Bhangoo, Dr. Raman Nijhwan, Dr. Om Tavri, Dr. Mukund Joshi

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<td>14:00-14:20Hrs</td>
<td>All about Raksha Programme</td>
<td>Dr. Sona Pungavkarl, Mumbai</td>
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<td>14:20-14:40Hrs</td>
<td>Increasing role of radiologist in drug and device development</td>
<td>Dr. Kohkan Shamsi, USA</td>
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<td>14:40-15:00Hrs</td>
<td>Challenges in Radiology Practice today!</td>
<td>Dr. Gurdeep Singh, Ludhiana</td>
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<td>15:00-15:20Hrs</td>
<td>Contrast Reactions &amp; Management</td>
<td>Dr. Uma Debi, Chandigarh</td>
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<td>15:20-15:40Hrs</td>
<td>Ethics in Radiological Practice</td>
<td>Dr. Mohanan K, Kochi</td>
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<td>15:40-16:00Hrs</td>
<td>Radiological Curriculum – Needs the Change</td>
<td>Dr. Deepak Mehta, Vadodara</td>
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<td>16:00-16:20Hrs</td>
<td>Audits in Radiology-How to do it Right</td>
<td>Dr. Sameer Raniga, Muscat</td>
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<td>16:20-16:40Hrs</td>
<td>Enterprunership for Radiologists</td>
<td>Dr. Harsh Mahajan, New Delhi</td>
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<td>16:40-17:00Hrs</td>
<td>Social Security Scheme of IRIA</td>
<td>Dr. Suresh Saboo, Jalna</td>
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17:00-17:30Hrs  Tea Break

17:30-19:30Hrs  GBM of IRIA
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<td>Dinner at Gymkhana Club, Saketri Road, Panchkula</td>
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<td>08:15-08:45Hrs</td>
<td>Meet the Professor</td>
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<td>09:00-17:00Hrs</td>
<td>Day 3 - Hall-A - Session - ULTRASOUND: FETAL, SMALL PARTS &amp; DOPPLER IMAGING</td>
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<td>Chairpersons: Dr. (Col) Mandeep Saini, Dr. Ramesh Chander, Dr. Varinder Garg, Dr. B R Goyal</td>
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<td>09:00-09:20Hrs</td>
<td>Ultrasound artefacts</td>
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<td>Dr. Anjali Prakash, New Delhi</td>
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<td>09:20-09:40Hrs</td>
<td>Contrast Enhanced Sonography</td>
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<td>Dr. Ujjwal Gorsi, Chandigarh</td>
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<td>09:40-10:00Hrs</td>
<td>Ultrasound Elastography</td>
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<td>Dr. Rahul Sachdev, New Delhi</td>
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<td>10:00-10:20Hrs</td>
<td>Follicular monitoring and ART</td>
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<td>Dr. Natasha Gupta, New Delhi</td>
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<td>10:20-10:40Hrs</td>
<td>High resolution sonography of perianal Fistulae</td>
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<td>Dr. Amandeep Singh, AMRItsar</td>
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<td>10:40-10:50Hrs</td>
<td>TECHNICAL UPDATE: Day to day maintainence of Ultrasound equipments for longer life</td>
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<td>Mr. Niranjan, Kochi</td>
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<td>10:50-11:20Hrs</td>
<td>Tea Break</td>
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<td>Chairpersons: Dr. (Col) Vikram Khanna, Dr. Hari Singh, Dr. Rohtas Yadav, Dr. Sunil Kakkar</td>
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<td>11:20-11:40Hrs</td>
<td>Image optimization in colour Doppler</td>
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<td>Dr. Rashmi Dixit, New Delhi</td>
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<td>11:40-12:00Hrs</td>
<td>Colour Doppler for Peripheral Arterial Disease</td>
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<td>Dr. Abhinav Jain, New Delhi</td>
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<td>12:00-12:20Hrs</td>
<td>Peripheral Venous Doppler</td>
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<td>Dr. Pradeep Parakh, Jaipur</td>
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<td>12:20-12:40Hrs</td>
<td>Carotid Doppler: Technique and current Status</td>
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<td>Dr. Kada Venkataramana, Kakinada</td>
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<td>12:40-13:00Hrs</td>
<td>Sonographic evaluation of transplant Kidney</td>
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<td>Dr. Ravinder Sidhu, USA</td>
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<td>13:00-14:00Hrs</td>
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<td>Moderators: Dr. Tanuj Garg, Dr. Vanita Jain, Dr. Meghana Barmase, Dr. Pradeep Kumar</td>
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<td>14:00-14:20Hrs</td>
<td>Discordant growth in Multiple Pregnancy</td>
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<td>Dr. Yuvabalakumaran, Chennai</td>
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<td>14:20-14:40Hrs</td>
<td>Ectopic Pregnancy</td>
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<td>Dr. Rama Anand, New Delhi</td>
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<td>14:40-15:00Hrs</td>
<td>Color Doppler in Growth Restriction</td>
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<td>Dr. Punam Bajaj, Gurgaon</td>
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<td>15:00-15:20Hrs</td>
<td>Sonography of placenta</td>
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<td>Dr. Akhilesh Sharma, Kanpur</td>
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<td>15:20-15:40Hrs</td>
<td>Setting up fetal intervention facility</td>
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<td>Dr. Bavaharan R, Thennur</td>
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<td>15:40-16:00Hrs</td>
<td>Technology Update</td>
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<td>16:00-16:30Hrs</td>
<td>Panelist: Dr. Pradeep S., Dr. Ladbans Kaur, Dr. Vanita Jain, Dr. Ravi Kannooja, Dr. Inusha Pani</td>
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<td>Moderator: Dr. Bhupendra Ahuja</td>
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<td>Panel Discussion: What after Anomaly Scan</td>
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<td>16:30-17:00Hrs</td>
<td>Panel Discussion: PC- PNDT Act</td>
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<td>17:30-18:00Hrs</td>
<td>Dinner at AKM Resort, Zirakpur</td>
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<td>19:30-22:30Hrs</td>
<td>Day 3 - Hall-B - Session - ABDOMINAL IMAGING</td>
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<td>09:00-09:20Hrs</td>
<td>Systematic Approach to Abdominal MRI</td>
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<td>09:20-09:40Hrs</td>
<td>Texture Imaging: Basics and Applications</td>
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<td>09:40-10:00Hrs</td>
<td>Technique of CT and MR Enterography</td>
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<td>10:00-10:20Hrs</td>
<td>CT Angiography of Abdomen : Optimized Acquisition, protocols &amp; Reporting</td>
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<td>10:20-10:40Hrs</td>
<td>Contrast enhanced ultrasound of the liver: Technique and indications</td>
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<td>10:40-11:00Hrs</td>
<td>IgG4 related Disease: What a Radiologist should know?</td>
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<td>Tea Break</td>
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<td>11:20-11:40Hrs</td>
<td>Update on imaging of appendicitis</td>
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<td>11:40-12:00Hrs</td>
<td>Mesenteric pathology: state-of-the-art Imaging</td>
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<td>12:00-12:20Hrs</td>
<td>Imaging of cholangiopathies</td>
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<td>12:20-12:40Hrs</td>
<td>Small bowel tumours</td>
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<td>12:40-13:00Hrs</td>
<td>Staging of rectal cancer with MRI</td>
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<td>13:00-13:20Hrs</td>
<td>Imaging of spleen: Ischemia, infections and tumours</td>
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<td>Lunch</td>
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<td>14:20-14:40Hrs</td>
<td>Modified Atlanta Classification</td>
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<td>14:40-15:00Hrs</td>
<td>Cystic lesions of Pancreas</td>
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<td>15:00-15:20Hrs</td>
<td>Imaging and staging of pancreatic cancer</td>
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<td>Imaging in chronic pancreatitis</td>
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<td>15:40-16:00Hrs</td>
<td>MR Imaging of Focal Hepatic Lesions</td>
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<td>16:00-16:20Hrs</td>
<td>Pre-transplant liver imaging</td>
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<td>Post- transplant Liver imaging</td>
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Chairpersons: Dr. G Dewan, Dr. Prashant Onkar, Dr. S.Nadaradjan, Dr. Rajesh Sharma

Moderator: Dr. K. Mohanan

Chairpersons: Dr. Sameer Gandhi, Dr. Harish Chandhok, Dr. Gurinder Mahal

Chairpersons: Dr. Suman Kochhar, Dr. Raju Sharma, Dr. Ritu Kashikar, Dr. Anirudh Kohli, Dr. Sandeep Vohra, Dr. Murthy C, Australia
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<tr>
<td>16:40-17:00Hrs</td>
<td>Reporting startegy of focal hepatic lesions : Focus on LIRADS</td>
<td>Dr. Karthik Ganesan, Mumbai</td>
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<tr>
<td>17:00-17:20Hrs</td>
<td>Case Based Review (Pancreas)</td>
<td>Dr. Binit Surekha, Jodhpur</td>
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<tr>
<td>19:30-22:30Hrs</td>
<td>Dinner at AKM Resort, Zirakpur</td>
<td>Dr. (TBA)</td>
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<tr>
<td>09:00-17:00Hrs</td>
<td>Day 3 - Hall C : PEDIATRIC IMAGING</td>
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<tr>
<td>09:00-09:20Hrs</td>
<td>ALARA Concept: Image Gently &amp; Beyond</td>
<td>Dr. Pilar Garcia Pena, Spain</td>
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<tr>
<td>09:20-09:40Hrs</td>
<td>Approach to a Pediatric Chest Xray</td>
<td>Dr. Rohini Gupta, New Delhi</td>
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<tr>
<td>09:40-10:00Hrs</td>
<td>Imaging of Pediatric Airways</td>
<td>Dr. Manisha Jana, New Delhi</td>
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<tr>
<td>10:00-10:20Hrs</td>
<td>Ultrasound of Pediatric Chest</td>
<td>Dr. Priscilla Joshi, Pune</td>
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<tr>
<td>10:20-10:40Hrs</td>
<td>Clinical Scenario: Child with Wheeze: Radiological aspects</td>
<td>Dr. Pilar Garcia Pena, Spain</td>
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<td>11:00-11:20Hrs</td>
<td>Tea Break</td>
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<td>11:20-11:40Hrs</td>
<td>KEYNOTE LECTURE : Application of Compressed Sensing in routine clinical pediatric MR imaging</td>
<td>Dr. Taylor Chung, USA</td>
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<tr>
<td>11:40-12:00Hrs</td>
<td>Lung MRI in Children</td>
<td>Dr. Kushaljit S Sodhi, Chandigarh</td>
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<tr>
<td>12:00-12:20Hrs</td>
<td>MR Urography</td>
<td>Dr. Anmol Bhatia, Chandigarh</td>
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<td>12:20-12:40Hrs</td>
<td>Pediatric body MR techniques focusing on free breathing</td>
<td>Dr. Taylor Chung, USA</td>
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<tr>
<td>12:40-13:00Hrs</td>
<td>Clinical Scenario: Non Sedated Awake Child : How to optimize MR Imaging &amp; New Techniques</td>
<td>Dr. Deepak Patkar, Mumbai</td>
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<tr>
<td>13:00-13:20Hrs</td>
<td>Pediatric Interventions</td>
<td>Dr. Murthy C, Australia</td>
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<td>13:20-14:20Hrs</td>
<td>Lunch</td>
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<td>14:20-14:40Hrs</td>
<td>Neonatal Cholestasis</td>
<td>Dr. Akshay Kumar Saxena, Chandigarh</td>
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<tr>
<td>14:40-15:00Hrs</td>
<td>Clinical Scenario: Vomiting infant : Ultrasound or contrast study</td>
<td>Dr. Anupam Jhobta, Shimla</td>
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<td>15:00-15:20Hrs</td>
<td>Congenital renal lesions</td>
<td>Dr. Neera Kohli, Lucknow</td>
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<tr>
<td>15:20-15:40Hrs</td>
<td>HIE in Children: What radiologist should know?</td>
<td>Dr. Manoj Mathur, Patiala</td>
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<td>15:40-16:00Hrs</td>
<td>Approach to Posterior Fossa mass in children</td>
<td>Dr. Sanjiv Sharma, Shimla</td>
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<tr>
<td>16:00-16:20Hrs</td>
<td>Clinical Scenario: Child with seizures: Imaging Algorithm</td>
<td>Dr. Shrinivas B Desai, Mumbai</td>
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<td>16:20-16:40Hrs</td>
<td>USG in soft tissue Lumps and bumps in Children</td>
<td>Dr. Subhash Tailor, Bhilwara</td>
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<td>16:40-17:00Hrs</td>
<td>Case Based reviews in Pediatrics</td>
<td>Dr. Milind Gune, Thane</td>
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<td>Tea Break</td>
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<td>19:30-22:30Hrs</td>
<td>Dinner at AKM Resort, Zirakpur</td>
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<td>09:00-17:00Hrs</td>
<td>Day 3 - Hall D: INTERVENTIONAL RADIOLOGY</td>
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<tr>
<td>09:00-09:20Hrs</td>
<td>Epidemiology and staging of HCC</td>
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<td>Dr. Madhusudhan, New Delhi</td>
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<td>09:20-09:40Hrs</td>
<td>Imaging of HCC from the perspective of interventional oncology</td>
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<td>Dr. Srikanth Moorthy, Kochi</td>
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<td>09:40-10:00Hrs</td>
<td>Ablation techniques for HCC</td>
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<td>Dr. Naveen Kalra, Chandigarh</td>
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<td>10:00-10:20Hrs</td>
<td>Endovascular treatment of HCC</td>
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<td>Dr. Sanjay Gupta, USA</td>
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<td>10:20-10:40Hrs</td>
<td>Imaging of HCC after locoregional treatment</td>
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<td>Dr. Shivanand G., New Delhi</td>
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<td>10:40-10:50Hrs</td>
<td>Technology Update by Canon</td>
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<td>10:50-11:20Hrs</td>
<td>Chairpersons: Dr. Arunanshu Behra, Dr. Divya Dahiya, Dr. Rammurti, Dr. R K Sharma</td>
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<td>11:20-11:40Hrs</td>
<td>Basics of image guided biopsy: Hardware &amp; techniques</td>
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<td>Dr. Shreeshar B.C., Chandigarh</td>
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<td>11:40-12:00Hrs</td>
<td>Basics of image guided drainage procedures: Hardware &amp; techniques</td>
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<td>Dr. Mukesh Yadav, New Delhi</td>
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<td>12:00-12:20Hrs</td>
<td>Abdominal and deep pelvic collections: Access routes and drainage</td>
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<td>Dr. Suyash Kulkarni, Mumbai</td>
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<td>12:20-12:40Hrs</td>
<td>Lines and ports: How to do it?</td>
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<td>Dr. Arun Gupta, New Delhi</td>
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<td>12:40-13:00Hrs</td>
<td>Sclerotherapy of peripheral arteriovenous malformations</td>
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<td>Dr. Shyam Kumar, Vellore</td>
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<td>13:00-13:20Hrs</td>
<td>Minimally invasive treatment of varicose veins</td>
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<td>Dr. Sandeep Tirtha, USA</td>
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<td>Lunch</td>
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<td>14:20-14:40Hrs</td>
<td>Endovascular treatment of GI bleeding</td>
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<td>Dr. Rajeev Suri, USA</td>
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<td>14:40-15:00Hrs</td>
<td>Hypersensitivity reactions to Contrast Media</td>
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<td>Dr. Olivier Clement</td>
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<td>15:00-15:20Hrs</td>
<td>Imaging and Intervention Haematuria</td>
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<td>Dr. Ajit Yadav, New Delhi</td>
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<td>15:20-15:40Hrs</td>
<td>Imaging algorithms and endovascular treatment of renovascular</td>
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<td>Dr Chandan Das, New Delhi</td>
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<td>15:40-16:00Hrs</td>
<td>PAIR in liver hydatids_Truce with surgeons</td>
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<td>Dr. Sunil Puri, Delhi</td>
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<td>16:00-16:20Hrs</td>
<td>Basics of biliary Drainage/ stents</td>
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<td>Dr. Shuvro Roy Chaudhury, Kolkatta</td>
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<td>16:20-16:40Hrs</td>
<td>Management of pancreatic collections and abscesses</td>
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<td>Dr. Mandeep Kang, Chandigarh</td>
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<td>16:40-17:00Hrs</td>
<td>Aspiration and Drainage of hepatic cysts and abscess</td>
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<td>Dr. Amar Mukund, New Delhi</td>
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<td>17:00-17:30Hrs</td>
<td>Tea Break</td>
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<td>Chairpersons</td>
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<td>19:30-22:30Hrs</td>
<td>Dinner at AKM Resort, Zirakpur</td>
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<tr>
<td>09:00-17:00Hrs</td>
<td><strong>Day 3 - Hall E : NEURORADIOLOGY</strong></td>
<td><strong>Chairpersons: Dr. N.Khandelwal, Dr. R.K. Gupta, Dr. S.K. Gupta, Dr. Narendra Kumar</strong></td>
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<tr>
<td>09:00-09:20Hrs</td>
<td>Brain anatomy-A primer</td>
<td>Dr. Paramjeet Singh, Chandigarh</td>
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<td>09:20-09:40Hrs</td>
<td>Next Generation Imaging : Whats new &amp; Whats coming?</td>
<td>Dr. Suyash Mohan, USA</td>
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<td>09:40-10:00Hrs</td>
<td>Ring lesions-is it still a diagnostic dilemma? MR multi-parametric imaging</td>
<td>Dr. Sameer Vyas, Chandigarh</td>
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<td>10:00-10:20Hrs</td>
<td>CNS infections: role of advanced MR techniques</td>
<td>Dr. R.K. Gupta, Gurgaon</td>
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<td>10:20-10:40Hrs</td>
<td>WHO brain tumor classification 2016: Lessons learned so far</td>
<td>Dr. Bejoy Thomas, Thiruvananthapuram</td>
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<td>10:40-10:50Hrs</td>
<td>Case Series: Antenatal diagnosis &amp; PFFD</td>
<td>Dr. Rachita Ramamaurthy, Bengaluru</td>
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<td>10:50-11:20Hrs</td>
<td><strong>Tea Break</strong></td>
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<td>11:20-11:40Hrs</td>
<td>Imaging in seizures-epilepsy: where have we reached</td>
<td>Dr. Bejoy Thomas, Thiruvananthapuram</td>
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<td>11:40-12:00Hrs</td>
<td>MR perfusion: tips, tricks and applications</td>
<td>Dr. TR Kapilamoorthy, Trivandrum</td>
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<td>12:00-12:20Hrs</td>
<td>MRI biomarkers in Neurocognitive disorders</td>
<td>Dr. Mohit Agarwal, USA</td>
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<td>12:20-12:40Hrs</td>
<td>Diffusion kurtosis imaging: a primer for general radiologist</td>
<td>Dr. Chirag K. Ahuja, Chandigarh</td>
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<td>12:40-13:00Hrs</td>
<td>Imaging of Movement Disorders</td>
<td>Dr. Jitender Saini, Bengaluru</td>
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<td>13:00-13:20Hrs</td>
<td>CSF imaging: when and how?</td>
<td>Dr. Leve Joseph, New Delhi</td>
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<td>13:20-14:20Hrs</td>
<td><strong>Lunch</strong></td>
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<td>14:20-14:40Hrs</td>
<td>Acute stroke imaging: minimum and precise</td>
<td>Dr. Vivek Gupta, Chandigarh</td>
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<tr>
<td>14:40-15:00Hrs</td>
<td>An approach to spinal canal lesions</td>
<td>Dr. Suresh Thakur, Shimla</td>
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<td>15:00-15:20Hrs</td>
<td>Spinal vascular lesion: diagnosis and management</td>
<td>Dr. Shailesh Gaikwad, New Delhi</td>
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<td>15:20-15:40Hrs</td>
<td>Backache imaging: when and how?</td>
<td>Dr. Ajay Kumar, Chandigarh</td>
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<td>15:40-16:00Hrs</td>
<td>Approach to T2W white matter hyperintensities in adults</td>
<td>Dr. Chirag K. Ahuja, Chandigarh</td>
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<td>16:00-16:20Hrs</td>
<td>Treatable causes of cognitive decline: don’t miss these</td>
<td>Dr. David Yousem, USA</td>
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<td>16:20-16:40Hrs</td>
<td>Head trauma: ABC of imaging</td>
<td>Dr. Amar Singh, Patna</td>
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<td>16:40-17:00Hrs</td>
<td>Case Base Review (Stroke, Epilepsy &amp; Backache)</td>
<td>Dr. Deepak Takhtani, USA</td>
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<td>17:00-17:20Hrs</td>
<td>White Matter Diseases in Children</td>
<td>Dr. Sunil Kumar, Lucknow</td>
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<td>Speaker(s)</td>
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<td>17:20-17:40Hrs</td>
<td>Imaging of Sella</td>
<td>Dr. Vijay Kumar K R, Bengaluru</td>
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<td>17:40-18:00Hrs</td>
<td>Tea Break</td>
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<td>19:30-22:30Hrs</td>
<td>Dinner at AKM Resort, Zirakpur</td>
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<td>09:00-10:50Hrs</td>
<td><strong>Day 3 - Hall F - Session I - MEDICO-LEGAL</strong></td>
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<td>Chairpersons: Dr. Subhash Balyan, Dr. Yogendra Singh, Dr. Sandeep Kavthale, Dr. Manju Bahl</td>
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<td>09:00-09:20Hrs</td>
<td>Legal battles of IRIA: PC-PNDT Act</td>
<td>Dr. Harsh Mahajan, New Delhi</td>
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<td>09:20-09:40Hrs</td>
<td>Turf protection in ultrasound/radiology</td>
<td>Dr. Hari Kumaran, Trivandru</td>
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<td>09:40-10:00Hrs</td>
<td>Decoding form F</td>
<td>Dr. O.P. Bansal, New Delhi</td>
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<td>10:00-10:20Hrs</td>
<td>Competence Based Test in Ultrasonography: Implications for Radiologists</td>
<td>Dr. D. Ramesh, Chennai</td>
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<td>10:20-10:35Hrs</td>
<td>Interactive Session</td>
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<td>10:35-10:50Hrs</td>
<td>Technology Update by Mindray</td>
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<td>11:20-15:00Hrs</td>
<td><strong>Day 3 - Session II - ARTIFICIAL INTELLIGENCE</strong></td>
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<td>Chairpersons: Dr. Harsh Mahajan, Dr. Anjali Agrawal</td>
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<td>11:20-11:40Hrs</td>
<td>Artificial Intelligence: A primer</td>
<td>Dr. Vidur Mahajan, New Delhi</td>
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<td>11:40-12:00Hrs</td>
<td>Artificial Intelligence and Chest radiograph</td>
<td>Dr. Milind Gune, Thane</td>
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<td>12:00-12:20Hrs</td>
<td>Preparing your Radiology Practice and IT Department for Big Data and AI</td>
<td>Dr. Vidur Mahajan, New Delhi</td>
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<td>12:20-12:30Hrs</td>
<td>Artificial Intelligence: Industry’s perspective</td>
<td>Siemens</td>
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<td>12:30-12:40Hrs</td>
<td>Artificial Intelligence for Breast Cancer Imaging</td>
<td>Dr. Nishi Mathur, Bengaluru</td>
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<td>12:40-13:00Hrs</td>
<td>Impact of AI on Radiology Teaching &amp; Training</td>
<td>Dr. Vasantha Kumar V, New Delhi</td>
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<td>13:00-13:20Hrs</td>
<td>Ethical and Legal issues of using AI and Machine Learning in Healthcare</td>
<td>Dr. Anjali Agrawal, New Delhi</td>
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<td>13:20-14:20Hrs</td>
<td>Lunch</td>
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<td>Chairpersons: Dr. Ajay Gulati</td>
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<td>14:20-14:40Hrs</td>
<td>What clinicians would like to achieve from Artificial Intelligence</td>
<td>Dr. Sanjay Gandhi, UK</td>
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<td>14:40-15:00Hrs</td>
<td>Current Status of Artificial Intelligence &amp; Computer Aided Detection</td>
<td>Dr. Sanjay Gandhi, UK</td>
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<td>15:00-17:00Hrs</td>
<td><strong>Day 3 - Session III : 3D PRINTING</strong></td>
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<td>Chairpersons: Dr. Bhavin Jhankharia</td>
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<td>15:00-15:20Hrs</td>
<td>Introduction to Medical 3-D Printing</td>
<td>Ms. Firoza, Pune</td>
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<td>15:20-15:40Hrs</td>
<td>Setting up a 3-D printing lab inside a radiology department</td>
<td>Dr. Nilesh Shah, Mumbai</td>
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<td>15:40-16:00Hrs</td>
<td>3-D Printing: Real time clinical experience</td>
<td>Dr. Bhavin Jankharia, Mumbai</td>
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<td>16:00-16:20Hrs</td>
<td>3-D Printing of Patient specific implants and prostheses</td>
<td>Dr. Vasantha Kumar V, New Delhi</td>
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<tr>
<td>16:20-16:40Hrs</td>
<td>3-D Printing: Experience from incubation centre</td>
<td>Dr. Praveen Kalra, Chandigarh</td>
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<tr>
<td>16:40-17:00Hrs</td>
<td>3-D Printing: Future prospects</td>
<td>Dr. Vasantha Kumar V, New Delhi</td>
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<tr>
<td>17:00-17:30Hrs</td>
<td>Tea Break</td>
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<tr>
<td>19:30-22:30Hrs</td>
<td>Dinner at AKM Resort, Zirakpur</td>
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</table>

**Day 3 - Hall G : ORAL PAPER PRESENTATION**

**Chairpersons:** Dr. Mandeep Kang, Dr. Samarjit Ghuman

<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
<th>Speaker</th>
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</thead>
<tbody>
<tr>
<td>08:30-08:38Hrs</td>
<td>Abs ID: 30 - CT Characterization of Portal Vein Thrombosis (Neoplastic Versus Bland)</td>
<td>Dr. Bhavana N</td>
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<tr>
<td>08:38-08:46Hrs</td>
<td>Abs ID: 217 - MDCT Evaluation of Small and Large Bowel Wall Mass Lesion With Histopathology Confirmation.</td>
<td>Dr. Ravi Kumar</td>
</tr>
<tr>
<td>08:46-08:54Hrs</td>
<td>Abs ID: 294 - CT findings of Idiopathic Abdominal Cocoon: a report of six patients.</td>
<td>Dr. Rajeev N Priyadarshi</td>
</tr>
<tr>
<td>08:54-09:02Hrs</td>
<td>Abs ID: 545 - MDCT Evaluation of Anatomical Variations in Celiac and Hepatic Arteries.</td>
<td>Dr. Ranjitha Kulkarni</td>
</tr>
<tr>
<td>09:02-09:10Hrs</td>
<td>Abs ID: 584 - Evaluation of Abdominal Tuberculosis By 3T Mr Enterography and Diffusion Weighted Mr Imaging</td>
<td>Dr. Prince Das</td>
</tr>
<tr>
<td>09:10-09:18Hrs</td>
<td>Abs ID: 660 - A Study to compare the validity of Ultrasonography And Magnetic Resonance Imaging with histopathological diagnosis in the evaluation Of Adnexal Masses”</td>
<td>Dr. Tanusri Debbarma</td>
</tr>
<tr>
<td>09:18-09:26Hrs</td>
<td>Abs ID: 682 - Computed Tomographic Evaluation of Solid Organ Injuries In Blunt Abdominal Trauma</td>
<td>Dr. Mahesh Karanjii</td>
</tr>
<tr>
<td>09:26-09:34Hrs</td>
<td>Abs ID: 712 - Imaging findings in malignant pancreatic tumors</td>
<td>Dr. Satyapraveen Samantula</td>
</tr>
<tr>
<td>09:34-09:42Hrs</td>
<td>Abs ID: 832 - Correlation of grade of Non-alcoholic Fatty liver disease with risk of cardiovascular disease in type 2 diabetes mellitus patients</td>
<td>Dr. Kavit Gupta</td>
</tr>
<tr>
<td>09:42-09:50Hrs</td>
<td>Abs ID: 894 - Abdominal CT enterography as an imaging tool for chronic diarrhea: Review of technique and diagnostic criteria</td>
<td>Dr. Nishant Patel</td>
</tr>
<tr>
<td>09:50-09:58Hrs</td>
<td>Abs ID: 995 - Symtomatic Biliary Pseudolithiasis in Adult Patients Treated with Ceftriaxone</td>
<td>Dr. E Sibi</td>
</tr>
<tr>
<td>09:58-10:06Hrs</td>
<td>Abs ID: 1004 - Bringing objectivity to bowel assessment : are iodine maps the answer?</td>
<td>Dr. Deeksha Bhalla</td>
</tr>
<tr>
<td>10:06-10:14Hrs</td>
<td>Abs ID: 1122 - Comparative evaluation of plain abdominal radiograph and ultrasound in the diagnosis of intestinal obstruction</td>
<td>Dr. Darisalan Kynjing</td>
</tr>
<tr>
<td>10:14-10:22Hrs</td>
<td>Abs ID: 1127 - INJECTION OF AQUEOUS JELLY PERCUTANEOSLY IN MR FISTULOGRAM</td>
<td>Dr. Samir Dere</td>
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<tr>
<td>Time</td>
<td>Abs ID</td>
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<tr>
<td>10:22-10:30Hrs</td>
<td>1129</td>
<td>USG Guided Biopsy of Omental Nodular Deposits and Its Correlation With Histopathological Examination</td>
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<tr>
<td>10:30-10:38Hrs</td>
<td>1169</td>
<td>Imaging characteristics of hepatocellular carcinoma</td>
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<tr>
<td>10:38-10:46Hrs</td>
<td>1200</td>
<td>MR ENTEROGRAPHY IN EVALUATION OF PEDIATRIC CROHN’S DISEASE ACTIVITY</td>
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<tr>
<td>10:46-10:54Hrs</td>
<td>1292</td>
<td>Imaging of malignant bile duct tumors</td>
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<tr>
<td>10:54-11:00Hrs</td>
<td>Moderator</td>
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<tr>
<td>11:00-11:15Hrs</td>
<td>Tea Break</td>
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<tr>
<td>11:15-11:23Hrs</td>
<td>49</td>
<td>Role of Transperianal Sonography and Magnetic Resonance Imaging In Evaluation Of Perianal Fistulae</td>
</tr>
<tr>
<td>11:23-11:31Hrs</td>
<td>112</td>
<td>Comparative Study of Conventional and CT Colonoscopy In Patients With Lower GI Symptoms</td>
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<tr>
<td>11:31-11:39Hrs</td>
<td>199</td>
<td>Demonstration of functional disorders of the lower esophageal sphincter by ultrasonographic swallow examination.</td>
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<tr>
<td>11:39-11:47Hrs</td>
<td>200</td>
<td>Layer anatomy of stomach and evaluation of gastritis on routine ultrasonography abdomen.</td>
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<tr>
<td>11:47-11:55Hrs</td>
<td>243</td>
<td>Magnetic Resonance Imaging in Evaluation In Rectal Cancer</td>
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<tr>
<td>11:55-12:03Hrs</td>
<td>452</td>
<td>Endorectal Coil Vs Body Coil In The Assessment of Involvement of Mesorectal Fascia In Locally Advanced Carcinoma Rectum (T3 And Above) With Histopathological Examination As Gold Standard</td>
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<tr>
<td>12:03-12:11Hrs</td>
<td>494</td>
<td>Is it always Tuberculosis?Can it be Crohn’s. Evaluating role of CT Enterography in diagnosis and differentiation of the two.</td>
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<tr>
<td>12:11-12:19Hrs</td>
<td>615</td>
<td>CT Enterography In The Evaluation of Small Bowel Diseases</td>
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<tr>
<td>12:19-12:27Hrs</td>
<td>692</td>
<td>Structured Reporting Format For MRI Ofcarcinoma Rectum In Its Local Staging -Reducing The Sweat of Radiologists and Surgeons</td>
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<tr>
<td>12:27-12:35Hrs</td>
<td>718</td>
<td>Role of CT in loco-regional staging of carcinoma of esophagus-our experience</td>
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<tr>
<td>12:35-12:43Hrs</td>
<td>1030</td>
<td>Role of CT Scan in small bowel obstruction</td>
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<tr>
<td>12:43-12:51Hrs</td>
<td>1102</td>
<td>MRI Evaluation of Rectal Cancer</td>
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<tr>
<td>12:51-12:59Hrs</td>
<td>549</td>
<td>Prospective Study of Role of Portal Venous Doppler In Predicting Capillary Leak Syndrome In Dengue Fever Patients</td>
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<tr>
<td>12:59-13:07Hrs</td>
<td>557</td>
<td>Correlation between hepatic extracellular volume fraction on multiphase computed tomography and severity of diffuse liver disease</td>
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<td>Time</td>
<td>Session</td>
<td>Speaker/Location</td>
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<tr>
<td>13:07-13:15Hrs</td>
<td>Abs ID: 578 - The Hepatic Arterial Doppler: A New Prognosticating Tool In Patients With Alcoholic Hepatitis – A Novel Radiological-Biochemical Correlation Study</td>
<td>Dr. Samarth S Gowda</td>
</tr>
<tr>
<td>13:15-13:23Hrs</td>
<td>Abs ID: 919 - Shear Wave Elastography in assessment of liver fibrosis.</td>
<td>Dr. Neeraj S.</td>
</tr>
<tr>
<td>13:31-13:39Hrs</td>
<td>Abs ID: 1210 - Perfusion MRI in cerebral venous and sinus thrombosis</td>
<td>Dr. Suprava Naik</td>
</tr>
<tr>
<td>13:39-13:47Hrs</td>
<td>Lunch</td>
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<tr>
<td>13:47-14:20Hrs</td>
<td>Tea Break</td>
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<tr>
<td>17:00-17:30Hrs</td>
<td>Day 4 - 20-01-2019</td>
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<tr>
<td>08:15-08:45Hrs</td>
<td>Meet the Professor</td>
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<tr>
<td>09:00-09:20Hrs</td>
<td>Day 4 - Session - Hall A : MSK IMAGING</td>
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<tr>
<td>09:00-09:20Hrs</td>
<td>Chairpersons: Dr. B.A.Muthanna, Dr. M.S Dhillon, Dr. Anil Kumar , Dr. Aditya Aggarwal</td>
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<tr>
<td>09:00-09:20Hrs</td>
<td>Skeletal Dysplasias</td>
<td>Dr. Varaparsad Vemuri,</td>
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<td>09:00-09:20Hrs</td>
<td>S.C.vilayawada</td>
<td>Vijayawada</td>
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<tr>
<td>09:20-09:40Hrs</td>
<td>Imaging of Tendon</td>
<td>Dr. Ramakrishna Narayana,</td>
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<td>09:20-09:40Hrs</td>
<td>Hyderabad</td>
<td>Hyderabad</td>
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<tr>
<td>09:40-10:00Hrs</td>
<td>Sono MR of Bones</td>
<td>Dr. P.K. Srivastava,</td>
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<td>09:40-10:00Hrs</td>
<td>Lucknow</td>
<td>Lucknow</td>
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<tr>
<td>10:00-10:20Hrs</td>
<td>Rotator cuff injuries-Role of MRI</td>
<td>Dr. Nafisa Shakir Batta,</td>
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<tr>
<td>10:00-10:20Hrs</td>
<td>Delhi</td>
<td>Delhi</td>
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<tr>
<td>10:20-10:40Hrs</td>
<td>Labro-ligamentous injuries of shoulder</td>
<td>Dr. Srikanth Narayanaswamy,</td>
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<td>10:20-10:40Hrs</td>
<td>Bengaluru</td>
<td>Bengaluru</td>
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<td>10:40-10:50Hrs</td>
<td>Technology Update</td>
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<td>10:40-10:50Hrs</td>
<td>茶歇</td>
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<td>10:50-11:20Hrs</td>
<td>Tea Break</td>
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<tr>
<td>11:20-11:40Hrs</td>
<td>Chairpersons: Dr. Amit Jain, Dr. James Teh, Dr. V. Goni, Dr. Devendra Chauhan</td>
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<tr>
<td>11:20-11:40Hrs</td>
<td>Sports injuries around hip joint</td>
<td>Dr. James Teh, UK</td>
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<tr>
<td>11:40-12:00Hrs</td>
<td>Common injuries at wrist</td>
<td>Dr. Hirak Ray Chaudhary,</td>
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<td>11:40-12:00Hrs</td>
<td>Kolkata</td>
<td>Kolkata</td>
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<tr>
<td>12:00-12:20Hrs</td>
<td>Sports injuries at Ankle</td>
<td>Dr. James Teh, UK</td>
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<tr>
<td>12:20-12:40Hrs</td>
<td>Sports injuries at elbow</td>
<td>Dr. Darshana Sanghavi,</td>
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<td>12:20-12:40Hrs</td>
<td>Mumbai</td>
<td>Mumbai</td>
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<tr>
<td>12:40-13:00Hrs</td>
<td>Meniscal injuries of knee</td>
<td>Dr. Ankur Shah, Ahmedabad</td>
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<td>13:00-13:20Hrs</td>
<td>Ligaments injuries around knee</td>
<td>Dr. Kulvinder Singh,</td>
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<td>13:00-13:20Hrs</td>
<td>Ahmedabad</td>
<td>Sonepat</td>
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<td>13:20-14:20Hrs</td>
<td>Lunch</td>
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<tr>
<td>14:20-17:00Hrs</td>
<td>Workshop on Foetal Imaging</td>
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<td>14:20-14:40hrs</td>
<td>11-14 weeks scan</td>
<td>Dr. Ladbans Kaur, Chandigarh Dr. Veenu Singla, Chandigarh</td>
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<td>14:40-15:10hrs</td>
<td>Second trimester anomaly scan</td>
<td>Dr. Ladbans Kaur, Chandigarh Dr. Bhupendra Ahuja, Agra</td>
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<tr>
<td>15:10-15:30hrs</td>
<td>Fetal echocardiography</td>
<td>Dr. S Pradeep, Bengaluru</td>
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<tr>
<td>15:30-15:50hrs</td>
<td>IUIG and fetal doppler</td>
<td>Dr. Sandhya Dhankar, Mohali</td>
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<tr>
<td>15:50-16:30hrs</td>
<td>Fetal chest, abdomen, including placenta and cervix</td>
<td>Dr. Bhupendra Ahuja, Agra</td>
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<tr>
<td>16:30-17:00hrs</td>
<td>Video demonstration of amniocentesis, CVS, fetal reduction</td>
<td>Dr. Sandhya Dhankar, Mohali</td>
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<tr>
<td>17:00-18:00hrs</td>
<td>Tea Break</td>
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<tr>
<td>09:00-13:20hrs</td>
<td>Day 4 - Session - Hall B : CHEST IMAGING</td>
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<tr>
<td>09:00-09:20hrs</td>
<td>Mediastinum: Anatomy and Masses</td>
<td>Dr. Rajgopal KV, Manipal</td>
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<tr>
<td>09:20-09:40hrs</td>
<td>HRCT Chest: Pattern identification</td>
<td>Dr. Aparna Shyam Kumar, Vellore</td>
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<tr>
<td>09:40-10:00hrs</td>
<td>Approach to Fibrosing Interstitial Lung</td>
<td>Dr. Narinder Kaur, Chandigarh</td>
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<tr>
<td>10:00-10:20hrs</td>
<td>Disease Thoracic biopsies: Tips and Tricks</td>
<td>Dr. Bhavin Jankharia, Mumbai</td>
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<tr>
<td>10:20-10:40hrs</td>
<td>Chest MRI: An under utilized tool</td>
<td>Dr. Ashu Seith Bhalla, New Delhi</td>
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<td>10:40-10:50hrs</td>
<td>Technology Update by Fujifilm</td>
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<tr>
<td>11:20-11:40hrs</td>
<td>Lung infections in immune compromised host - An approach</td>
<td>Dr. Darshan Vummidi, USA</td>
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<tr>
<td>11:40-12:00hrs</td>
<td>Imaging in Pulmonary Thrombo- Embolism: A systematic approach</td>
<td>Col (Dr.) Jyotindu Debnath, Bhopal</td>
</tr>
<tr>
<td>12:00-12:20hrs</td>
<td>Pulmonary Aspergillosis: New epidemic or old foe</td>
<td>Dr. Mandeep Garg, Chandigarh</td>
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<tr>
<td>12:20-12:40hrs</td>
<td>Imaging of Bronchogenic carcinoma-What is new</td>
<td>Dr. Rakhi Bhadada, Chandigarh</td>
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<tr>
<td>12:40-13:00hrs</td>
<td>Chest Sonography</td>
<td>Dr. Ravinder Kaur, Chandigarh</td>
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<tr>
<td>13:00-13:20hrs</td>
<td>Tracheal Pathologies</td>
<td>Dr. Narainder Gupta, USA</td>
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<tr>
<td>13:20-14:20hrs</td>
<td>Lunch</td>
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<tr>
<td>14:20-14:40hrs</td>
<td>Workshop on Breast Imaging</td>
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<tr>
<td>14:40-15:00hrs</td>
<td>Breast USG : Normal anatomy and Technique</td>
<td>Dr. Parul Garg, Noida</td>
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<td>15:00-15:20hrs</td>
<td>Breast USG : BIRADS Category Assessment</td>
<td>Dr. Punam Bajaj, Gurgon</td>
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<tr>
<td>15:20-15:40hrs</td>
<td>Mammography: Case based Review</td>
<td>Dr. SMRIti Hari, New Delhi</td>
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<tr>
<td>Time</td>
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<td>Speaker(s)</td>
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<tr>
<td>15:40-16:00Hrs</td>
<td>Breast MRI: Problem solving tool</td>
<td>Dr. Victoria Mango, USA</td>
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<tr>
<td>16:00-16:20Hrs</td>
<td>USG Guided breast interventions</td>
<td>Dr. Tulika Singh, Chandigarh</td>
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<tr>
<td>16:20-16:40Hrs</td>
<td>Hands on/demonstration of USG guided core biopsy</td>
<td>Dr. Madhavi Chandra, New Delhi Dr. Punam Bajaj, Gurugram</td>
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<tr>
<td>16:40-17:00Hrs</td>
<td>Hands on/demonstration of USG guided Vaccum assisted biopsy</td>
<td>Dr. SMRIti Hari, New Delhi Dr. Victoria Mango, USA</td>
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<tr>
<td>17:00-17:20Hrs</td>
<td>Hands on/demonstration of USG guided hook wire localization</td>
<td>Dr. Tulika Singh, Chandigarh Dr. Parul, Noida</td>
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<tr>
<td>17:20-18:00Hrs</td>
<td>Tea Break</td>
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<tr>
<td>09:00-13:20Hrs</td>
<td>Day 4 - Session - Hall C : CARDIAC IMAGING</td>
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<td>Chairpersons: Col. (Dr) Vinay Maurya, Dr. Shyam Kumar, Dr. Anish Bhattacharya</td>
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<tr>
<td>09:00-09:20Hrs</td>
<td>An approach to a patient with post CABG recurrence of angina on coronary CT Angiogram</td>
<td>Dr. Rochita, Chennai</td>
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<tr>
<td>09:20-09:40Hrs</td>
<td>Current applications of Orthogonal imaging techniques in heart diseases</td>
<td>Dr. Sanjeev Kumar, Delhi</td>
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<tr>
<td>09:40-10:00Hrs</td>
<td>Image optimization in Cardiac MRI</td>
<td>Dr. Gurpreet Singh Gulati, Delhi</td>
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<tr>
<td>10:00-10:20Hrs</td>
<td>Cardiac MRI -stress perfusion studies</td>
<td>Dr. B.M. Mahesha, Mysore</td>
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<tr>
<td>10:20-10:40Hrs</td>
<td>Image optimization in CT Coronary Angiography</td>
<td>Lt. Col. (Dr) Uddandam Rajesh, Pune</td>
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<td>10:40-10:50Hrs</td>
<td>Technology Update By Samsung</td>
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<td>10:50-11:20Hrs</td>
<td>Tea Break</td>
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<td>Chairpersons: Dr. CM Sreedhar, Dr. James Moon, Dr. Uma Debi</td>
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<tr>
<td>11:20-11:40Hrs</td>
<td>CTA in CABG and stents</td>
<td>Dr. Chandrashekh, New Delhi</td>
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<tr>
<td>11:40-12:00Hrs</td>
<td>Imaging algorithms in Congenital heart disease</td>
<td>Dr. Rajesh Kannan, Kochi</td>
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<td>12:00-12:20Hrs</td>
<td>Imaging of Pericardium</td>
<td>Dr. Shibani Mehra, Delhi</td>
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<td>12:20-12:40Hrs</td>
<td>Aortoarteritis: Imaging &amp; Interventions</td>
<td>Dr. Sanjeev Kumar, Delhi</td>
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<td>12:40-13:00Hrs</td>
<td>Myocardial tissue characterization</td>
<td>Dr. James Moon, UK</td>
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<td>13:00-13:20Hrs</td>
<td>Case Based reviews</td>
<td>Dr. Mona Bhatia, New Delhi</td>
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<tr>
<td>13:20-14:20Hrs</td>
<td>Lunch</td>
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<td>17:00-17:30Hrs</td>
<td>Tea Break</td>
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<tr>
<td>09:00-13:20Hrs</td>
<td>Day 4 - Session - Hall D : MISCELLENOUS</td>
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<td>Chairpersons: Dr. Anil Khosla, Dr. Suyash Mohan</td>
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<td>09:00-09:20Hrs</td>
<td>Imaging in Sarcoidosis</td>
<td>Dr. Sudhir Sachar, Amalapuram</td>
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<td>Speaker/Institution</td>
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<td>09:20-09:40Hrs</td>
<td>How to write an e book</td>
<td>Dr. Deepak Takhtani, USA</td>
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<tr>
<td>09:40-10:00Hrs</td>
<td>Cone Beam CT</td>
<td>Dr. Akshay Shah, Pune</td>
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<tr>
<td>10:00-10:20Hrs</td>
<td>Radiology Learning beyond classroom for the Facebook generation</td>
<td>Dr. Sumer Sethi, New Delhi</td>
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<tr>
<td>10:20-10:40Hrs</td>
<td>MRI of ano rectal fistulae</td>
<td>Dr. Shikha Khandelwal, Ahmedabad</td>
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<tr>
<td>10:40-10:50Hrs</td>
<td>Ultrasound in inguinoscrotal lesions</td>
<td>Dr. M V K Rao, Orissa</td>
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<td>10:50-11:20Hrs</td>
<td>Tea Break</td>
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<tr>
<td>11:20-11:40Hrs</td>
<td>MR Lymphangiography -current status and update</td>
<td>Dr. Sreekumar, Cochin</td>
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<td>11:40-12:00Hrs</td>
<td>Principles and Applications of Dual energy CT</td>
<td>Dr. Satheesh Krishna, Canada</td>
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<tr>
<td>12:00-12:20Hrs</td>
<td>Current issues in safe use of contrast media in Neuroimaging</td>
<td>Dr. Anil Khosla, USA</td>
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<tr>
<td>12:20-12:40Hrs</td>
<td>Emerging Electrical Therapy for Malignant Gliomas: Neuroradiology</td>
<td>Dr. Suyash Mohan, USA</td>
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<td>12:40-13:00Hrs</td>
<td>Ultrasound Guided Pain Relief Procedures</td>
<td>Dr. Mukesh Yadav, New Delhi</td>
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<td>13:00-13:20Hrs</td>
<td>Current concept in Imaging of Peripheral Nerves Tunnels and crossings of</td>
<td>Dr. Ankur Goyal, New Delhi</td>
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<td>the extremities : Imaging road map</td>
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<td>13:20-14:20Hrs</td>
<td>Lunch</td>
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<tr>
<td>14:20-17:20Hrs</td>
<td>Workshop on MSK Imaging</td>
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<td>14:20-14:40Hrs</td>
<td>Shoulder ultrasound basics</td>
<td>Dr. Shalini Agrawal, India</td>
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<tr>
<td>14:40-15:10Hrs</td>
<td>Live demonstration</td>
<td>Dr. Mahesh Prakash, India</td>
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<tr>
<td>15:10-15:25Hrs</td>
<td>Basics of wrist ultrasound</td>
<td>Dr. Anindita Sinha, India</td>
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<tr>
<td>15:25-15:45Hrs</td>
<td>Live demonstration</td>
<td>Dr. Samarendra, India</td>
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<td>15:45-16:00Hrs</td>
<td>Basics of Knee ultrasound</td>
<td>Dr. Kokila Gupta, India</td>
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<td>16:00-16:20Hrs</td>
<td>Live demonstration</td>
<td>Dr. Mahesh Prakash, India</td>
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<td>16:20-16:35Hrs</td>
<td>Basics of ankle ultrasound</td>
<td>Dr. Samarendra, India</td>
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<td>16:35-16:55Hrs</td>
<td>Live demonstration</td>
<td>Dr. Anindita Sinha, India</td>
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<tr>
<td>16:55-17:15Hrs</td>
<td>Live demonstration of Elbow joint</td>
<td>Dr. Shalini Agrawal, Rohtak</td>
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<td>17:15-17:20Hrs</td>
<td>Discussion and Q &amp; A</td>
<td>All Faculty</td>
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<td>17:20-18:00Hrs</td>
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<tr>
<td>08:30-08:38Hrs</td>
<td>Abs ID: 16 - ‘Empty sella’ on routine MRI studies: An incidental finding</td>
<td>Dr. Jyotindu Debnath</td>
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<td>or otherwise?</td>
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<td>Abs ID</td>
<td>Presentation</td>
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<tr>
<td>08:38-08:46Hrs</td>
<td>36</td>
<td>The Value of Diffusion Weighted Imaging and Apparent Diffusion Coefficient Measurements in The Differential Diagnosis of Vertebral Bone Marrow Lesions</td>
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<td>08:46-08:54Hrs</td>
<td>169</td>
<td>Magnetic Resonance Evaluation of Children With Developmental Delay And Its Correspondence To Functional Clinical Assessment</td>
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<td>08:54-09:02Hrs</td>
<td>174</td>
<td>Role of Magnetic Resonance Spectroscopy in Evaluation of Brain Lesions</td>
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<td>09:02-09:10Hrs</td>
<td>198</td>
<td>Comparison of CT Angiography and High Resolution Time of Flight Magnetic Resonance Angiography for Intracranial Vessels Using Compressed Sense Technique</td>
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<td>09:10-09:18Hrs</td>
<td>201</td>
<td>Role of mr spectroscopy in evaluation of intraaxial brain tumors</td>
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<td>09:18-09:26Hrs</td>
<td>208</td>
<td>Role of MRI in Evaluation of Hypoxic Ischemic Encephalopathy And To Correlate MRI Findings With Clinical Outcome</td>
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<td>09:26-09:34Hrs</td>
<td>242</td>
<td>Mr Imaging Evaluation of Japanese Encephalitis - A Study And Review of Literature</td>
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<td>09:34-09:42Hrs</td>
<td>279</td>
<td>Congenital Sensorineural hearing loss: Comprehensive preoperative evaluation with CT and MRI</td>
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<td>09:42-09:50Hrs</td>
<td>330</td>
<td>Role of MRI in assessment of Pediatric posterior fossa tumors: comparison with Histopathology</td>
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<td>09:50-09:58Hrs</td>
<td>517</td>
<td>Diffusion tensor imaging in diagnosing Cervical Spondylotic Myelopathy</td>
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<td>09:58-10:06Hrs</td>
<td>533</td>
<td>“Role of Magnetisation Transfer Imaging In Evaluation of Neurocysticercosis and Tuberculoma”</td>
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<td>10:06-10:14Hrs</td>
<td>537</td>
<td>‘Grading Gliomas’ –A Novel Apparent Diffusion Co-Efficient (ADC) Value Based Approach</td>
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<td>541</td>
<td>Role of computed tomography scoring systems to predict clinical outcome in adults with traumatic brain injury</td>
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<td>10:22-10:30Hrs</td>
<td>594</td>
<td>Pre Treatment and Post Treatment Mr Spectroscopy Changes in Anterior Cingulate Cortex After Treatment With Methyl Phenidate In Children With Attention Deficit Hyperactivity Disorder</td>
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<td>10:30-10:38Hrs</td>
<td>854</td>
<td>Multimodality quantitative MR imaging in Temporal lobe epilepsy</td>
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<td>10:38-10:46Hrs</td>
<td>1006</td>
<td>Evaluation of nigrosome 1 in clinically suspected cases of parkinsonism</td>
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<td>10:46-10:54Hrs</td>
<td>1068</td>
<td>Utility of 3D Double Inversion Recovery Sequences In Detecting Small Gray And White Matter Lesions In Patients With Multiple Sclerosis.</td>
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<td>10:54-11:20Hrs</td>
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Chairpersons: Major (Dr) Gen Vivek Sharma, Dr. Ajay Kumar
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<tr>
<td>11:20-11:28Hrs</td>
<td>Abs ID: 1116 - Papilledema: Diffusion Weighted Imaging Of Optic Nerve Head</td>
<td>Dr. Nirmalya Ray</td>
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<td>11:28-11:36Hrs</td>
<td>Abs ID: 1130 - corelating pain severity with type of lesion, thickness and segment of trigeminal nerve involved in patients of trigeminal neuralgia and evaluating efficacy of treatment</td>
<td>Dr. Rajsree Purna Pawar</td>
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<td>11:36-11:44Hrs</td>
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<td>11:44-11:52Hrs</td>
<td>Abs ID: 56 - Cone Beam Computed Tomography (CBCT) in evaluation of Obstructive Sleep Apnea (OSA)</td>
<td>Dr. Akshay Shah</td>
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<td>11:52-12:00Hrs</td>
<td>Abs ID: 71 - Role of diffusion MRI in differentiation of residual/recurrent neck malignancies and post-treatment changes in comparison with histopathology findings</td>
<td>Dr. Ankush Jajodia</td>
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<td>12:00-12:08Hrs</td>
<td>Abs ID: 349 - Comparative study of elastography and ultrasonography in differentiating benign and malignant thyroid lesions with histopathological correlation</td>
<td>Dr. Hithishini H</td>
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<td>12:08-12:16Hrs</td>
<td>Abs ID: 400 - Role of Shear Wave Elastography Using Acoustic Radiation Force And Impulse In Evaluation of Thyroid Nodules.</td>
<td>Dr. Kiran U. Navalgatti</td>
</tr>
<tr>
<td>12:16-12:24Hrs</td>
<td>Abs ID: 493 - Role of Magnetic Resonance Imaging (MRI) and Diffusion Weighted Imaging (Dwi) In Characterization of Jaw Lesions</td>
<td>Dr. Rajesh V</td>
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<td>12:24-12:32Hrs</td>
<td>Abs ID: 591 - Role of sonoelastography beyond sonography in cervical lymphadenopathy</td>
<td>Dr. Renu Yadav</td>
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<td>12:32-12:40Hrs</td>
<td>Abs ID: 645 - Role of Multidetector Computed Tomographic (MDCT) in Evaluating Paranasal Sinus Anatomy And Its Variations, Common and Uncommon Sinus Pathologies</td>
<td>Dr. Rahul Karthik L</td>
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<tr>
<td>12:40-12:48Hrs</td>
<td>Abs ID: 678 - Evaluation of Thyroid Nodules Using Ultrasonography, Color Doppler and Ultrasound Elastography With Fnac Correlation&quot;</td>
<td>Dr. Anuraj B N</td>
</tr>
<tr>
<td>13:00-13:10Hrs</td>
<td>Abs ID: 786 - Cross Sectional Imaging of Orbital Tumors With Histopathological Correlation</td>
<td>Dr. Pallavi Mannam</td>
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<tr>
<td>13:10-13:20Hrs</td>
<td>Abs ID: 859 - Role of diffusion tensor imaging (DTI) in early detection of cervical spondylotic myelopathy?</td>
<td>Dr. Sachin T</td>
</tr>
<tr>
<td>13:04-13:12Hrs</td>
<td>Abs ID: 1155 - Comparative Study of Orbital Doppler Parameters In Diabetics With Retinopathy And Diabetics/ Healthy Controls Without Retinopathy</td>
<td>Dr. Thanga Meena.M</td>
</tr>
<tr>
<td>13:12-13:20Hrs</td>
<td>Abs ID: 1306 - Multimodality imaging of carotid body paragangliomas in diagnosis and preoperative assessment?.</td>
<td>Dr. Sachin T</td>
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<td>13:20-13:32Hrs</td>
<td>Moderator</td>
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<td>13:32-14:20Hrs</td>
<td>Lunch</td>
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<tr>
<td>14:20-17:00Hrs</td>
<td>Workshop on Interventional Radiology</td>
<td>Coordinator: Dr Arvind Chatturvedi, Dr Mandeep Kang, Dr Naveen Kalra</td>
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<tr>
<td>14:20-14:50Hrs</td>
<td>Percutaneous liver biopsy</td>
<td>Dr. Srinivas MR, Bangalore</td>
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### Day 4 - Hall F: ORAL PAPER PRESENTATION

#### 08:30-13:20Hrs

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<tr>
<td>08:30-08:38Hrs</td>
<td>Abs ID: 79 - ROLE OF DYNAMIC CONTRAST ENHANCED MRI (DCE MRI) IN THE EVALUATION OF SOFT TISSUE TUMOURS</td>
<td>Dr. Pritam Gadia</td>
</tr>
<tr>
<td>08:38-08:46Hrs</td>
<td>Abs ID: 117 - USG And Mr Imaging of Rotator Cuff Tears With Surgical Correlation</td>
<td>Dr. Vikash Rustagi</td>
</tr>
<tr>
<td>08:46-08:54Hrs</td>
<td>Abs ID: 262 - Role of Chemical Shift MRI in differentiating benign and malignant vertebral marrow lesions</td>
<td>Dr. Brahmdeep Singh Wadhawan</td>
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<tr>
<td>08:54-09:02Hrs</td>
<td>Abs ID: 364 - Dynamics / Adynamic High Resolution Sonography Of Foot &amp; Ankle</td>
<td>Dr. Sudhir Kumar Shukla</td>
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<td>09:02-09:10Hrs</td>
<td>Abs ID: 424 - Imaging Spectrum Of Sacroilitis On MRI: Differentiation Between Infective And Seronegative Spondylarthropathy</td>
<td>Dr. Ravikant Kaushik</td>
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<td>09:10-09:18Hrs</td>
<td>Abs ID: 508 - A Prospective Study To Evaluate The Accuracy of High Resolution Ultrasonography In Patients With Non Traumatic Shoulder Pain By Comparing With MRI.</td>
<td>Dr. Arpitha K Jayram</td>
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<tr>
<td>09:18-09:26Hrs</td>
<td>Abs ID: 701 - Role of diffusion –weighted magnetic resonance in diagnosis of early sacroilitis</td>
<td>Dr. J Krishna Priya Raj</td>
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<td>09:26-09:34Hrs</td>
<td>Abs ID: 906 - Cortical breach and Grades of tumor margins on radiographs and correlation with Diffusion Weighted MRI in diagnosing benign bone tumors and tumor like lesions</td>
<td>Dr. Sandeep Kaur</td>
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<td>09:34-09:42Hrs</td>
<td>Abs ID: 911 - Role of Magnetic Resonance Imaging Whole Spine In Tuberculosis of Spine And Its Histopathological Correlation</td>
<td>Dr. Bhajan Lal</td>
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<td>09:42-09:50Hrs</td>
<td>Abs ID: 1047 - Role of Magnetic Resonance Imaging After Anterior Cruciate Ligament Reconstruction.</td>
<td>Dr. R Amulya</td>
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<td>09:50-09:58Hrs</td>
<td>Abs ID: 1050 - Utility of Ultrasound Determined Median Nerve Diameter Following Perineural Steroid Injection In Patients With Idiopathic Carpal Tunnel Syndrome.</td>
<td>Dr. Amit Katyan</td>
</tr>
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<td>09:58-10:06Hrs</td>
<td>Abs ID: 1059 - MRI Evaluation of Extensor Compartment of Knee: Prospective Study</td>
<td>Dr. Vihag Raman</td>
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<td>10:06-10:14Hrs</td>
<td>Abs ID: 1060 - MRI Evaluation of Traumatic Meniscal Injuries With Arthroscopic Correlation</td>
<td>Dr. Patil Raj Kumar</td>
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<tr>
<td>10:14-10:22Hrs</td>
<td>Abs ID: 1086 - 3D SHINKEI MR Neurography in Brachial plexus injuries with 1.5 T scanner</td>
<td>Dr. Rajagopal K V</td>
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<td>10:22-10:30Hrs</td>
<td>Abs ID: 1088 - Adhesive Capsulitis: MRI Correlation with Clinical Stages and Proposal of MRI Staging</td>
<td>Dr. M Praveen Kumar</td>
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<tr>
<td>10:30-10:38Hrs</td>
<td>Abs ID: 1112 - Role of Imaging In Diagnosis of Glenohumeral Deformity Following Obstetric Brachial Plexus Injury</td>
<td>Dr. Karthikrajan R</td>
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<tr>
<td>10:38-10:46Hrs</td>
<td>Abs ID: 1148 - Types of Periosteal reactions on radiographs and Chemical Shift MRI in Osteosarcoma</td>
<td>Dr. Usha Rani</td>
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<tr>
<td>10:46-10:54Hrs</td>
<td>Abs ID: 1156 - Ultrasound guided intervention using platelet rich plasma (PRP) in anterior talofibular ligament tear.</td>
<td>Dr. Saurabh Suman</td>
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<td>10:54-11:00Hrs</td>
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<td>10:54-11:20Hrs</td>
<td>Tea Break</td>
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<td>11:20-11:28Hrs</td>
<td>Abs ID: 1170 - Diagnostic Accuracy of High Resolution Ultrasoundsonography In Comparison With MRI For Evaluation of Rotator Cuff Pathologies</td>
<td>Dr. Dineshram. V</td>
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<tr>
<td>11:28-11:36Hrs</td>
<td>Abs ID: 1182 - “T2 Mapping of Articular Cartilage In Osteoarthritis of The Knee Using 3 T MRI”</td>
<td>Dr. Harish</td>
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<td>11:36-11:44Hrs</td>
<td>Abs ID: 1205 - Ultrasonographic evaluation of peripheral joints in inflammatory arthritis</td>
<td>Dr. Sadaf Sultana</td>
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<td>11:44-11:52Hrs</td>
<td>Abs ID: 1238 - Value of CHL (Coracohumeral ligament) and SGHL (Superior glenohumeral ligament) thickness in diagnostic efficacy of adhesive capsulitis of shoulder joint and its relation to the clinical pain severity index (SPADI)</td>
<td>Dr. Rajagopal K V</td>
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<td>11:52-12:00Hrs</td>
<td>Abs ID: 1254 - Patellar Index – Assessing Patella Alta and Appraising Its Significance.</td>
<td>Dr. Akshatha R Bhat</td>
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<td>12:00-12:08Hrs</td>
<td>Abs ID: 1255 - Role of 3D Computed tomography (CT) in the evaluation of scapular fractures</td>
<td>Dr. Karthik B R</td>
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<td>12:08-12:16Hrs</td>
<td>Abs ID: 161 - Role of Quantitative CT Parameters in Chronic Obstructive Parenchymal Disease Evaluation</td>
<td>Dr. Daizy Garg</td>
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<td>12:16-12:24Hrs</td>
<td>Abs ID: 459 - Correlation Between MDCT Severity Score of Bronchiectasis and Pulmonary Function Tests.</td>
<td>Dr. Ranjitha Kulkarni</td>
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<td>12:24-12:32Hrs</td>
<td>Abs ID: 679 - Diagnostic criteria for pulmonary thromboembolism on plain CT chest images: A retrospective study</td>
<td>Dr. Royce Dsa</td>
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<td>12:32-12:40Hrs</td>
<td>Abs ID: 681 - Interobserver Variability in Interpretation of Chest Radiograph In Suspected Paediatric Chest Tuberculosis</td>
<td>Dr. Ankita Rana</td>
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<td>12:40-12:48Hrs</td>
<td>Abs ID: 1015 - “To assess the utility of CT pulmonary angiography-128 sliced (CTPA) in a suspicious case of pulmonary embolism (PE) in road traffic accident patients in co-ordination with clinical (well’s score), biochemical (D-DIMER value) and Deep Venous Thrombos</td>
<td>Dr. Prashant Modi</td>
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### Day 4 - Hall G : ORAL PAPER PRESENTATION

**Chairpersons:** Dr. Veenu Singla, Dr. Uma Debi

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<td>08:30-08:38Hrs</td>
<td>Abs ID: 35</td>
<td>Doppler Assessment of the Fetal Pulmonary Artery as a Predictor of Fetal macrosomia in Diabetic mothers</td>
<td>Dr. Shaktiprada Nayak</td>
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<tr>
<td>08:38-08:46Hrs</td>
<td>Abs ID: 347</td>
<td>Prospective Study of Role of Aortic Isthmic Doppler In Predicting Outcome In Asymmetric Intrauterine Growth Restricted(Iugr) Fetuses</td>
<td>Dr. P Ramesh</td>
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<td>08:46-08:54Hrs</td>
<td>Abs ID: 395</td>
<td>Evaluation of Uterocervical Angle as a predictor of Spontaneous Pre-term births</td>
<td>Dr. Resham Srivastava</td>
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<td>08:54-09:02Hrs</td>
<td>Abs ID: 518</td>
<td>“Correlation of Antenatal Umbilical Artery Coiling Index At Second Trimester Scans With Perinatal Fetal Outcome”</td>
<td>Dr. Shreyas Rao G</td>
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<td>09:02-09:10Hrs</td>
<td>Abs ID: 598</td>
<td>Role of Cervical Elastography In Assessment of Induction Of Labor In Pregnancy</td>
<td>Dr. Sherine Marian</td>
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<td>09:10-09:18Hrs</td>
<td>Abs ID: 654</td>
<td>Second trimester placental elastography and uterine artery doppler in prediction of pre-eclampsia</td>
<td>Dr. Rajkumar Meena</td>
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**12:48-12:56Hrs**
- Abs ID: 1163 - Imaging and Diagnosis of Transient Tachypnea of Newborn In Preterm Neonates.  
  Dr. Mohammed Imran Basha Sy

**12:56-13:04Hrs**
- Abs ID: 1191 - Computed Tomography Guided Tru-Cut Biopsy of Lung Masses and Its Histopathological Correlation.  
  Dr. Sibani Patro

**13:04-13:12Hrs**
- Abs ID: 1239 - Accuracy and Safety of CT Guided core biopsy of Ground-Glass Opaque Pulmonary lesions  
  Dr. J Sravanthi

**13:12-13:20Hrs**
- Abs ID: 314 - Coloring The Fetal Abdomen At First Trimester Anomaly Scan ? What Is It Worth ?  
  Dr. Kavita Aneja

**13:20-13:32Hrs**
- Moderator

**13:20-14:20Hrs**
- Lunch

**14:20-17:00Hrs**
- Workshop on Prostate Imaging
  
  - 14:20-14:35Hrs: Prostate imaging – What the clinician wants from imaging?  
    Dr. Ravimohan Mavuduru
  
  - 14:35-14:55Hrs: Ultrasound of prostate and guided biopsies – How I do it ?  
    Dr. Ujwal Gorsi
  
  - 14:55-15:10Hrs: MRI techniques and Normal MR anatomy of prostate  
    Dr. Ajay Gulati
  
  - 15:10-15:35Hrs: Multi parametric MRI of prostate  
    Dr. Ashish Khandelwal
  
  - 15:35-15:55Hrs: Fusion imaging for prostate  
    Samsung
  
  - 15:55-16:20Hrs: Challenging prostate cases  
    Dr. Ashish Khandelwal
  
  - 16:20-16:45Hrs: Focal therapy and Biochemical Recurrence of Prostate Cancer  
    Dr. Ashish Khandelwal
  
  - 16:45-17:10Hrs: Panel Discussion / Question Answers

  Panelist - Dr Ashish Khandelwal, Dr Ravi mohan Mavduru, Dr Ujjwal Gorsi, Dr Ajay Gulati

**17:00-18:00Hrs**
- Tea Break
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<td>09:18-09:26Hrs</td>
<td>Abs ID: 734 - Ultrasonographic Measurement of Fetal Foot Length and Its Accuracy In Estimation of Gestational Age</td>
<td>Dr. J. Sravanthi</td>
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<td>09:26-09:34Hrs</td>
<td>Abs ID: 1013 - To evaluate fetal liver length in women with gestation diabetes mellitus Vs non gestation diabetes mellitus</td>
<td>Dr. Anil Sharma</td>
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<td>09:34-09:42Hrs</td>
<td>Abs ID: 1104 - Utility of Apparent Diffusion Coefficient (ADC) in Evaluation of Endometrial Masses - The Dark Horse of Pelvic MRI</td>
<td>Dr. Smita Manchanda</td>
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<tr>
<td>09:42-09:50Hrs</td>
<td>Abs ID: 1139 - Validation of Two Dimensional Transperineal Ultrasound and Dynamic Magnetic Resonance Imaging in Pelvic Floor Dysfunction</td>
<td>Dr. Sivasakthi</td>
</tr>
<tr>
<td>09:50-09:58Hrs</td>
<td>Abs ID: 497 - Comparative Evaluation of Palpable Breast Lumps With Digital Breast Tomosynthesis And Dynamic Contrast Enhanced MRI Breast With Its Histopathological Correlation</td>
<td>Dr. Tusharika Sharma</td>
</tr>
<tr>
<td>09:58-10:06Hrs</td>
<td>Abs ID: 516 - “Correlation of Ultrasonographic Features of Bi-Rads IV and Above Breast Lesions With Their Hormone Receptor Status and Histological Grade”</td>
<td>Dr. Shreyas Rao G</td>
</tr>
<tr>
<td>10:06-10:14Hrs</td>
<td>Abs ID: 233 - A novel non breath hold cardiac MRI protocol for myocardial viability imaging: Our Initial Experience</td>
<td>Dr. Rohit Aggarwal</td>
</tr>
<tr>
<td>10:14-10:22Hrs</td>
<td>Abs ID: 928 - Comparative Assessment Of Efficacy Of The Doppler Ultrasound Criteria of Carotid Plaque Detection &amp; carotid IMT(cIMT) measurement to Predict Coronary Artery Disease (CAD) in Cerebrovascular Accident (CVA) patients</td>
<td>Dr. Pragya Sinha</td>
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<tr>
<td>10:22-10:30Hrs</td>
<td>Abs ID: 1144 - Native T1 Mapping in diffuse myocardial diseases in 3T MRI</td>
<td>Dr. Vimal Chacko Mondy</td>
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<tr>
<td>10:30-10:38Hrs</td>
<td>Abs ID: 1250 - Cardiac risk stratification by coronary artery calcification scoring in subclinical hypothyroidism</td>
<td>Dr. Shweta Singh</td>
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<tr>
<td>10:38-10:46Hrs</td>
<td>Abs ID: 1252 - “Role of MDCT angiography and colour doppler imaging in evaluation of peripheral vascular disease of the lower limb arteries”</td>
<td>Dr. Sachin T</td>
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<tr>
<td>10:46-10:58Hrs</td>
<td>Moderator</td>
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<td>10:58-11:20Hrs</td>
<td>Tea Break</td>
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<tr>
<td>11:20-11:28Hrs</td>
<td>Abs ID: 124 - Renal Colic Mimics on Non Contrast Helical Computed Tomography</td>
<td>Dr. Uttara Swati Anand</td>
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<tr>
<td>11:28-11:36Hrs</td>
<td>Abs ID: 248 - Is Sonosalpingography a diagnostic or therapeutic tool? - A Golden Old Tool in a New Platinum Box</td>
<td>Dr. Rajul Rastogi</td>
</tr>
<tr>
<td>11:36-11:44Hrs</td>
<td>Abs ID: 445 - Evaluation of Hematuria in young adults using MDCT urography: A prospective study in tertiary care centre in North India</td>
<td>Dr. Manik Mahajan</td>
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<tr>
<td>11:44-11:52Hrs</td>
<td>Abs ID: 515 - “Sonographic Grading of Renal Parenchymal Changes And Its Comparison With Estimated Glomerular Filtration Rate (Egfr) Using Modified Diet In Renal Disease Formula”</td>
<td>Dr. Prashanth K S</td>
</tr>
<tr>
<td>11:52-12:00Hrs</td>
<td>Abs ID: 542 - Role of 1H MR spectroscopy in characterization of adrenal lesions</td>
<td>Dr. Neha Choudhary</td>
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<td>12:00-12:08Hrs</td>
<td>Abs ID: 1107 - The Value of Three Dimensional Multi-Detector CT Hysterosalpingography In Evaluation Of Primary Infertility In Patients With Non-Contributory Hysterosalpingography</td>
<td>Dr. Akhil Anand</td>
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<tr>
<td>12:08-12:16Hrs</td>
<td>Abs ID: 1202 - Correlation of ADC Values of Transplant Kidney With Functional Status And Usefulness To Predict Dysfunction</td>
<td>Dr. S Divya</td>
</tr>
<tr>
<td>12:16-12:24Hrs</td>
<td>Abs ID: 565 - Role of Transcranial Strain SonoeLastography in predicting Neonatal Encephalopathy - A novel approach</td>
<td>Dr. Astha Singh</td>
</tr>
<tr>
<td>12:24-12:32Hrs</td>
<td>Abs ID: 939 - Association between maternal iron deficiency anemia and fetal hippocampal volume</td>
<td>Dr. Shweta Singh</td>
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<tr>
<td>12:32-12:40Hrs</td>
<td>Abs ID: 1011 - Transperineal ultrasound in evaluation of imperforate anus.</td>
<td>Dr. Nisha Rathi</td>
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<tr>
<td>12:40-12:48Hrs</td>
<td>Abs ID: 1089 - Magnetic Resonance Spectroscopy in Children With Non Acute Neurological Illness</td>
<td>Dr. Sebastian Antony</td>
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<tr>
<td>12:48-12:56Hrs</td>
<td>Abs ID: 1135 - Multidetector Computed tomography in the Evaluation of Childhood Intestinal Lung Diseases</td>
<td>Dr. C Amarnath</td>
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<tr>
<td>12:56-13:04Hrs</td>
<td>Abs ID: 45 - Recalcitrant Desmoid Tumors: Does Cryoablation Help?</td>
<td>Dr. Raja Shaikh</td>
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<tr>
<td>13:04-13:12Hrs</td>
<td>Abs ID: 737 - Image guided PICC placement: Our experiences</td>
<td>Dr. Brijesh K Soni</td>
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<td>13:12-13:20Hrs</td>
<td>Moderator</td>
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<td>13:20-14:20Hrs</td>
<td>Lunch</td>
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<td>14:20-14:35Hrs</td>
<td>Neurovascular Simulato Workshop</td>
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<td>14:20-14:35Hrs</td>
<td>Cerebral aneurysms imaging: tips to acquire and interpret CT/MR angiography</td>
<td>Dr. Chirag Ahuja</td>
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<tr>
<td>14:35-14:50Hrs</td>
<td>Acute stroke imaging: tips to acquire and interpret CT/MR imaging</td>
<td>Dr. Sameer Vyas</td>
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<td>14:50-15:05Hrs</td>
<td>Endovascular aneurysm treatment: demonstration of a case on simulator</td>
<td>Dr. Vivek Gupta</td>
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<tr>
<td>15:05-15:20Hrs</td>
<td>Endovascular stroke treatment: demonstration of a case on simulator</td>
<td>Dr. Anuj Prabhakar</td>
</tr>
<tr>
<td>15:20-16:50Hrs</td>
<td>Hands on training of various hardware used in endovascular treatment of aneurysms and stroke + hands on simulator cases</td>
<td>Dr. Vivek Gupta, Dr. Sameer Vyas, Dr. Chirag Ahuja, Dr. Anuj Prabhakar</td>
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<tr>
<td>16:50-17:00Hrs</td>
<td>Discussion</td>
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<td>17:00-18:00Hrs</td>
<td>Tea Break</td>
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The talk will focus on some common do’s and don’t of musculoskeletal radiology, including technical, clinical and diagnostic issues.

Dr Ajay Gulati, Additional Professor, PGIMER Chandigarh

CT Angiography of Abdomen: Optimized Acquisition, Protocols & Reporting

Computed tomography angiography (CTA) is a comprehensive technique for evaluation of vascular anatomy, diagnosing vascular diseases, planning treatment strategies and assessing the effectiveness of vascular treatment. In the present modern era with significant technological advancements, CTA has become the primary diagnostic tool for vascular pathologies particularly the arterial system. It has nearly replaced conventional angiography for diagnostic purposes in most clinical algorithms.

Following intravenous injection of iodinated contrast medium, CTA uses a thin-section CT acquisition that is timed to coincide with peak arterial or venous enhancement. CTA techniques vary between institutions, suggesting that there is no uniform or specific ideal technique. Rather, there are several general concepts to consider when performing CTA in the abdomen.

From an equipment perspective, there are several features that are mandatory for obtaining high quality CTA. Spiral CT with helical scanning technique is followed which allows continuous CT gantry rotation during table movement, resulting in a 3-dimensional (3D) volumetric data set. MDCT technology with thin detector configuration is preferred which allows high quality reformations. Combination of spiral CT and MDCT results in an excellent combination of high temporal and spatial resolution, which is necessary to achieve high quality CTA.

Understanding of the contrast kinetics is equally important to obtain technically good quality studies. Optimizing contrast material injection protocols and ensuring proper timing is critical for achieving adequate vascular opacification. Degree of vascular enhancement depends on the amount of contrast, injection rate and duration of injection, iodine content of administered contrast, body habitus, and cardiac output. These injection parameters may be individualised for specific applications or patient characteristics to obtain optimal study performances.

Because of the vast amount of data encountered during abdominal CTA, various post-processing techniques are available in most modern workstations which facilitate in interpreting complex 3D relationships and objectively quantifying stenosis and other vascular abnormalities. Evaluation of CT angiogram includes review of primary transverse reconstructions complemented by generation of volume renderings, maximum-intensity projections and curved planar reformations for proper study interpretation. Complete interpretation of a CT angiogram also includes evaluation for extravascular abnormalities that may have detected and clinically significant. Following a standardised pattern of reporting and documentation helps to achieve proper performance of the examination and aids in reducing the errors.

Radiation concerns with CTA should be kept in mind since large coverage areas and multiple phases of scanning can result in large effective doses to the patient. This radiation exposure should be optimized using dose reduction strategies such as low kVp scanning, tube current modulation, and iterative reconstruction, as appropriate.
USG Placenta: An Island Less Explored

Placenta is the interface between fetus and mother which performs all the vital functions of fetus, like respiration, nutrition and excretion.

Placenta has got a complex embryological development, which the lecture would touch upon to increase the basic understanding of its physiological functions.

The physiological functions of the placenta with reference to its blood supply and effect on the fetus in any adverse case scenarios will also be dwelled upon, and Pathologies of placenta related to focal lesions, most of them insignificant and some rare ones which may cause adverse outcome.

Location of placenta is an important factor because it may cause ante-partum haemorrhage, fetal distress and interventional delivery may have to be resorted to.

To conclude, I would give emphasis on examining placenta thoroughly on routine exams, just to avoid missing any of the subtle changes, which might later result in adverse outcome.

Cone-beam computed tomography (CBCT): Third dimension in oral and maxillofacial imaging

Cone-beam computed tomography (CBCT) is a new diagnostic tool that has revolutionized diagnosis and treatment of the maxillofacial region. The introduction of cone-beam computed tomography (CBCT) specifically dedicated to imaging the maxillofacial region, a true paradigm shift from a 2D to a 3D approach providing a 3-dimensional representation of the maxillofacial skeleton with minimal distortion. CBCT is capable of providing sub-millimetre resolution in images of high diagnostic quality, with short scanning times (10–70 seconds) and radiation dosages reportedly up to 15 times lower than those of conventional CT scans. This imaging modality facilitates clinicians through expanding the role of imaging from diagnosis to image guidance of operative and surgical procedures by way of third-party software.

The potential scope of clinical applications for cone-beam imaging is vast and has been shown to be particularly useful in the dental and maxillofacial areas such as investigation of jaw pathology, paranasal sinuses, bony components of the TMJ, Pre- and post-implant assessment, Orthodontic assessment, Endodontic assessment, Assessment of impacted teeth in particular their relationship to the important anatomical structures, Evaluation of facial trauma. In addition, sleep disorders can also be diagnosed.

The purpose of this presentation is to outline the concepts of CBCT technology, to review the practical applications of CBCT in different dental and medical disciplines, and provide clinical guidance on the appropriate use of this modality in practice.

Keywords: Computed tomography, Cone-beam computed tomography (CBCT), maxillofacial imaging.
Dr Alka Ashmita Singhal

Medanta Medcity, Delhi

Sonography of Parathyroid

Ultrasound imaging of the parathyroids in hyperparathyroidism: Sestamibi-ultrasound correlation, diagnostic challenges and pitfalls.

Localization of all the abnormal parathyroid glands on imaging forms the basis of surgical management of hyperparathyroidism. Various common diagnostic modalities employed are Tc-99m-sestamibi scan, Ultrasound, Contrast CT and SPECT CT. An understanding of the diagnostic features (typical and atypical appearances), sensitivity, false negatives and false positives of the various modalities and their correlation will be discussed. Video clips have been added to elucidate Doppler flow characteristics. Evaluation of both eutopic and ectopic parathyroids will be discussed. A basic understanding of normal anatomy and embryology to help overcome the challenges faced due to anatomic variability in the location of parathyroids is being included. Role of ultrasound in evaluation of Sestamibi negative parathyroids, multiple parathyroid nodules, cases of MEN, recurrent hyperparathyroidism and Parathyroid Carcinoma will be discussed.

Dr. Amandeep Singh

High Resolution Sonography Of Perianal Fistulae

Perianal fistula is a connection between the anal canal and the skin of the perineum. It implies a chronic granulating track connecting two surfaces lined by epithelium. The anal canal is a cylindrical structure surrounded by two muscular layers, the internal and external sphincters. Anal glands provide a free channel facilitating the spread of infection from the anal lumen deep into the sphincter muscles, from where it may spread secondarily in almost any direction.

Endoanal ultrasound (EAUS) as well as MRI of the pelvis are commonly employed for imaging of perianal fistulae, sinuses and abscesses. However, both imaging methods demand specialized and expensive equipments as well as an experienced investigator. The use of a rigid EAUS probe can be traumatic or even not possible in patients with inflammatory perianal disease due to anal canal stenosis.

Transperineal /perianal ultrasound ((TPUS / PAUS) is a quick, noninvasive, and feasible technique for the evaluation of various pathologic conditions of the pelvic floor. It represents another method to detect perianal inflammatory disease which can be performed using regular ultrasound probes without special patient preparatio n. Furthermore, it can be used in patients with anal stenosis. However, despite its methodical simplicity, PAUS is not yet widely used in the detection of perianal fistulae and/or abscesses.

Parks classification system is used to classify perianal fistula. In addition to 2-dimensional (D) grayscale imaging, a color Doppler study is performed in order to evaluate the vascularity of the fistulae and the anorectal canals. Internal sphincter is homogeneous and hypoechoic and seen lateral to anal canal, while external sphincter is heterogeneous and hyperechoic. Ischioanal fat is seen lateral to external sphincter. A fistulous tract is an elongated hyperechoic structure with or without internal hyperechogenicity, and that starts from the anal canal and extends to the perineal skin. Active fistula shows hyperemia along the fistulous tract on the color Doppler study and/or internal air bubbles on a 2D grayscale image, with or without fluid collection.
Transperineal ultrasound (TPUS) has high sensitivity and specificity in diagnosing and classifying perianal fistulae and abscess. A wide availability, lower cost and better tolerability of TPUS make it a modality of first choice for evaluation of patients of perianal fistulae. MRI can be reserved for patients with suggestion of high riding fistula on Transperineal ultrasound (TPUS).

Dr. Amar Kumar Singh
MBBS, MD, DNB. Assistant Professor Radiology, PMCH, Patna
Head trauma - ABC of imaging

Radiology play the pivotal role in a patient of head trauma starting from exclusion, confirmation and characterization of the various aspect of head injury to the classification, prognostication and treatment as well as the follow up. Out of all the modalities from X-ray, Ultrasound, CT, MR, Nuclear scan and Angiogram, the CT scan remains the most important modality due to its capability to scan faster in a few seconds along with multiplanar reconstruction, exquisite bony details as well as the recent advancement in the form of fast perfusion study as well as angiographic study. MRI is the next modality of choice when there is disparity between the patient’s condition and CT finding as well as in a case of diffuse axonal injury.

Traumatic brain injuries (TBI)
- Closed head injury
- vastly more common
- blunt trauma: motor vehicle collision, assault, sport, industrial/workplace accidents, etc
- blast injuries
- non-accidental injury in children
- Penetrating head injury
- high-velocity penetrating brain injury e.g. gunshot injuries
- low-velocity penetrating brain injury e.g. stabbing

Clinical presentation
- Reduced Glasgow Coma Scale (GCS), nausea/vomiting and/or amnesia.
- The severity of the injury based on GCS:
  - Mild TBI: GCS 14-15
  - Moderate TBI: GCS 9-13
  - Severe TBI: GCS 3-8
- This scale has limitations as there are other causes for reduced GCS in trauma (alcohol, drugs, seizure, etc).
Complications

• Severe mass effect can result in:
  1. Midline shift: associated with worse prognosis
  2. Cerebral herniation: often requires urgent treatment
  3. Hydrocephalus: can also be a chronic non-mass effect related complication.

Associations

• Other traumatic injuries are common:
• Cervical spine injury: patients with GCS <8 are most at risk
• Skull fracture
• Facial fracture
• Pneumocephalus
• Extracranial injuries in 35%.

• Primarily concerned with two features:
• Degree of swelling, as determined by
• midline shift and/or
• compression of basal cisterns
• Presence and size of contusions/haemorrhages referred to “high or mixed density lesions”

The Rotterdam CT score of traumatic brain injury aimed at improving prognostic evaluation
• The Rotterdam classification includes four independently scored elements.
  1) degree of basal cistern compression
  2) degree of midline shift.
  3) epidural haematomas, and
  4) intraventricular and/or subarachnoid blood
  5) Each of these is given a score, and these scores are tallied, with the addition of 1 to the total.
  6) A completely normal appearing scan has a Rotterdam score of 1 and the worse possible score is 6.

Treatment and prognosis

• Large haematoma - urgent neurosurgical evacuation.
• Hydrocephalus - urgent ventricular drainage.
• Intracranial pressure (ICP) monitor insertion is a common procedure used to help in the assessment of severe TBI.
• Ongoing follow-up with CT is often required.
In patients with diffuse injuries ~15% will develop new lesions, and ~35% of cerebral contusions will increase in size with progression typically 6-9 hours after injury.
EDH crossing the suture line

- Extradural hematomas do cross sutures.
- This occurs in many scenarios:
  - Skull fracture crosses the suture.
  - Sutural diastasis.
  - Vertex extradural hematomas, usually venous often cross the midline elevating the superior sagittal sinus.

Dr Amit T Kharat

MBBS DMRD DNB MNAMS PGDHHM PHD (MSK Radiology) FICR FIMSA
Professor of Radiology, DPU Pune

Musculoskeletal Ultrasound of The Rotator Cuff

Ultrasound is relatively cheap & dynamic modality for examining shoulder joint. We can diagnose rotator cuff diseases and impingement by using ultrasound. Accuracy of ultrasound depends upon the examination technique. Examiner should be aware of the anatomy of shoulder. High frequency (7-12 MHz) probe is
needed for examination. Examination can be done either from front or back of the patient while patient is sitting position. There are 3 classical positions to perform a shoulder ultrasound and two dynamic motion scan as we will discuss in the lecture.

Based on the above imaging we can diagnose complete tear, partial tear, calcific tendinosis, bursitis and impingements.

Non-visualization of tendon suggests complete tear. Full thickness tear needs further description in terms of the size in the sagittal and coronal planes. Fresh tears need to be differentiated from chronic tears. The role of assessment of the supraspinatus and infraspinatus muscle bulk is very critical at this stage. Atrophy of the muscles secondary to a chronic tear has clinical significance in prognostication on the surgical outcome.

Partial hypoechoic defect in tendon is suggestive of partial tear. Partial tear can be bursal surface, intrasubstance or articular surface and involve supraspinatus tendon, infraspinatus tendon or the conjoint tendon. Tear can also be diagnosed in the subscapularis tendon, however a close assessment of the biceps tendon can give clue to subscapularis tear as the biceps tendon subluxates medially in partial or full thickness subscapularis tears. Diagnosis of tendinosis can be easy provided the tendon is heterogeneous, edematous and bulky. In subtle tendinosis it can be challenging and may be not very reliable.

While evaluating partial tears anisotropy should be kept in mind; it should be recognized & should be avoided. Internal heterogeneity in tendon is suggestive of tendon degeneration or tendinosis.

The biceps tendon is a very important structure and it has to be assessed upto to the supraglenoid notch. The point of the 90 degree turn of the biceps tendon is critical and the rotator interval is created which separate the subscapularis from the supraspinatus tendon. The rotator interval can be assessment on grey scale and power Doppler to assess for adhesive capsulitis. The biceps tendon should be assessed in the groove for tenosynovitis and presence and absence of tendinosis.

We can evaluate subacromial-subdeltoid bursa for presence of any fluid which is suggestive of bursitis. The bursa is shaped like a tear drop and all the recesses, (anterior, posterior and lateral recesses should be evaluated). Also, cortical irregularity of the humeral head and greater tuberosity can be seen. These finding serve as secondary signs for rotator cuff disease and may give some insights if there is periarthritis of the shoulder.

Acromio-clavicular joint capsule and joint space can be evaluated easily for presence of degenerative changes, dislocations & any subluxations.

The role of ultrasound is dynamic examination is crucial and needs special mention. Two types of impingements can be diagnosed by ultrasound. The subacromial and subcoracoid space impingements. The common impingement is the subacromial this usually happens due to spur at the under surface of the acromion, thickened coracoacromial ligament and the lateral downs loping of the acromion. At this point assessment of the radiograph will add value to your examination. While demonstration the subacromial impingement special note should be done at what point the pain is noticed and smooth gliding of the conjoint tendon is interrupted. Similarly the subcoracoid impingement can be assessed, although this is a less common type of impingement.

The role of screening of the opposite shoulder is very critical, the reason behind this is comparative anatomy gives you better insights in the pathology, also silent tears in the opposite shoulder can be seen in 1/4th of the population.

In conclusion, three positions and two dynamic scans can give us most of the anatomical information of the structures around the shoulder joint. A systematic methodical examination should include a detailed history, radiographic assessment and compare with opposite shoulder. Tendinosis especially the subtle insertional tendinosis can be challenging to diagnose on ultrasound. When in doubt always ask for higher investigations to confirm your findings.
Healthcare ethics involves making well researched and considerate decisions about medical treatments, keeping patient’s beliefs and wishes in mind. Ethics committees are mandatory for all healthcare organizations. Ethics and legal issues are two sides of the same coin. Deviation from the ethical code could result in medicolegal issues.

AI has a huge potential to optimize or enhance medical care at all levels, keeping the processes affordable, accessible and scalable. The ability to crunch huge data sets at a faster speed and greater accuracy for complex problems has caused development and implementation of AI at a breakneck pace. But this is also the time to pause for a bit, to recognize the ethical issues and dilemmas that AI presents and form think tanks to develop a code of ethics to resolve them, and provide guidelines and principles that may be incorporated in the development and implementation phases.

Relevant ethical issues pertain to
A. Data used for formulation of algorithms-
   1. Who does this data belong to?
   2. Who has the permission to use it?
   3. What all can this data be used for?
   4. Data may contain bias or could have a faulty design-inadvertent or intentional
   5. Data security
   6. If there are any commercial returns, who are the beneficiaries?

B. Implementation of AI
   1. How does one ensure standards for an AI algorithm?
   2. Who takes liability of an error?
   3. Should the patients be informed that AI is being used?
   4. Must the AI be explainable or is it acceptable as a blackbox?
   5. Machine learning models are trained using a cost function which involves opposing goals. How does one balance cost reduction, better quality, human emotions; and in what ratio?
C. Access to AI

1. Since AI is duplicable and usable at a large scale, how does one ensure social justice?

2. What constitutes fair compensation for AI developers, if the product is duplicated by the government to be used for the masses?

How to tread the best path?

“Best” is contextual and perspective based. In general, a healthy respect for ethics while embracing these disruptive technologies is the only way forward. Open source-community based development, testing and implementation of AI algorithms, may be a suitable step towards universal health care in resource-limited regions.

Dr. Anjali Prakash

Ultrasound Artifacts

 Artefacts that are seen in ultrasound are due to multiple reasons. Though they may be unwanted, many of them are crucial in imaging as they provide vital clues to the structure and composition of the tissues. Many artefacts result from violation of assumptions made in constructing the image. The talk will focus on the mechanism of the common artefacts and their clinical significance.

Dr. Ankur Goyal

(AIIMS New Delhi)

Current concepts in Imaging of Peripheral Nerves

Tunnels and crossings of the extremities: Imaging road map

Imaging modalities of choice for the evaluation of peripheral nerves are high-resolution ultrasound (US) and magnetic resonance imaging (MRI). Advantages of US include ability to trace the entire length of nerve without any limitation of field of view, comparison with contralateral side and dynamic examination. MR neurography includes high resolution thin-section T2-weighted (T2w) and T1w sequences, former done both with and without fat suppression. Advantages over US include simultaneous comprehensive evaluation of muscle edema / atrophy and any focal lesions. A three-dimensional T2w sequence may also be done. In addition, volumetric diffusion-weighted imaging with background suppression (DWIBS) is useful to delineate the nerves distinctly from surrounding tissues. Diffusion tractography with fractional anisotropy (FA) values and color-coded FA maps provide functional information as well. Contrast is usually administered only for infective and neoplastic lesions. Radiographs & computed tomography (CT) serve to evaluate any bony lesions causing nerve impingements.

Tunnels of extremities are narrow fibro-osseous or fibro-muscular passages, prone to traffic jams. The usual culprits are space occupying lesions like ganglion, lipoma, extruded osseous fragments and mechanical compression related to posture or dynamic friction. The clinical manifestation is in the form of entrapment neuropathies or tendinopathies.

Tunnels of upper limb include Pronator tunnel & Carpal tunnel (median nerve); Cubital tunnel & Guyon’s canal (ulnar nerve); Spiral Groove (radial nerve); Arcade of Frohse (posterior interosseous nerve), suprascapular
and spinoglenoid notch (suprascapular nerve) and ulnar groove (extensor carpi ulnaris tendon). Common entrapment tendinopathies include De Quervain tenosynovitis and trigger finger. Clinically important crossings of upper limb are proximal and distal intersections where extensor tendons of hand are prone to friction and tenosynovitis. Tunnels of lower limb include piriformis tunnel (sciatic nerve), fibular neck (common peroneal nerve), medial tarsal tunnel at ankle (tibial nerve), peroneal tunnel (peroneal tendons), anterior tarsal tunnel (deep peroneal nerve) and sinus tarsi.

It is important to have knowledge of the various predisposed sites of entrapment of nerves and tendons in the extremities. There may be increased “traffic” within the tunnel or thickening of the walls leading to compression of the tendon & nerves within.

**Dr. Ankur Shah**

**Meniscal injuries of knee Learning objectives**
1. To understand MR anatomy of menisci.
2. To differentiate intrameniscal signal v/s tear.
3. To understand the types of meniscal tear: Horizontal, vertical and complex.
4. To learn signs of different meniscal tear on MRI.
5. To understand mechanism of injury and types of tear.
6. To differentiate surgical and non-surgical meniscal tear.
7. To know the pitfalls and mimics of meniscal tears.

MRI is a highly accurate imaging method for diagnosing meniscal tears. However, there can be erroneous diagnosis of meniscal tears due to anatomical variations and normal structures resembling tear.

The normal meniscal vascularity, perimeniscal venous plexus and meniscal degeneration should be differentiated from meniscal tears.

Menisci are C-shaped structures within the knee joint between femoral condyles and tibial plateau. It has three segments: Anterior horn, Body, Posterior horn.

PD images are considered optimal for detecting meniscal lesions, which are sensitive to the T1 shortening of imbibed synovial fluid in tears and mucinous degenerations. Images acquired with a short TE are more sensitive than images acquired with a longer TE in the detection of meniscal degenerations and tears. FS PD conventional spin-echo sequence can also be used to characterize meniscal signal

**Criteria for meniscal tear**
- Abnormal shape of the meniscus
- High signal intensity unequivocally contacting the surface of the meniscus on PD images.

**“Two-slice touch rule”**

If an intrameniscal signal contacted the surface of the meniscus on only one image, there is 18 to 55% likelyhood that the tear will be seen on arthroscopy.
If it contacted the surface on 2 or more images, there is 90 to 96% likelyhood that the tear will be identified on arthroscopy

**MR grading of meniscal tear:**
- **Grade 1:** A non-articular focal or globular intra-substance increased signal
- **Grade 2:** A horizontal, linear intrasubstance increased signal that extends up to the capsular periphery but does not extend up to the articular surface
- **Grade 3:** Increased signal intensity extends to atleast one articular surface or free edge of meniscus

**Types of meniscal tears:**
1. Horizontal Vertical – Longitudinal / Radial Complex
2. Bucket handle tear is a displaced longitudinal tear.
3. Flipped meniscus is a form of bucket handle tear.
4. A meniscal root tear is a radial tear located at the meniscal root.

Meniscocapsular separation occurs when the meniscus detaches from the capsular attachments. If a meniscal tear results in a fragment displaced away from the site of tear, it is termed as displaced flap tear.

Complex meniscus tears are those in which the tear extends in more than one plane creating separate flaps of meniscus

**Pitfalls of meniscal tear:**
1. Transverse meniscal ligament
2. Anterior horn of lateral meniscus
3. Meniscofemoral ligaments
4. Popliteomeniscal fascicle of lateral meniscus

**Dr. Anmol Bhatia**

**Pediatric MR Urography**

Magnetic resonance urography (MRU) is a valuable radiation free imaging modality for assessing various disorders of the pediatric urinary tract. MR imaging has inherently greater soft-tissue contrast than other imaging techniques. Common indications for pediatric MRU include evaluation of complex renal and urinary tract anatomy, suspected urinary tract obstruction, operative planning, and postoperative assessment. It allows comprehensive evaluation of the upper and the lower urinary tract in children by providing both morphologic and functional information. MR hydrography (T2-weighted imaging of urine) helps in delineating the dilated or obstructed urinary systems, whereas postcontrast sequences (gadolinium-enhanced T1-weighted imaging of the kidneys and urinary system) depict nondilated or nonobstructed urinary systems. Postcontrast sequences also allow a functional evaluation of the kidneys and urinary tract. In the talk, the common indications, sequences and technique, strengths and weaknesses of pediatric MR urography will be discussed, along with pictorial demonstration of some common and uncommon abnormalities of the pediatric urinary tract.
HRCT THORAX – Pattern identification

What is the dominant HR-pattern:
- reticular
- nodular
- high attenuation (ground-glass, consolidation)
- low attenuation (emphysema, cystic)

Reticular pattern –
Increased small lines giving a ‘net like’ pattern. Can be seen with intra and interlobular septal thickening.

- There are 2 types of septal thickening
  Smooth septal thickening:
  - interstitial pulmonary edema
  - lymphangitic spread of carcinoma or lymphoma
  - alveolar proteinosis

Nodular or irregular septal thickening:
- lymphangitic spread of carcinoma or lymphoma
- sarcoidosis
- silicosis

Combination of intra and interlobular septal thickening in interstitial lung disease and fibrosis.

Nodular Pattern –
High attenuation pattern Ground glass opacity / Consolidation

**Acute**
- Pulmonary edema - Cardiogenic / ARDS
- Pulm hemorrhage
- Pneumonia – viral / PCP / Mycoplasma
- Acute eosinophilic pneumonia

**Chronic**
- Hypersensitivity
- BOOP / COP
- Chronic eosinophilic pneumonia
- Alveolar proteinosis
- Lung fibrosis – UIP / NSIP
- BACA
Low attenuation pattern:

- Emphysema
- Lung cysts (LAM, LIP, Langerhans cell histiocytosis)
- Bronchiectasis
- Honeycombing

Other factors helping in HRCT interpretation

Where is it located within the secondary lobule?

- Centrilobular
- Perilymphatic
- Random

Where is it located within the lung?

*Upper Vs lower zone (Upper lobe predominance – TB, CWP, silicosis, sarcoidosis, hypersensitivity, AS, resp bronchiolitis, smoking related centriacinar emphysema); (Lower lobe predominance – UIP, NSIP patterns, drug induced, connective tissue disease related ILD, asbestosis, some hypersensitivityalpha 1 antitrypsin deficiency )

Central Vs peripheral predominance (Central – classically sarcoidosis, peripheral subpleural – UIP pattern)
Are there additional findings

- pleural fluid
- lymphadenopathy
- traction bronchiectasis
- cardiomegaly
- oesophageal dilatation
- MPA dilatation

Dr Ashu Seith Bhalla

*Chest MRI has several established, and other evolving roles in the evaluation of chest disorders. It remains an under-utilized tool in most radiology practices*

**MRI- Pros & Cons**

Pros Radiation free

Cons

- Cost & availability
- Time consuming, need for sedation
- Technically thorax has many challenges
- Respiratory & cardiac motion
- Air in lungs

**Role of MRI Mediastinal Lesions**

- Thymus- Hyperplasia Vs Thymoma, Staging
- Lymph nodes- Follow-up, activity assessment
- Fibrosing mediastinitis- Follow-up, activity assessment
- Posterior mediastinal masses- Neural foraminal extension, cyst Vs solid, Whole body MRI in neuroblastoma
- Indeterminate masses- Contrast enhancement characteristics and diffusion for characterisation
- MRI is immensely useful for “Cyst Vs solid differentiation”
- CT often errs, especially when high density fluid present
- Pre-operative staging- Cine-MRI aids in evaluation of equivocal infiltration

**Lymph Nodes Contrast enhanced MRI Vs CECT**

- Equally good/ better for characterization of nodes
- May have incremental value over CT in evaluating persistent nodes following treatment in tuberculosis
- “Activity assessment”
- Diffusion weighted MRI does not aid in characterization

**Fibrosing Mediastinitis**

- Mapping extent
• Effect on vascular structures – SVC, Pulmonary arteries
• Effect on airway
• Assessing activity- Contrast enhancement, diffusion restriction

**T2 hypointense mediastinal masses**
• Fibrosing mediastinitis-inactive stage
• Calcified nodal masses
• Fungal infection

**Upper Airway/Obstructive Sleep Apnoea- Sleep MRI**
• Dynamic MRI can demonstrate abnormal airway motion
• Anatomic causes of obstruction excluded
• Level of obstruction identified- retropalatal, retroglossal or combined.
• Severity of obstruction
• Assessment of treatment response

**MRI Lung**
• Follow up imaging in patients requiring frequent Imaging
• Immunocompromised hosts
• Cystic fibrosis, ABPA follow up
• Solitary pulmonary nodule characterization
• Limitations: Difficult in patients with poor respiratory effort, small nodules missed

**Carcinoma Lung Staging**
• Superior contrast resolution
• Superior in assessing diaphragmatic & mediastinal invasion
• Good for assessing pericardial and cardiac extension
• Better in assessing the invasion of brachial plexus, vertebral bodies & chest wall.
• Distinct benefit in Pancoast tumours
• MRI brain superior for metastases

**Chest Wall Infections**
• MRI modality of choice e.g for sternoclavicular joint TB, osteomyelitis, vertebral infections
WHO brain tumour classification 2016: Lessons learnt so far
SCTIMST, Thiruvananthapuram.

The classification of brain tumours has radically changed with the 2016 update of the WHO classification. In addition to histopathological characteristics, for the first time, molecular and genomic information was also incorporated in the classification. This is mainly to accommodate the therapeutic and prognostic heterogeneity within histopathologically similar tumour substrates.

Several tumours where reclassified, some terminologies were removed and some new pathologies were introduced. Posterior fossa tumours especially the medulloblastomas were also reclassified based on genomic and transcriptomic characteristics which determine their prognosis. Several radiogenomic characteristics based on this new classification are being described in the recent literature and several ongoing studies are underway to further predict the molecular genomics based on structural and advanced MR imaging features. In addition, machine learning strategies are being applied to extract the enormous amount of imaging features which can be used as radio-genomic classifiers. The classification and the understanding are evolving so fast and many more AI strategies are going to be involved in the diagnostic imaging and post therapeutic follow up of these patients.

Radiologists should be aware of the advances which are happening in this field. This lecture will cover the most relevant radio-genomic classifiers which are currently being used in 2016 CNS WHO.

Chronic Respiratory Infection In Children

Chronic respiratory infection in children deals predominantly with lower respiratory tract infections. These infections are predominantly due to viral or bacterial pneumonia in children.

Viral pneumonia primarily affects the mucosa of the airways causing bronchiolitis. Mucosal oedema & secretions lead to obstruction of the bronchioles resulting in air trapping which is seen on the chest radiograph as diffused hyperinflation.

Atelectasis is usually see due to mucus plugs. There is increased peri bronchial marking with streaky lines radiating from the hilum due to inflammation of the bronchi surrounding interstitum. Bacterial pneumonia is usually caused by streptococcal pneumonia or even tuberculosis in our country. It causes segmental in lobar consolidations and is usually unilateral as compared to viral pneumonia which is bilateral. It appears as well defined or rounded opacity in chest radiograph and can stimulate a mass. There are complications of bacterial pneumonia that can follow or accompany the pneumonia which can result into Para pneumonic effusion and or empyema. There can be also pneumonia with cavitary necrosis. Treatment management will depend on the merit of the pneumonia & its complications.
Dr Binit Sureka

Associate Professor, Dept. of Radiology, AIIMS Jodhpur

Case Based Review (Pancreas)

- To study atypical pancreatic cases
- Case of scar containing neuroendocrine tumor of pancreas mimicking serous cystadenoma – first case in literature
- Discuss few cases of pancreatic schwanomma
- Highlight imaging features of pancreatic Serotoninoma
- Discuss uncommon causes of pancreatitis - Autoimmune pancreatitis and genetic mutation associated pancreatitis
- Discuss the differential diagnosis of these atypical cases; salient features of these atypical cases which can help in preoperative diagnosis

Dr. Chandan J Das

Associate Professor, Department of Radiology, All India Institute of Medical Sciences, New Delhi, India

The role of MRI-TRUS fusion biopsy in diagnosis of prostate cancer: a prospective cohort study

Introduction: TRUS guided 12 core biopsy of prostate, the current standard, has a sensitivity of 39-52% in diagnosing prostate cancer. Fusion biopsies based on multiparametric MRI images followed by TRUS guidance increase accuracy of biopsies and may improve their yield. We prospectively evaluated the diagnostic yield of fusion biopsies in a cohort of men with suspicion of prostate cancer.

Materials and Methods: In an IRB approved prospective cohort study, 100 men with suspicion of prostate cancer were recruited to undergo an MRI-TRUS fusion biopsy using the Artemis(R) (Eigen, USA) device. All patients underwent standard 12 core systematic biopsies in addition to biopsies targeted at the MRI identified (PIRADS 3-5 score) abnormal regions. Yield from standard cores was compared with targeted cores. Gleason scores of 4+3 or higher were considered significant.

Results: The mean age of the patients was 64.06 ± 8.68 years and the mean PSA was 9.63 ±5.22ng/mL. 25 patients had cancer of which 2 (8%) were detected only on standard cores and 2 (8%) only on targeted cores. Of the clinically significant cancers, targeted biopsy detected a higher number (21/23, 93%) than standard biopsy (16/23, 69%). 5 of 7 (71%) cancers that were insignificant on standard biopsy were upgraded to clinically significant prostate cancer on targeted cores.

Conclusion: 8% of cancers were detected only on MRI-TRUS fusion targeted biopsies while it upgraded more than two-thirds of insignificant cancers to significant cancers. Fusion biopsies thus provide an incremental information over standard TRUS guided biopsies in the diagnosis of clinically significant prostate cancer.
Dr Chander Mohan

Editor in Chief, IJRI Director, Interventional Radiology, BLK Super specialty Hospital, New Delhi

Submission to IJRI: Do’s and Don’ts

IJRI receives large number of submissions. 496 articles have been received in 2018 so far, comprising of 176 original articles, 214 case reports, 24 review articles and 27 pictorial Essays and others comprising of smaller numbers.

The articles are subjected to internal review checks to assess suitability of its worthiness for processing. Then the assigned editor sends the suitable articles to Editorial Board members and external reviewers to carry out critical reviews. The review process goes on till decision is taken about its acceptance/rejection.

Unfortunately, the overall acceptance rate for the articles has been only 9% last year. Majority of the original articles based on thesis and other articles were not found suitable due to various reasons such as suboptimal scientific content, poorly written, plagiarism, non-adherence to guidelines, failure of authors to modify articles in spite of repeatedly advising them and so on.

Hence, this talk proposes to focus on Do’s and Don’ts for submission of the article to IJRI. All essential requirements and adherence to IJRI and other relevant guidelines will be discussed as well as the common mistakes committed will be highlighted. The aim of the talk is to create awareness among authors especially the younger colleagues about the various requirements so as to make submissions that are readily accepted by the journal.

Dr Chandrashekhara S H

Associate Professor, Radio-diagnosis, AIIMS, New Delhi

CTA in CABG and stents

Recent advances in MDCT with new development of post processing softwares have significantly improved the diagnostic accuracy in the evaluation of coronary stents and bypass grafts. The MDCT advances have led to superior visualization of the stent lumen and in-stent restenosis. MDCT has recently emerged as a practical alternative to invasive investigations such as coronary angiography. Inspite of image-degrading artifacts and challenges of cardiac motion, the current generations of MDCT including dual source technology have improved evaluation of the in-stent lumen and also assess subtle neointimal hyperplasia as well. Current generation MDCT have overcome issues of image noise and substantially reduced the radiation dose. The modification of ECG triggering, reduced tube voltage scanning, iterative reconstruction techniques have significantly improved the sensitivity and specificity of coronary stent evaluation by MDCT. The proximal stents > 3mm with thin struts are better evaluated by MDCT. The visibility of lumens of different stents varies, which depend upon the stent type and the stent diameter. The blooming effect is more prominent for smaller coronary stent with thicker struts, reducing their diagnostic accuracy. Radiologist should have adequate knowledge of the different types of coronary stents, artifacts they produce and techniques to reduce those artifacts by dedicated post processing techniques and window settings. MDCT also helps in the evaluation of post stent complications such as fracture, migration or pseudoaneurysm formation.

The advancing MDCT technologies with modifications of ECG triggering have enabled the improved diagnostic accuracy of CABG grafts noninvasively. It not only assesses the grafts, but also assesses the post-operative complications such as graft occlusion, sternal infection, pleural or pericardial effusion, pulmonary embolism or pseudoaneurysm formation. It has emerged as an important diagnostic modality for evaluation of CABGs in both the early and late postoperative settings. With improved technology of MDCT with 3D and
multiplanar reconstructions have significantly improved the evaluation of graft patency and postoperative complications. MDCT has great advantage in preoperative assessment before repeat CABG surgery to prevent any inadvertent injuries during invasive coronary angiography.

Dr. Darshana Sanghavi

MRI Of Sports Injuries At The Elbow

The presentation will focus on MRI of sports injuries at the elbow. Normal and variant anatomy of the elbow will be described. Variant anatomy that mimics pathology in the throwing athlete will be discussed in detail. The key concept of valgus extension overload syndrome will be discussed. Finally, post operative MRI will be reviewed with emphasis on athletes imaged after surgery for ulnar collateral ligament injury or ulnar neuritis. Adult and pediatric pathologies of the elbow will be discussed.

Dr Devasenathipathy Kandasamy

Associate Professor Radiodiagnosis, AIIMS, New Delhi

IgG4 Related Diseases: What a Radiologist should know?

IgG4 related disease (IgG4-RD) is a recently recognized entity which is believed to be a fibroinflammatory disorder. It is a wide spectrum of diseases which can affect many organs from head to toe. They all share a characteristically common clinical, serological and pathological features. Their presentation can be varied and some of them can present with tumefactive lesions which can be difficult to differentiate from other malignant lesions. Hence it is important for the radiologists to be aware of this entity to avoid wrong diagnosis and further management. The clinical presentation is so nonspecific that radiologist could be the first person to make the right diagnosis. Serologically they can have elevated levels of IgG4. Lymphoplasmacytic infiltration (IgG4 rich), obliterative phlebitis and storiform fibrosis are the histopathological hallmarks of this entity.

Type 1 Autoimmune pancreatitis is the first entity which was recognized as the IgG4 disease. It is seen in almost 60% of all the patients diagnosed with IgG4-RD and many times it is the heralding lesion following which involvement of other systems can occur over months to years. Many disease processes which were traditionally considered as separate entities such as orbital pseudotumor, Riedel’s thyroiditis, fibrosing mediastinitis, retroperitoneal fibrosis etc are now considered as a part of IgG4-RD.

The diagnosis is usually made on the basis of serology and histopathology. The role of imaging is to diagnose, evaluate the disease extent (multiorgan involvement) and to follow-up after treatment. Another role of imaging is to differentiate it from disseminated malignancies. CT scan of chest, abdomen and pelvis is indicated in all patients diagnosed with IgG4-RD.

There can be a variety of appearances on imaging depending on the organs involved, but they are usually seen as a hypodense lesion on CT with delayed enhancement. The characteristic feature on MRI is intermediate signal intensity on both T1 and T2 W images and significant diffusion restriction. The most common manifestations and their characteristic imaging findings will be discussed.

Steroid is the mainstay in therapy apart from newer drugs like rituximab, azathioprine, methotrexate etc. They usually respond well to treatment but has the propensity to recur. Spontaneous resolution can also occur in a small number of patients.
Memorial Oration of Icri -2019

Title of Oration: Clinical Perspective of ASRM and the new ESHRE &ESGE classification of Mullerian Duct Anomalies

INTRODUCTION: 3D Transvaginal Ultra sonogram and MRI (Magnetic resonance Imaging) has become the mainstay for diagnosing Mullerian duct anomalies (MDA). Imaging done for primary amenorrhea, infertility or bad obstetric history reveals MDA. Knowledge regarding classification of MDA is important, as the treatment varies with respect to the different classes. As all the lesions do not fit in within the classification of American Society for Reproductive Medicine (ASRM), new anatomy based classification was established by The European Society of Human Reproduction and Embryology (ESHRE) and the European Society for Gynecological Endoscopy (ESGE).

Goals of therapy in MDA are to relieve obstruction immediately, restoration of normal menstruation and sexual function, and preservation of reproductive potential.

Aim: To evaluate the clinical usefulness of ASRM and ESHRE classification in those cases referred for MRI as part of infertility workup.

Materials and Methods: All patients underwent MRI pelvis. T2 weighted sequences in all 3 planes (axial, coronal and sagittal. First sagittal T2 image was obtained (TR/TE-4860/86, slice thickness (ST)-5mm & NEX-2), following which oblique coronal and oblique axial sections were obtained along and perpendicular to long axis of uterus. Volume sequences like T2 CUBE (TR/TE-2000/102, ST-2.8 mm and gap 1.4 mm) & reformation in all the planes including oblique sections were done after image acquisition. T1 sequence was done in one plane.

Coronal screening of upper abdomen was done to pick up renal abnormalities. Instillation of vaginal gel used in cases of blind vagina, transverse or longitudinal vaginal septum.

For all cases both classifications were made.

Conclusions: The ESHRE AND ESGE classification is able to classify all most all the congenital anomalies of the female genital tract, whereas the ASRM classification is not so comprehensive.

ASRM seems to be user friendly as people were tuned to that because of routine use for decades.

Independent classification of uterine, cervical and vaginal anomalies were made in ESHRE AND ESGE. It is of great clinical use in cases of obstructive cervical / vaginal malformations with normal uterus as they constitute about 50% of anomalies ASRM classification does not provide specific classes for these anomalies and groups them all under type I.

Cases classified under U2 &U3C are surgically treated. Arcuate uterus may be classified as partial septate uterus in ESHRE–ESGE. It can result in increased hysteroscopic metroplasty. This is one of the limitations of the ESHRE–ESGE.

Ectopic Mullerian tissue anomalies like accessory cavitating uterine mass and tricavitated uterus belongs unclassified U6 category. They are not classified under ASRM.

MRI done after instillation vaginal gel helps to clearly delineate the transverse and longitudinal vaginal septum.
Dr. Dipankar Das

Spinal Trauma report - what really matters

Spinal trauma is a common entity because of increasing road traffic accidents. Imaging plays an important role in the management of the patient.

Plain x ray, CT Scan and MRI are usual modalities used. The key role is to identify whether the injury is stable or unstable and to look for injury to spinal cord and spinal nerves.

MRI is excellent in delineating the extent of cord and nerve root injury, injury to posterior ligament complex etc. CT scan is better for evaluation of bony trauma.

Dr. Firoza Kothari

Co-Founder and CTO
Anatomiz3D Medtech Private Limited

3D Printing has been utilised in the medical industry for over 15 years now, but it’s only starting to become the buzz word now. The exploration of the technology in various specialities has led to opening up new avenues for its application. The talk will focus on its multi-specialty utilisation through different products and case studies, along with introduction to Bioprinting.

Dr. Hemant Patel

MD, DMRE, DNB

MRI Prostate: Special attention to evaluation of CA Prostate

Prostate cancer is the most commonly diagnosed cancer in males and the second cause of cancer related death in men. Detection and clinical staging of prostate cancer currently includes a prostate-specific-antigen (PSA) test, a digital rectal examination, and a transrectal ultrasound (TRUS)-guided prostate biopsy. The TNM stage is obtained using these variables and treatment of prostate cancer is based on clinical stage and is patient specific.

The first part of this article outlines how prostate MRI increases the accuracy of tumor detection, localization and staging and thus facilitates guidance of patient specific treatment. We also discuss the role of MRI in guiding repeat prostate biopsy for patients with previous negative TRUS biopsy, the use of MRI as a baseline test for patients with suspected prostate cancer before TRUS biopsy and the emerging potential role of MRI to replace TRUS biopsy in patients on active surveillance. The second part of this paper reviews prostate MRI technique, morphologic T2-weighted imaging and multiparametric MRI, including diffusion weighted MRI (DWI), dynamic contrast-enhanced MRI (DCE-MRI), and MR spectroscopy (MRS).

Prostate imaging and interpretation is based on prostate imaging reporting and data system version 2 (PI-RADS™ v2) providing clinical guidelines for multiparametric magnetic resonance imaging (mpMRI) of the prostate. PI-RADS™ v2 aims to promote global standardisation, to diminish variation in the acquisition, interpretation and reporting of prostate mpMRI examinations and to improve detection, localisation, and risk stratification in patients with suspected cancer in treatment naïve prostate glands. It does not address detection of recurrence, progression during active surveillance and evaluation of other parts of the body.
PI-RADS™ v2 improves and standardises communication between radiologists and urologists to detect or exclude the presence of significant prostate cancer with a high likelihood. Findings on mpMRI are assessed on a 5-point category scale based on the probability that a combination of findings on T2-weighted (T2w) sequences, diffusion-weighted MRI (DWI) and dynamic contrast-enhanced MRI (DCE-MRI) correlates with the presence of a clinically significant prostate cancer at a particular location. PI-RADS assessment categories range from 1 to 5 with 5 being most likely to represent clinically significant prostate cancer. The dominant sequence to detect prostate cancer in the peripheral zone is DWI, whereas for tumour detection in the transition zone T2w is the most important sequence. DCE-MRI has been attributed a minor role and only qualitative assessment with presence or absence of focal enhancement is suggested. Up to four suspicious lesions of category 3, 4 and 5 are assigned on a sector map and the index lesion should be identified.

Prostate cancer biochemical recurrence occurs in 20 to 80 percent of patients within 10 years after radical prostatectomy and is difficult to treat. Salvage radiotherapy is the main option for treatment, but the imaging modalities currently used are not sensitive enough to identify the location of recurrence until it is too late, leading to a “best-guess” approach for targeting the radiotherapy.

PSMA PET/CT is sufficiently sensitive to detect and localize the recurrent prostate cancer early enough to potentially guide salvage radiotherapy,

To summarise, Radiologists need to understand the advantages, limitations, and potential pitfalls of the different MRI sequences to provide optimal assessment of prostate cancer. Structured reporting according to PIRADS contributes to quality assurance by standardizing prostate MRI, and it facilities the communication of findings to urologists.

Dr. Hirak Ray Choudhury
Consultant & Head, Deptt. of Radiology  AMRI Hospital, Dhakuria, Kolkata.

Common Injuries at Wrist

Human wrist has a compartmentalised intricate anatomy. When Wilhelm Conrad Rontgen created the radiograph of his wife Anna Bertha’s hand in 1895, ‘Radiography’ and ‘Hand and Wrist Imaging’ both were born. Despite all advancements, the humble radiograph still remains as the most common and widely used modality to evaluate wrist injury. Common injuries include fractures of distal radius, ulna, carpel bones and metacarpal bases, TFCC and ligamental injuries.

The advent of digital radiography has immensely improved quality and still today AP, PA, oblique and lateral views with ancillary views including dynamic ancillary views form the backbone of initial wrist series for trauma. CT with 3D reconstructions give the clinician additional information of displacements and malalignments. MRI is used to depict suspected fractures, ligamental, cartilage and tendon injuries.

This presentation discusses the importance of radiographs, description of anatomy of common fractures of wrist and associated injuries with an understanding of fracture dynamics thus emphasising on “what the surgeon needs to know”. Imaging evaluation demands more than simple fracture detection and description. Pertinent ancillary findings and negative radiographic findings, that factor into clinical algorithms need to be addressed for seamless clinical decisions and optimal surgical outcome.
Ultrasound of Wrist

Ultrasound is ideally suited for the assessment of complex anatomy and pathologies of the wrist. Focused and dynamic wrist ultrasound can provide rapid real-time diagnosis and can be used for guided treatment in certain clinical situations.

It is equally good and sometimes better than MRI for certain pathologies. The talk provides a simplified approach to scanning technique for wrist and illustrates a spectrum of common and uncommon pathologies encountered, so as to increase the awareness of the role of a quick and cost-effective ultrasound examination in joint pathologies and guided intervention procedures.

How to guide authors so your journal flourishes, or, how to improve your citation index

This discussion will allow the audience to understand the basics of writing a superb manuscript, one that gets accepted and subsequently read by a wide audience. This in turn may lead to the manuscript being cited more often by other researchers in the field which may make the journal in which it is published be more often quoted and thus more highly regarded.

The above process describes the background of the metric known as the Citation Index, an imperfect but often used value for researchers to be assessed for promotion, and for journals to be ranked.

The discussion will review necessary elements of manuscript preparation, authorship and ethics so as to optimize this process.

Imaging in Pulmonary Thrombo-embolism: A Systematic Approach

Introduction: Pulmonary thromboembolism (PTE) is a common, life threatening clinical condition after myocardial infarction and stroke. Accurate clinical diagnosis of PTE has always been challenging due to non specific nature of the signs and symptoms of PTE. Majority of deaths from PTE are potentially preventable if accurate diagnosis is made in time and treatment instituted.

Evaluation of PTE: Suspected acute PTE is a clinical emergency and demands urgent diagnostic testing, clinical prediction score and prognostication. A rapid clinical assessment, D-dimer assay, ECG and echocardiography forms important initial evaluation methods which can be performed bed side particularly for sick patients. D dimer assay, although very sensitive suffers from lack of specificity. ECG findings are again non specific in vast majority of cases.

Imaging studies: The various imaging studies for the evaluation of a suspected case of PTE include i) Chest radiograph, ii) Echocardiography, iii) Ventilation-perfusion scintigraphy, iv) Pulmonary angiography v) Computed tomography pulmonary angiography (CTPA), vi) MRI and vii) Lower limb ultrasonography and Doppler study.
i) Chest radiograph: The chest radiographic findings (e.g. pleural effusion, consolidation, pleural based opacity, elevated hemi-diaphragm etc) which may be observed in a case of acute PTE are again non specific,

ii) Echocardiography: Echocardiography is the most useful first-line investigation in hemodynamically unstable patients especially in the evaluation of right sided strain and pulmonary arterial hypertension besides enabling diagnosis of alternative etiologies.

iii) Ventilation-perfusion (VP) scintigraphy: VP scan, although is very sensitive suffers from poor specificity.

iv) Pulmonary angiography: Prior to the advent of pulmonary angiography, a confidant diagnosis of pulmonary thromboembolism during life could be made only during surgery i.e. pulmonary embolectomy. Pulmonary angiography has served as the gold standard for the diagnosis of PTE for decades. Pulmonary angiography has been traditionally used whenever there was a discrepancy between clinical suspicion of PTE and other imaging findings. With the availability and widespread use of multi detector CT (MDCT), requirements of pulmonary angiography for the diagnosis of PTE have been significantly reduced. Currently, pulmonary angiography is specifically obtained before carrying out interventions such as mechanical clot fragmentations, catheter directed thrombolysis etc.

v) Multi-Detector Computed tomography pulmonary angiography (MDCTPA): Advent of MDCT has been a major step forward in the diagnosis of PTE. MDCTPA has become the frontline noninvasive imaging investigation for the initial evaluation of patients with suspected PTE. Submillimetric slice thickness with isotropic resolution in orthogonal as well as non orthogonal planes, increased speed of Z axis coverage and optimum contrast bolus synchronization has enabled MDCT to be very accurate in the diagnosis of acute PTE even in critically ill patients with poor breath-hold. Incidence of non diagnostic scans has been drastically reduced with the advent of MDCTPA. Unlike VP scanning, MDCTPA enables accurate visualization of intraluminal thrombus upto 3rd-4th order pulmonary artery branches. Associated lung parenchymal abnormalities are also accurately depicted by MDCT. Another, advantage of MDCT is the ability to offer alternative diagnoses in the absence of PTE.

Role of MDCTPA has expanded from early diagnosis to prognostication of acute PTE. It is well known that majority of PTE related deaths occur due to right sided failure. Besides echocardiography, MDCTPA has the distinction in the accurate evaluation of right sided strain in the form of increased RV: LV ratio, septal bowing to the left, evidence of pulmonary artery hypertension, prominence of SVC, Azygos vein, reflux of contrast into the hepatic veins/IVC. MDCTPA thus enables early institution of thrombolytic therapy which is crucial for a successful outcome in a case of PTE. MDCTPA has a reported accuracy of more than 90% in the diagnosis of PTE. False positive MDCTPA studies are extremely rare.

Clot Burden: MDCT enables assessment of pulmonary clot burden as well as simultaneous detection and estimation clot load in the abdomino-pelvic and lower limb veins in the same sitting depending on the institutional protocol which may be helpful for management and prognosis in patients with PTE.

vi) Magnetic Resonance Imaging: MRI has not yet gained widespread acceptance in the evaluation of suspected PTE because of various reasons like critically ill patients with poor breath hold, longer scan time, relatively inferior spatial resolution, and the requirement of MR-compatible monitoring devices. MRI may be an alternative option in patients with deranged renal function and pregnant patients where contrast medium toxicity and radiation hazards a major concern. Molecular MRI with fibrin specific contrast agents may further enhance imaging of PTE patients in the near future.

vii) Lower limb ultrasonography and Doppler study: Deep venous thrombosis of the lower limbs and abdomen are an important precursor of PTE and are often considered as part of a spectrum of one disease. Majority of patients of PTE would have evidence of deep venous thrombosis in their lower limbs. Hence,
besides other imaging modalities used for the diagnosis of PTE, lower limb ultrasonography and Doppler study forms an important component of comprehensive evaluation of PTE.

**Conclusion:** Timely and accurate diagnosis of acute PTE is crucial for the early institution of definitive therapy which will result in significant reduction of preventable mortality associated with the condition. However, it needs to be understood at this point that no single noninvasive diagnostic test is sufficiently accurate for the diagnosis in all patients. Wherever facility exists, MDCTPA should preferably be used as the front line imaging method for the diagnosis and management of PTE.

**References:**


**Dr. Jyotsna Sen**

*Senior Professor, Pt. B. D. Sharma PGIMS, Rohtak.*

**Imaging in Pelvic Inflammatory Disease**

Pelvic inflammatory disease (PID) is the most frequent gynaecological cause of acute emergency. Despite being relatively common, PID represents a diagnostic dilemma because the symptoms are often mild and non-specific and may mimic other abdominal and pelvic diseases. Characteristic imaging findings seen with cervicitis, endometritis, acute salpingitis, oophritis, tubo-ovarian abscess and pyometra are crucial for prompt diagnosis and treatment.

**Dr. Kada Venkataramana**

**Carotid Doppler: Technique and current Status**

- Atherosclerotic carotid arterial disease accounts for ~33% of all ischemic strokes and TIAs
- Symptoms associated with stenosis and unstable plaques.
- The most common site of symptomatic carotid stenosis is - carotid bulb and the proximal ICA
- Carotid doppler established as a screening noninvasive technique for the evaluation of the cervical portions of the carotid and vertebral arteries for identification and characterization of atherosclerotic plaques and identification and grading of significant stenosis.
- Color Doppler also useful for diagnosis of Takayasu’s arteritis, Fibromuscular dysplasia, Anerysm, Carotid body tumour etc
- The basic doppler principle, hemodynamics of circulation, Optimal use of doppler parameters, meticulous scanning technique are pre requisites for interpretation and reproducibility of the results.
DR. T. R. Kapilamoorthy,  
Professor, SCTIMST, Trivandrum E-mail: kapilamoorthytr@yahoo.com

MR perfusion in neuroimaging

Current use of perfusion and metabolism has improved the diagnostic ability of various CNS disorders esp tumours and non tumour conditions.

In MR perfusion, the 4 important parameters that are used are, Dynamic susceptibility contrast imaging (DSC), Dynamic contrast imaging (DCE), Arterial spin labelling techniques (ASL) and the recent Intravascular incoherent motion imaging (IVIM).

DYNAMIC SUSCEPTIBILITY CONTRAST-ENHANCED MR PERFUSION: Here the first pass of a bolus of gadolinium-based contrast agent through brain tissue is monitored by a series of T2- or T2*-weighted MR images. Signal loss occurs due to susceptibility effect of the paramagnetic contrast agent. The signal intensity–time curve obtained can be converted to contrast medium concentration–time curve by using the principles of the indicator dilution theory. From these data parametric maps of cerebral blood volume (CBV) and flow (CBF) can be derived.

DYNAMIC CON Shade contrast-enhanced MR perfusion: Here serial T1-weighted images are acquired before, during, and after administration of MR contrast media. From the signal intensity–time curve, composite values of parametric Ktrans (transfer constant), vp (fractional plasma volume), and ve (fractional volume of the extracellular extravascular space) are obtained.

ARTERIAL SPIN LABELING MR PERFUSION: In this method, magnetically labeled blood is used as an endogenous tracer. The acquired labeled image is subtracted from the control image to get the final ASL image (CBF maps). There are 3 main types of ASL technique: Continuous ASL, Pulsed ASL and Pulsed-Continuous ASL (Pseudo continuous ASL, pCASL).

intravascular incoherent motion imaging (IVIM): In this recent technique, microvascular perfusion is measured with an MR imaging called intravoxel incoherent motion (IVIM) imaging. Incoherent motion arises inevitably from the thermal diffusion characterized by diffusion coefficient (D) and in biologic perfused tissue, from movements of blood in microvasculature called pseudodifffusion coefficient (D*).

The advantage and disadvantages each of these technique are discussed in detail with respect to tumours and non-tumour conditions.

Dr. Karthik Ganesan

Title Reporting Strategy of Focal Hepatic Lesions: Focus on LI-RADS

Hepatocellular carcinoma (HCC) is the most common primary liver cancer worldwide, and, early diagnosis is critical for optimum patient management. Liver Imaging-Reporting and Data System (LI-RADS) is a comprehensive system for standardized interpretation and reporting of liver examinations performed in at-risk populations. Understanding the LI-RADS algorithm is fundamental to its application in clinical practice. This case-based review, will provide a beginners guide to understand stepwise progression of HCC in at-risk populations and understand fundamentals of LI-RADS algorithms highlighting key major features in clinical examples.
Dr. M V Kameswar Rao

Associate Prof. In Radiodiagnosis Dept. Of Radiodiagnosis M K C G Medical College, Berhampur, Odisha

Ultrasound In Inguinoscrotal Lesions

Ultrasound being the commonest and readily available and cost effective modality of choice for first hand diagnosis is used for all the patients presented in routine opd or casualty for abdominal emergencies. Many a times patients having abdominal complaints are referred where a routine US examination becomes incomplete because there is a concomitant lesion in inguinal region or in scrotum. Emergencies involving inguinal region and scrotal region are very common and are caused by different disease processes. So a thorough USG of Inguinal and Scrotal region becomes inevitable depending on the pathology. A USG of inguinal region is always incomplete without examination of scrotal region also.

Patients with lumps and bumps in inguinal region, all the complaints of scrotal region are worked up with definite USG findings in each cases described in detail. Evaluation of Inguino-scrotal pain, all inguinal hernias, nodal masses, scrotal lesions including infections, trauma, tumors-both benign and malignant, torsions, varicoceles, hydroceles, epididymal lesions are described for specific diagnosis to be made in emergencies for most appropriate treatment to be instituted because some inguinoscrotal conditions have high complication rates.

Use of B-mode, color mode, spectral Doppler mode ,comparison with contralateral side, correlation with clinical history, clinical examination findings are done as a routine procedure in all cases. Some insight into the congenital abnormalities of testis like undescended testis is also made for quick understanding.

Dr M K Mittal

Professor, VMMC & Safdarjung Hospital, New Delhi

Approach to Skeletal Dysplasias

Skeletal dysplasias are disorders characterized by developmental abnormalities of the skeletal system. The prevalence is about 1 in 2000 newborn infants. With advances in sonography techniques many dysplasias can now be diagnosed / suspected during antenatal period. Manifestations of skeletal dysplasias range from a barely noticeable abnormality to a severe and lethal condition. Establishment of a precise diagnosis is important for prediction of adult height, accurate recurrence risk, pre-natal diagnosis in future pregnancies, and, most importantly, for proper clinical management. Exact genetic cause is known in most skeletal dysplasias, because of advances made over the last decade in the elucidation of the genetic defect.

Term skeletal dysplasia is sometimes used to include conditions which are not actually skeletal dysplasia. According to revised classification of the constitutional disorders of bone, these conditions are divided into two broad groups: the osteochondrodysplasias (abnormality of bone and/or cartilage growth) and the dysostoses (abnormality of bone and/or cartilage texture)

For the purpose of uniformity of nomenclature and classification, nosology of skeletal dysplasias was first published about 45 years ago in Paris and named as Nosology and Classification of Genetic Skeletal Disorders. Thereafter it has gone multiple revisions to incorporate continuous advancements especially in molecular and genetic field. The current nosology revision took place in Bologna, Italy in the year 2015, which is 9th edition of nosology. In this version of the nosology, the number of conditions has diseases has gone down (from 456 to 436) while the number of genes has increased many fold. Nosology is not for diagnosis but enumerates and groups various conditions based on genetic, molecular, biochemical and/or radiographic criteria. In the 9th edition of Nosology 436 conditions have been grouped in 42 groups.
Approach to a case of potential dysplasia Workup of skeletal dysplasia includes History (prenatal and family history), Physical examination with measurements and investigations. Routine investigations include Laboratory tests and Radiographic evaluation. Molecular and genetic investigations are done after a limited differential diagnosis is established. Histological examination of cartilage is performed, when available.

For radiological evaluation, skeletal survey of a child with a suspected bone disorder is conducted. In preterm fetuses and stillbirths, an infantogram replaces the standard skeletal survey. Sometimes imaging of other family members suspected of having the same condition, may be helpful, to confirm possible mode of inheritance.

**Analysis of Radiographs**: Radiographs need to be analyzed in an orderly fashion. Offiah and Hall have listed a scheme providing a systematic approach to the skeletal survey to reach a diagnosis. The systematic approach includes (A) Anatomical localization in which the dysplasia is named according to the involved bone and part of bone involved, (B) Analysis of bone for the five “S’s”: Structure, Shape, Size, Sum and Soft tissues.(C) Recognition of complications for the patient management & not for diagnosis. (D) Dead or alive i.e. that a dysplasia is lethal or non-lethal, helps to exclude or confirm a given diagnosis, or affects the subtype of the condition. This approach is called as ABCD.

This approach is exhaustive, confusing and time consuming and even then, it is not always possible, to reach a diagnosis. Therefore some authors have advocated that radiographs should be first analyzed for characteristic features of a few common conditions and diagnosis reached. If a proper diagnosis is not possible then a systematic approach should be resorted to, to reach a diagnosis.

In this talk I attempt to reach a Radiological diagnosis of various conditions which include both common and rare dysplasias, based on one or few radiographs.

Dr Mahesha. B M

**Consultant Radiologist Mahadeshwara Diagnostics Mysore**

**Cardiac MR - Stress Perfusion (Adenosine)**

Coronary artery disease is the significant Cause of mortality and morbidity in adult & elderly population. Assessment of regional myocardial Perfusion is crucial in evaluation & Therapeutic decision making in patients with Known or Suspected Coronary artery Disease. Cardiac MR Stress study has become standard for Evaluation of Perfusion distribution in patients with Ischemic Heart disease by using Vasodilator drug Adenosine.

Adenosine Stress perfusion CMR has been demonstrated to provide reliable information about relevant Myocardial perfusion. In Stable patients with CAD will provide great accuracy in identifying the patients who will benefit from Revascularization & also Negative predictive value for an event free follow is excellent. CMR provides High resolution, No radiation & no attenuation problem related images. Goal of Perfusion during stress (Pharmacological vasodilation). Myocardial blood flow increases 4-5 fold downstream of normal coronary arteries, but does not increase downstream of severely diseased arteries

**Indications**: Suspicion of CAD, Significance of Coronary stenosis in relation to Ischemia, Estimation of ischemic zone & post revascularization analysis.

**Contraindications**: Allergy to Adenosine, Acute MI, Aortic Dissection, Severe HTN, Bradycardia / Heart block.
CMR Procedure: Multicomponent CMR stress testing protocol Cine MRI for the assessment of Cardiac morphology and Function at baseline.

Stress perfusion MRI to visualize regions of myocardial hypoperfusion during vasodilation (Adenosine infusion + Gd Injection) by using IR – GRE / FLASH Sequence.

Adenosine is infused over a period of 4.0 mins at a dose of 140 micrograms/kg/min with 10 ml saline chase. Perfusion sequence is started together with a 0.075mmol / kg Body weight of Gd – DTPA at a rate of 4 ml / sec as First pass study.

Rest perfusion MRI helps in distinguishing true perfusion defects from image artifacts (Gd injection), done after 10 mins of Stress Study by administering 0.075mmol / kg Body weight of Gd – DTPA at a rate of 3 ml / sec Intravenously.

Delayed – Enhanced contrast (DEC) Study for the determination of myocardial infarction, by using IR – SSFP Sequence at 5, 10, 15, 20, 25 & 30 mins in the post contrast period.

Interpretation:

Ischemia: appears nonenhancing hypointense defect involving Myocardium during the Adenosine Stress perfusion (1st pass of contrast), more in subendocardium & resolves from edge to centre of defect. No defect seen in Rest perfusion study. No Enhancement / Hyperintensity in Delayed Contrast Study.

Infarct: Enhancing Myocardium in the Delayed Contrast phase with hypointense defect in Stress study.

Normal: No defects in perfusion study. No enhanced area in Delayed Contrast study.

Summary Cardiac MR Stress perfusion study is emerging as an improved method for detecting coronary artery Disease. When combined with Delayed Enhanced Study the sensitivity, specificity, and diagnostic accuracy is at highest level. Cardiac MR perfusion stress study is appropriate for evaluating / ascertaining physiologic significance of indeterminate CAD.

Dr. Mahesh Prakash

USG and MRI in evaluation of peripheral nerves:

Ultrasound has emerged as a powerful tool for evaluation of peripheral nerves with advancement of USG hardware and software. There are advantages of ultrasound over MRI like low cost, portability and dynamic evaluation. Ultrasound has higher edge to edge resolution. MRI has advantage of complete evaluation of area where the peripheral nerve pathology is suspected. The subtle change like early edema is better depicted by MRI, Magnetic resonance neurography (MRN) is relatively newer imaging technique for evaluation of nerve pathologies. This technique enhances the visualization of peripheral nerve in various planes by using high resolution nerve selective and nonselective MR sequences.

Detailed understanding of nerve anatomy, pathophysiology and imaging features on various MR sequences are important for accurate interpretation. The normal nerve size is usually similar to adjacent artery. The abnormal nerve will show focal or globular thickening of nerve. The signal of nerve is isointense to TI and T2W images. The abnormality in signal will be increased hyperintensity and may be similar to vein. Other features like fascicular pattern, course of nerve, perineural fat and enhancement must be evaluated for making correct diagnosis.
Pulmonary Aspergillosis: New epidemic or old foe

Background / purpose: Pulmonary aspergillosis is an enigmatic and challenging pulmonary infection. The disease spectrum and pathogenesis is greatly determined by the immune status of the affected individual and any pre-existing local structural lung damage. The aim of Imaging is to understand the constellation of radiological findings which can be seen in different forms of pulmonary aspergillosis.

Teaching Points: The spectrum of pulmonary aspergillosis varies from asymptomatic colonization of the lung by fungal hyphae to fulminant, life-threatening course. The final diagnosis usually comes from a combination of clinical, radiological and immunological findings. In hyperimmune individuals, it presents as allergic bronchopulmonary aspergillosis (ABPA) which is a manifestation of type I hypersensitivity reaction to fungal antigens. In immunocompromised individuals, invasive form of aspergillus is seen which may be airway invasive or angio-invasive. This disease is severe and can be life threatening, so early diagnosis is necessary. In patients with pre-existing fibrocavitary lung disease, chronic pulmonary aspergillosis (CPA) is seen which is often misdiagnosed and can keep smouldering for years in the absence of high index of suspicion and poor knowledge of imaging findings.

Imaging findings: ABPA is seen in atopics and it complicates asthma and cystic fibrosis. ABPA has non-specific features on chest radiography. High resolution computed tomography (HRCT) is the imaging modality of choice. It presents with central bronchiectasis, consolidation, centrilobular nodules and mucus plugging. Presence of high attenuation mucus (HAM) on HRCT is considered pathognomonic of ABPA.

Invasive form of aspergillosis is seen almost exclusively in immunosuppressed patients and it can be airway invasive or angioinvasive. Airway invasive form presents as air space or peribronchiolar consolidation. In angioinvasive form, HRCT can show multiple nodules with surrounding ground glass opacities (CT Halo sign). Though it is not specific for aspergillus but it is the earliest sign of invasive fungal infection in appropriate clinical setting.

Radiological forms of CPA includes simple aspergilloma (single cavity with fungal ball), Chronic cavitary pulmonary aspergillosis (one or more cavities with fungal balls showing slow increase in size), Chronic necrotizing pulmonary aspergillosis (rapid increase in cavity size), and Chronic fibrosing pulmonary aspergillosis (fibrotic destruction of atleast two lobes). Depending on worsening or improving immunity, these various forms of CPA can interchange and can also coexist within the same patient. In addition, pleural thickening and pericavitary infiltrates can also be seen.

Conclusion: Radiologists need to be aware of the various imaging manifestations of pulmonary aspergillosis in appropriate clinical and immunological settings so as to assist the clinician in reaching at an early and correct diagnosis and to avoid any further complications.

Airway imaging in pediatric age group is a challenge; owing to the problems of breath-hold and the resultant poor image quality. CT remains the main workhorse of airway imaging; however for pediatric airway imaging the technique should be adequately modified. Also, a thorough knowledge of airway anatomy is very crucial in order to interpret the pathology.
Various airway disorders include intrinsic airway abnormality (such as primary tracheobronchomalacia, developmental anomalies such as bronchogenic cyst, tracheobronchial atresia, fistula etc); as well as secondary airway abnormalities caused by lymph nodes, masses or aberrant vascular structures. This talk will discuss the technical nuances as well as the imaging findings of common airway pathologies in children.

Dr. Milind Gune

My Talk On Day 3 - Session II Artificial Intelligence

TIME OF TALK: 11.40 TO 12.00 HRS

TALK UPDATED: AI AND CHEST RADIOGRAPH

This Presentation Will Review The History And Progress of AI Applications In The Chest Radiograph

A Review Of Literature, Discussion Of Key Concepts Such As Convolutional Neural Networks, NLP And Prediction Models And Illustrative Cases Will Be Presented; The Latest Updates In This Field Will Be Discussed

Dr. Mohit Agarwal

MRI biomarkers in Neurocognitive disorders

The workgroup tasked by the National Institute on Aging and Alzheimer’s Association for revising the 1984 criteria for Alzheimer’s disease (AD) gave its recommendations in 2011. The workgroup emphasized that there were many features of the original 1984 criteria that required revision. One of the key aspects to the need for revision was the extreme heterogeneity of ‘possible’ AD dementia, many patients of which will now include individuals with mild cognitive impairment (MCI). There also was relative lack of acknowledgement and lack of complete characterization of other dementing conditions such as dementia with Lewy bodies, fronto-temporal dementia, primary progressive aphasia etc.

The workgroup integrated the use of biomarkers (MRI, FDG-PET and CSF assays) in AD dementia such that while clinical criteria remain the cornerstone of diagnosis, biomarker evidence is expected to enhance the pathophysiological specificity of the diagnosis. Although widespread use of structural MRI, one of the major three biomarkers, is not yet an established standard of care in routine clinical practice, data continues to accumulate indicating its inevitability in the near future, especially in the management of patients presenting with MCI, who may or may not have AD as the underlying pathophysiological process.

Mild cognitive impairment (MCI) is now an established clinical entity which characterizes individuals with persistent but minor cognitive deficits that do not fulfill the clinical definition of dementia. A person with MCI is at increased risk of developing Alzheimer’s disease (AD) or another dementia.

The implications of this statement include the importance of early recognition of the underlying pathology responsible for MCI in a given patient. Volumetric analysis of AD and other dementias has shown the heterogeneity of regional volume loss in these patients, with the probability of AD being higher in patients with hippocampal atrophy. To this end, other research-based MRI biomarkers such as arterial spin labelling (ASL) and diffusion metrics such as mean diffusivity (MD) and fractional anisotropy (FA) also hold promise where ASL can be used as a surrogate marker for synaptic dysfunction and MD can be used as a marker for neuronal injury and microstructural disintegrity. Although considerable overlap exists, pattern of regional volume loss and ASL/MD abnormalities, with or without the involvement of the hippocampus, can help in the differentiation of these dementias. Detection of biomarker changes early in the disease course, such as
in the preclinical phase or in the MCI phase is of potential benefit since therapy may be effective in early stages. In a study 45% reduction in the rate of hippocampal atrophy was observed in prodromal AD following 1 year of donepezil treatment. Preparing caregivers and families for the long-term care of these patients is also an important advantage of early diagnosis. Additionally, misdiagnosis of AD can add to significant healthcare costs of up to $14,000 per year, which can be mitigated by use of techniques that can improve AD diagnosis.

Dr. N. Chidambaranathan
Head of Department of Radiology, Apollo Hospitals, Chennai 60006

Imaging of Musical Networks in the Brain

Music plays an important role in brain maturation. Music promotes communication, social, cognitive, and emotional development. It helps in Occupational & Rehabilitation therapy. Music is strongly linked to motivation and to human social contact. Music is like breathing—all pervasive. Music is a core human experience and a generative process that reflects cognitive capabilities.

Music can affect the brain in many ways, many of which are just now being studied. Music therapy—the clinical application of music to treat a wide range of diagnoses using physiological and medical approaches—has advanced dramatically over the past decade. It is proving to be an effective clinical tool for treating medical diagnoses such as Alzheimer’s disease, autism, post-traumatic stress disorder, dementia, stroke, NICU infants, language acquisition, dyslexia, pain management, stress and anxiety, coma, and more.

Music is an exceptionally emotionally rich and engaging sensory stimulus. Music is a universal feature of human societies, partly owing to its power to evoke strong emotions and influence moods. Cognitive neuropsychology and functional neuroimaging studies in the healthy brain have shown that the neural mechanisms involved in analyzing music are intimately linked to the machinery of pleasure and reward. Emotion in music is processed by a complex distributed brain network architecture, including salience and evaluation systems in the insula, amygdala, and orbitofrontal cortex projecting to mesolimbic and subcortical dopaminergic pathways.

Functional neuroimaging studies on music and emotion show that music can modulate activity in brain structures that are known to be crucially involved in emotion, such as the amygdala, nucleus accumbens, hypothalamus, hippocampus, insula, cingulate cortex and orbitofrontal cortex. The potential of music to modulate activity in these structures has important implications for the use of music in the treatment of psychiatric and neurological disorders.

Functional MR imaging (fMRI) has been used to study music perception in humans. Music perception involves the processing of several activities that mainly include i). Musical syntax, ii). Musical meaning, iii) Auditory working memory, iv) . Emotional aspects.

Music activates multiple brain networks during music listening, responding & performance.

• Activity levels in different places in the brain responded similarly from one individual to the next to the same music.
• Subcortical auditory structures in the midbrain and thalamus showed significantly greater synchronization in response to musical stimuli.
• Midbrain auditory processing centers worked more or less in real time, while the right-brain analogs of the Broca’s and Geschwind’s areas appeared to chew on longer stretches of music. These structures may be necessary for holding musical phrases and passages in mind.
Investigating emotion with music: fMRI study.

Functional magnetic resonance imaging, or fMRI, is a technique for measuring brain activity. It works by detecting the changes in blood oxygenation and flow that occur in response to neural activity. Pleasant music activates:

- Inferior frontal gyrus (IFG, inferior Brodmann’s area 44, BA 45, and BA 46)
- Anterior superior insula
- Ventral striatum
- Heschl’s gyrus
- Rolandic operculum.

Rolandic operculum, anterior superior insula & ventral striatum – form a motor-related circuitry that serves the formation of (premotor) vocal sound production during the perception of pleasant auditory information.

**Activation associated with melody familiarity for participants.**

- The neural basis of melody recognition in a network comprising cortical regions within the superior temporal, inferior and superior frontal, middle orbitofrontal, supramarginal, and precentral gyri.
- Older adults engage additional resources in superior frontal and parietal areas whereas younger adults preferentially employ the superior temporal region.
- Unpleasant music showed activations of amygdala, hippocampus, parahippocampal gyrus, and temporal poles. These structures have previously been implicated in the emotional processing of stimuli with (negative) emotional valence (Unpleasant emotion).
- A cerebral network comprising these structures can be activated during the perception of auditory (musical) information.

**MRI study of happy & sad affective states induced by classical music.**

- Presentation of Happy music showed increased activity in the ventral and dorsal striatum, anterior cingulate, parahippocampal gyrus, & auditory association areas.
- Presentation of neutral music was associated with increased activity in the insula and auditory association areas.
- With sad music, increased activity responses were noted in the hippocampus/amygdala & auditory association areas.
- On fMRI, in children with musical training showed enhanced activation of specific areas of the prefrontal cortex, supplementary motor area, the presupplementary area, & the right ventrolateral prefrontal cortex -- are linked to executive function.
- Executive functions are high-level cognitive processes that enable people to quickly process & retain information and a strong predictor of academic achievement.
- On cognitive testing, adult musicians and musically trained children showed better performance on several aspects of executive functioning.
Proposal of this Study

How Happy/sad music influences emotion & network
How our emotions are affected by music is that there are two kind of emotions related to music: perceived emotions and felt emotions.

Our music choices can predict our personality. Can improve Classical music visual attention
Significance of musical training in children
How Music Activates the emotional & reward network of the brain

Reference:

Jennifer L. Agustus, Colin J. Mahoney, and Jason D. Warren et al., Functional MRI of music emotion processing in frontotemporal dementia


Nandine Gaab, Lab of Cognitive Neurosciences at Boston Children's Hospital, June 2014

Dr. Nafisa Shakir Bhata

Rotator cuff injuries: Role of MRI

Shoulder movement, specially initiation of abduction relies on the functional integrity of the tendons and muscles rotator cuff, predominantly involving the supraspinatus, which generates rotational torque to glide the humerus into the incongruent glenoid cup, providing balanced compression and stability in a wide range of motion.

Rotator cuff tears are due to intrinsic tendon weakness or extrinsic forces impinging upon the cuff, and sometimes result of direct trauma.

This lecture will guide you through various types of cuff tears, explicitly describing but simplifying them according to size, position, shape, thickness, retraction, extension, and relevant clinical details, and accurate pre & postoperative prognostic factors, reliably guiding patients’ treatment outcomes.

A short obligatory focus will be attempted, to the adjunct pathologies of biceps tendon, humeral head, superior labrum, bony variants, which are supplementary and mandatory observations in rotator injuries, working out a complete reporting prototype.

Dr. Narainder Gupta

Tracheal Diseases / Pathology

The tracheobronchial tree should be carefully assessed on the imaging studies of the thorax. This is to ensure detection of disease as the symptoms of tracheobronchial tree diseases are non-specific and often misdiagnosed as asthma. Wide variety of pathology can affect trachea including benign and malignant diseases. These include cartilaginous, inflammatory/infectious, deposition diseases as well as neoplastic disorders. The diseases affecting the cartilaginous portion of trachea spare the posterior membranous part of trachea as in tracheobronchopathia osteochondroplastica and relapsing polychondritis. Sarcoidosis, amyloidosis, Granulomatous polyangiitis, tuberculosis can present with lung lesions and papillomatosis can
do the same. Overall tracheal tumors are uncommon but malignant involvement is commoner than benign involvement. Squamous cell carcinoma is the commonest tracheal malignancy.

Good, Bad & Ugly of Tubes & Lines in critically sick This review would discuss and illustrate normal and abnormal positioning of the nonvascular as well as vascular support devices particularly in intensive care settings. In addition, circulatory support devices would also be illustrated. Included in the review are chest tubes, nasogastric tube, naso-enteric tubes, central venous catheters, umbilical venous as well as arterial catheters, pacer and automatic implantable cardioverter defibrillators (AICD), intra-aortic balloon pump (IABP) as well as ventricular assist devices (VAD).

Dr. H.T. Narayana, Bangalore.

Us Imaging In Uterine Anomalies

Female infertility needs multimodality and multidisciplinary approach for a definitive assessment and to plan management schedules.

Uterine anomalies are one of the major contributing factors for infertility. Accurate assessment of anomalies is crucial for treatment triages.

Trans-vaginal ultrasound is the primary investigation of choice for uterine anomalies. Combined with 3D all the uterine anomalies can be diagnosed accurately by about 90-95% of cases.

USG is almost equal to and is superior to MRI imaging. This presentation covers classification, diagnostic pathways and planning treatment guidelines.

Dr. Natasha Gupta

Assisted Reproductive Techniques and Follicular Monitoring

There is a dramatic rise in the incidence of assisted reproduction in the past decade. There are various techniques for ART, of which, In Vitro Fertilization (IVF) is the most popular. IVF involves the following steps- Ovarian stimulation, Ovum retrieval, Fertilization & Embryo culture and Embryo Transfer.

Ultrasound, particularly TVS, has an indispensable role in IVF. It helps to perform baseline pelvic assessment and evaluation of ovarian reserve prior to ART. In the IVF cycle, USG plays an important role during the steps of Ovarian stimulation, Oocyte retrieval and Embryo transfer.

Serial sonographic study of the ovary is done in the follicular phase of menstrual cycle for Follicular monitoring. This helps to estimate follicular maturity, predict the time of ovulation so that ART intervention can be appropriately timed, and to identify patients at risk for Ovarian Hyperstimulation. Oocyte retrieval and Embryo transfer are also carried out under sonographic guidance.

Various 2D and 3D ultrasound techniques are available for ovarian and follicular evaluation- 2D real time scanning, stored 2D cine loops, with and without use of tissue harmonics, 3D multiplanar views, Volume contrast imaging, Inversion mode, Sonography based Automated Volume Calculation (Sono-AVC) and 2D & 3D pulsed doppler.

However, there are many complications of ART that are not infrequent in occurrence, which the radiologist needs to be familiar with, for an early accurate identification and management.
Anterior Complex Imaging

Learning Objectives

- To understand the anatomical composition of Anterior complex.
- To describe normal appearance of the various components with normal variants.
- To understand abnormalities of various components and their significance.

Anterior complex is a group of anatomical structures visualised in routine transventricular view of fetal brain, comprised of anterior interhemispheric fissure, callosal sulcus, corpus callosum, cavum septum pellucidum and anterior horns of lateral ventricles.

Normal appearance of anterior complex is a strong indicator of normalcy of fetal CNS. Deviation from normal is a reliable indicator of midline defects and should prompt for a detailed neurosonogram.

- **Interhemispheric fissure** Interhemispheric fissure is the anterior most component of the anterior complex and is linear in form in normal cases. Any widening or distortion of the interhemispheric fissure is an indicator of a possible callosal agenesis or other midline cerebral anomaly and should warrant a direct assessment of corpus callosum in mid-sagittal sections.

- **Callosal Sulcus** Callosal sulcus forms a T shape with interhemispheric fissure in normal fetal brain. It is defined as distorted if there is any deviation from the T shape. Absence of the T is an obvious indicator of absence of genu.

- **Genu of corpus callosum** Genu of corpus callosum should be visualised in all anterior complexes after 20 weeks. Presence/Absence and appearance should be studied to rule out cases of callosal agenesis and dysgenesis.

- **Cavum septum pellucidum** Cavum septum pellucidum in an anechoic CSF filled space between anterior horns of lateral ventricles and can have a square or a triangular form.

- **Anterior horns of lateral ventricles**- Anterior horns are seen on either side of CSP and can have a ‘Comma’ shape or a triangular shape with a lateral base. Any deviation from these shapes can be defined as dysmorphic and warrants further investigations.

Appearance of Anterior Complex In Cerebral Malformations

**Agenesis of corpus callosum**: Interhemispheric fissure is widened, Callosal sulcus and genu are not visualised and Cavum septum pellucidum is absent with dysmorphic anterior horn in some cases.

**Partial Agenesis of Corpus callosum**: Genu is thin or not visualised. May be normal. Cavum may be atypical in shape with dysmorphic anterior horn.

**Hamartomas of Caudate nucleus**: CSP may be atypical in shape with dysmorphic anterior horn. Nodular heterotopias CSP may be atypical in shape with dysmorphic anterior horn.

**Holoprosencephaly**: Anterior horn complex is grossly distorted.

**Schizencephaly**: Callosal sulcus may be distorted with dysmorphic anterior horn and atypical CSP.
Pitfalls: Genu and callosal sulcus can be only faintly visualised in 18-20 weeks scan so their assessment at that gestation is limited.

CONCLUSION: Anterior complex after 20 weeks is a robust indicator of cerebral midline as well as cortical malformations. Majority of foetuses with cerebral malformations will display abnormality in anterior complex.

Dr. Neera Kohli

Congenital Renal lesions (CRLs)

CRLs can be described effectively by grouping them in the categories given below:

Agenesis: May be U/L or B/L Supernumerary

Kidneys: Have been reported rarely. Both these conditions are easily diagnosed by USG, DMSA, CECT, & retrograde pyelography

Rotational anomalies: Non rotation & incomplete rotation; Commonest. Kidney is in fetal or almost fetal position respectively. Excessive rotation; hilum faces posteriorly or postero-medially with renal vessels lying posterior to kidney. Reverse rotation; hilum faces laterally, upper ureter is displaced laterally & vessels lie anterior to the kidney. Seen satisfactorily by IVU, CT & MR urography

Abnormalities of position: Ipsilateral/uncrossed ectopia; kidney is on same side as its ureter & vesicle opening. It can be cranial or caudal. In cranial type, kidney is placed postero-medial in the lower thorax, either within a diaphragmatic hernia or below a localised diaphragmatic eventration. 2nd type is called an intrathoracic kidney. In caudal type kidney is positioned b/w L3 & iliac crest. If within the iliac fossa, it is iliac ectopia. If in true pelvis, then it is pelvic ectopia. Crossed renal ectopia; kidney is on other side of midline with respect to its ureteral orifice. It may be fused/ unfused/ solitary. Fused crossed ectopia; or U/L fused kidney, is commonest. Ectopic kidney crosses midline to fuse with the orthotopic kidney, usually at its lower pole. X- Ray chest, US, IVU, CECT, CT angiography, DMSA scan establish the diagnosis.

Fusion Anomalies: Horseshoe kidney is commonest. It is asymptomatic in 90%. Lower poles fuse in midline by an isthmus of parenchyma or fibrous tissue. Nephrogram is U shaped on IVU, CT & MR Urography, as lower calyces curve towards midline near the isthmus ® a hand holding position

Ureteropelvic duplication (Duplex Kidney): Two separate pelvicalyceal systems are present

Partial duplication /bifid ureters: Both ureters join before entering the bladder. Complete duplication: Ureters open separately. Weigert- Meyer rule applies in 85% cases. Two ureters & two contrast jets are seen entering the bladder on IVU & CT urography. Poor/no contrast excretion is seen in the upper moiety. VCUG shows reflux in lower pole & in ureterocele (if present).

Renal Hypoplasia: Kidney is smaller than normal but functions well. Numbers of calyces are less than 7. Ureter is normal

Cystic renal dysplasia: Autosomal recessive polycystic kidney disease (ARPKD); Characterized by B/L symmetrical small cysts. Liver cysts, bile duct ectasia & periportal fibrosis are always present. Child has variable degree of renal & hepatic failure. Antenal US show oligohydramnios, & markedly enlarged hyper-echoic kidneys. Post natal US shows homogenously hyperechoic, solid, & enlarged kidneys. Peripheral hypoechoic halo due to compressed cortex may be seen. CECT shows prolonged striated nephrogram. Multicystic
dysplastic kidney (MDK); in neonates it is only 2nd in frequency to hydronephrosis. Diseased kidney is non functional. Types: Pelvi-infundibular- commoner. Cysts represent dilated calyces. Hydronephrotic: Rare. Cysts represent dilated pelvi calyceal system. At times it is difficult to differentiate MDK & a large PUJ block. Usually 1 large lateral cyst is seen in MDK, whereas in PUJ block dilated pelvis is central & calyces extend out from it. Dynamic Nuclear Scan differentiates the two. Autosomal dominant polycystic kidney disease (ADPKD); Multiple B/L large cysts are present. Cysts may also be seen in: liver- 50%, pancreas- 9%, brain, ovaries, spleen & testis- 1%. Renal contour is smooth, size & echo-texture is normal in smaller children on US. Kidney is enlarged in older children. Round radiolucent defects with smooth margins, may be seen in nephrographic phase (Swiss cheese pattern) of IVU.

**PUJ Obstruction:** Commonest cause of neonatal hydronephrosis. PUJ obstruction in duplex system generally involves the lower moiety. Duplex Doppler is used to differentiate b/w obstructive & non obstructive hydronephrosis. RI of > 0.7 in peripheral intra renal arteries indicates obstruction in patients > 4 yrs. Diuresis renography is an adjunct to IVU for confirming obstruction in prominent pelvis & to detect intermittent PUJ block.

**Prominent normal extrarenal pelvis:** incidence is about 10%. Absence of symptoms, prompt post contrast opacification of calyces, normal sized calyces with sharp fornices & quick clearing of contrast in prone or erect films; differentiates this from PUJ.

Post operative evaluation. Imaging needn’t be done right after surgery as there is edema at the site of operation. IVU/ renography should be done 3-6 months after surgery. Maximum recovery is seen in 6 months. Delay in appearance of recovery signs beyond 6 months indicates poor clinical result.

**Dr. Niraj Dubey**

**Imaging features of Benign soft tissue tumors**

There is a bewildering and huge array of benign soft tissue tumors of the body. Consequently there are different ways of classifying them. They can be classified by their histology, by their tissue of origin (WHO Classification) and by the location ie skin, subcutaneous tissue, intramuscular, retroperitoneal etc etc. However a comprehensive practical way eludes most workers and a practical way to classify would be related to their frequency of occurrence and probability of encountering them in routine clinical practice. This talk will attempt to follow the last mentioned method without prejudice to any of the previously mentioned systems.

It will be well appreciated that all the current imaging modalities that are available to the practicing radiologist would be useful in imaging these lesions. However, making optimum utilization of resources would dictate that the most easily available and economical modalities such as plain x rays and US scanning be made use of where they are sufficient and the more sophisticated and complex modalities such as MRI be reserved for problem solving and imaging of deep seated lesions.

By far the most common benign soft tissue lesions encountered in routine clinical practice of an MSK specialist would be ganglion cysts and lipomas. While both these lesions have fairly conclusive and specific features on US studies, an MR study may be needed in some cases to distinguish the multiple varieties of lipomatous lesions of the body. Conversely an MR may be the primary mode of investigation of a suspected retroperitoneal lipoma.

Most Imaging departments have a regular so called “lumps and bumps clinic” where the commonly occurring superficial benign lesions, which are easily identified by the patients and are of immediate concern to them, are encountered and this talk will follow a similar pattern of presentation. Various commonly encountered
benign lesions of overt concern to the patient will be illustrated and as a logical follow up step the most common imaging modality utilized will be US scanning.

It is hoped that such an approach will be of use to the practicing musculoskeletal radiologist in delivering accurate reports using optimal and economical imaging modalities.

Dr. Nirmalya Ray, Dr. Niranjan Khandelwal, Dr. Paramjeet Singh, Dr. Vivek Gupta, Dr. Chirag Ahuja, Dr. Manish Modi, Dr. Naveen Sankhyan

Compressed Sense Magnetic Resonance Imaging Of Brain for Reduction of Time of Acquisition And Its Comparison With Conventional Magnetic Resonance Imaging Of Brain Regarding Image Quality

1 Department of Radiodiagnosis and Imaging, PGIMER, Chandigarh.
2 Department of Neurology, PGIMER, Chandigarh.
3 Department of Paediatric Medicine, PGIMER, Chandigarh.

BACKGROUND AND PURPOSE: Reducing the complexity and length of examinations has been a major direction of research in MRI in recent years. (1-3) To reduce the scan time duration for patients without compromising the resolution and information contents of different MR images, the possible use of newly developed scan acceleration methods like compressed sensing has been realized. In this study, compressed sensing is combined with the parallel-imaging or SENSE infrastructure, i.e., Compressed SENSE (CSENSE), for accelerating anatomic MR data acquisition in human brain by exploiting the multi-element receiver coil sensitivity variation and sparsity constraining. The main aim of this study was to compare the quality of images acquired by conventional MRI and CSENSE MRI for various brain MRI sequences including TOF MR angiography sequences.

MATERIALS AND METHODS: A total of 227 patients, undergoing brain MRI for various indication were included in the study. All MR examinations were performed on 3 T MRI scanner (Philips Ingenia 3 Tesla KONINKLIJKE MRI system, Best, Netherlands) using a 24 channel head coil. The patients were divided into routine MRI group and MR angiography (MRA) group. Out of the 227 patients, 169 patients were included in the routine MRI group while 58 patients were included in the MRA angiography group. In the routine MRI group, axial T2, 3D FLAIR, pre- and post-contrast 3D T1, SWI and DRIVE sequences were acquired using conventional and CSENSE technique while in MRA group TOF MRA head and neck was acquired using both the techniques. The process of additional CSENSE sequence was randomised. The patients who underwent routine MRI brain had additional sequences for MRI brain done only while those patients needing MRA for their clinical indication had additional MRA sequences for MRA only. All the CSENSE sequences, except DRIVE, were acquired with two acceleration factors with either of them applied to a particular patient. The acceleration factors for different sequences and time reduction achieved are summarised in table 1.

The images were evaluated based on a pre-defined scale by three neuro-radiologists, having 10 years, 7 years & 5 years of experience in evaluating brain MRI and were blinded to the set of images they were evaluating, have evaluated the images independently regarding image quality The scale was based on visualisation of 10 anatomical brain structures for routine MRI group (grey-white junction, basal ganglia, thalamus, subarachnoid space sharpness, ventricles, cerebellar structures, brainstem, hippocampus, centrum semiovale, and corpus callosum). Visibility of cranial nerves and/or inner ear structures (if done for IAC) as well as lesion visibility were assessed (if done for characterisation of a lesion on DRIVE sequence. SWI was evaluated by looking at iron/calcium/ mineral deposition at bilateral globus pallidi, red nuclei, dentate
nuclei, choroid plexus, pineal gland and cortical veins (a total of 6 structures) on the system generated susceptibility maps. Visibility of petro-cavernous and supracallosal segment of bilateral internal cerebral arteries, V4 segment of vertebral arteries, M1, M2 and M3/M4 segments of middle cerebral artery, A1, A2 and A3/A4/A5 segments of anterior cerebral artery, P1, P2 and P3/P4 segments of posterior cerebral arteries, anterior communicating artery, basilar trunk were assessed on TOF MRA of intracranial vessels. Visibility of origin of great vessels, proximal, middle and distal 1/3rd of common carotid arteries, carotid bulb and proximal 1/3rd, middle and distal 1/3rd of internal carotid arteries and V1, V2 and V3 segments of vertebral arteries were assessed on TOF MRA extracranial vessels. The visualisation score for vessels which are bilateral were done separately. Visibility of each structure or a vessel on a specific sequence by both techniques was graded by a 4-point scale as follows: 4= excellent, 3= moderate, 2= seen but limited, 1= poor. The images were further evaluated for resolution, lesion conspicuity on a 3-point scale (1=Poor, 2=Average, 3=Good) and for artefacts as well (1=Significant and image cannot be evaluated, 2=Average but image can be evaluated, 3=None or minimal). The overall diagnostic confidence was evaluated using a 7-point scale (1=Non-diagnostic, 2= Poor, 3=Acceptable,4=Standard, 5=Above average, 6=Good, 7=Outstanding).

The quantitative evaluation of image quality was done by calculating the apparent contrast background deviation (CBD) as defined by (Mean structure/vessel− Mean background )/SDbackground, where Mean structure/vessel = mean signal intensity of the structure, and Meanbackground and SDbackground are the mean signal intensity and the standard deviation of the background respectively. For 3D FLAIR, pre- and post-contrast 3D T1 sequence, the SI of one of the basal ganglia and centrum semiovale was calculated as the structure of interest and SI of ventricular CSF is calculated at the same slice as the background. The mean of apparent CBD at basal ganglia and centrum semiovale was calculated as well. For SWI, the technique is repeated only for magnitude images, however the mean image contrast ratio of bilateral globus pallidi was calculated. The technique needed to be altered for T2 and DRIVE sequence as CSF has the highest SI on any T2 sequence. For T2, SI of each of hippocampus is calculated as the structure of interest and the SI of ipsilateral temporalis muscle is calculated as the background. The mean of apparent CBD of bilateral hippocampi was calculated following it. For DRIVE, SI of one of the cranial nerve/lesion of interest is calculated and the SI of visualised brain parenchyma is taken as background. For intracranial MRA, apparent SI of each M1 MCA and basilar trunk were calculated as the vessel of interest and SI of background ipsilateral perisylvian cortex or brainstem were calculated as background. Mean apparent CBD was calculated as well. For extracranial MRA, SI at one of the carotid bulb and one of the distal cervical ICA were calculated as structure of interest and SI of ipsilateral sternocleidomastoid muscle at the same slice was calculated. Mean of the apparent CBD was calculated as well.

Statistical analysis was performed using SPSS software version 17 (Statistical Packages for the Social Sciences, Chicago, IL). P value of <0.05 was considered to indicate statistical significance. Interrater agreement was evaluated using the quadratic-weighted κ test (slight agreement, κ < 0.2; fair agreement, 0.2−0.4; moderate agreement, 0.4−0.6; substantial agreement, 0.6−0.8; almost-perfect agreement, ≥0.8). The subjective visualization scores for each segment were assessed using the Wilcoxon signed-rank test. The apparent CBD were compared using a paired t test between conventional MRI & CSENSE MRI sequences.

Results: High inter-rater agreement was found regarding visualisation of different brain structures and for resolution lesion conspicuity, artefacts and overall diagnostic confidence. The image quality for CSENSE for all the sequences was comparable with that of conventional MRI sequences with nonsignificant statistical difference between the two with regards to structural visualisation, resolution, lesion conspicuity and overall diagnostic confidence, as evaluated by Wilcoxon signed-rank test. The apparent CBD difference between conventional & C-SENSE sequences were also equivalent with nonsignificant statistical differences between the two. The results are summarised in table 2.

Conclusion: The results of our study show that images with sufficient diagnostic quality can be obtained using CSENSE technique for routine MRI brain acquisition. At the same time, the acquisition time can be significantly...
reduced compared to conventional technique without compromising significantly on image quality. Thus, CSENSE can be used as a potential tool for reducing image acquisition time without compromising the image quality. This could be of paramount significance particularly in paediatric population or patients requiring sedation or anaesthesia at it can potentially reduce the need for sedation & anaesthesia. More over because of lesser acquisition the sequences can be more useful in emergency conditions like acute stroke.

References:

<table>
<thead>
<tr>
<th>TABLE-1. SUMMARY OF ACCELERATION FACTOR AND TIME REDUCTION ACHIEVED WITH DIFFERENT SEQUENCES</th>
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<tbody>
<tr>
<td>SEQUENCE</td>
</tr>
<tr>
<td>-----------------</td>
</tr>
<tr>
<td>T2 (2D)</td>
</tr>
<tr>
<td>CONVENTIONAL</td>
</tr>
<tr>
<td>CSENSE 1</td>
</tr>
<tr>
<td>CSENSE 2</td>
</tr>
<tr>
<td>3D-FLAIR</td>
</tr>
<tr>
<td>CONVENTIONAL</td>
</tr>
<tr>
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<tr>
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<tr>
<td>CSENSE 1</td>
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<td>CSENSE 2</td>
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<tr>
<td>TOF MRA EXTRACRANIAL</td>
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</tr>
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<tr>
<td>CSENSE 2</td>
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### TABLE-2. MEAN P VALUE AND K VALUE FOR ALL SEQUENCES

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<thead>
<tr>
<th>SEQUENCE</th>
<th>MEAN ± SD</th>
<th>K VALUE</th>
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<tr>
<td></td>
<td>P VALUE</td>
<td></td>
</tr>
<tr>
<td></td>
<td>CONVENTIONAL VS CSENSE A/1</td>
<td>CONVENTIONAL VS CSENSE B/2</td>
</tr>
<tr>
<td>T2</td>
<td>0.16 ± 0.11</td>
<td>0.18 ± 0.12</td>
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<tr>
<td>3D FLAIR</td>
<td>0.18 ± 0.14</td>
<td>0.17 ± 0.15</td>
</tr>
<tr>
<td>PRECONTRAST 3D T1</td>
<td>0.21 ± 0.17</td>
<td>0.15 ± 0.10</td>
</tr>
<tr>
<td>POSTCONTRAST 3D T1</td>
<td>0.22 ± 0.13</td>
<td>0.15 ± 0.11</td>
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<tr>
<td>SWI</td>
<td>0.17 ± 0.15</td>
<td>0.18 ± 0.16</td>
</tr>
<tr>
<td>DRIVE</td>
<td>0.15 ± 0.16</td>
<td>0.14 ± 0.12</td>
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<tr>
<td>MRA INTRACRANIAL VESSELS</td>
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<td>MRA EXTRACRANIAL VESSELS</td>
<td>0.16 ± 0.19</td>
<td>0.19 ± 0.16</td>
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</table>

#### IMAGE GALLERY

Fig 1. Contrast enhanced MRI of a 12 year old male child with left frontal abscess. (A) & (B) T2 axial sequences of brain acquired with conventional MRI & CSENSE MRI technique with acceleration factor of 1.8 respectively. (C) & (D) Axial reformatted image of 3D FLAIR sequences acquired with conventional MRI & CSENSE MRI technique with acceleration factor of 10.8. (E) & (F) Axial reformatted image of T1-GRE pre-contrast sequences acquired with conventional MRI & CSENSE MRI technique acquired with acceleration factor of 4. (G) & (H) Axial reformatted image of T1-GRE post-contrast sequences acquired with conventional MRI & CSENSE MRI technique acquired with acceleration factor of 3.4. The images were considered to have sufficient diagnostic quality by both the observers.
Fig 2. Susceptibility weighted images of a 30 year old male with seizure disorder. A calcified granuloma is noted in right parietal region, showing few haemorrhagic foci in right parietal region. (A) & (B) Magnitude and phase images of brain acquired with conventional SWI. (C) & (D) Magnitude and phase images of brain acquired with CSENSE SWI with acceleration factor of 6.75. The images were considered to have sufficient diagnostic quality by both the observers.

Fig 3. MRI of a 21 year old female patient with focal seizure showing left frontal lobe NCC. Axial reformatted image of 3D DRIVE sequences acquired with conventional MRI & CSENSE MRI technique with acceleration factor of 3.3. The eccentrically located scolex is demonstrated in both the sequences. The images were considered to have sufficient diagnostic quality by both the observers.
**Fig 4.** Intracranial MRA of a 22 year male patient presenting with focal seizure. (A-C) MRA acquired with conventional technique and (D-F) MRA acquired with C-SENSE with acceleration factor of 3. (A-B) and (D-E) axial maximum intensity projection images and (C & F) volume rendered images. The images showed an arteriovenous malformation in left temp region with multiple dilated feeding arteries with intervening nidus. Both the observers considered the sets of images to have equivalent quality and comparable diagnostic information.

**Fig 5.** Extracranial MRA of a 42 year male patient presenting with right sided hemiparesis. (A, C) Consecutive axial images at the level of carotid bulb acquired with conventional MRA. (B, D) Consecutive axial images at the level of carotid bulb acquired with CSENSE MRA with acceleration factor 2. (E, G) Coronal and oblique sagittal reformatted maximum intensity projection images acquired with conventional MRA. (F, H) Coronal and oblique sagittal reformatted maximum intensity projection images acquired with CSENSE MRA with acceleration factor 2. The images show presence of an athero-calcific plaque in right CCA bifurcation extending into right ICA origin causing stenosis (50-60%) (shown by blue arrow) and left proximal cervical ICA dissection (shown by red arrow) with gradual narrowing of distal left ICA. Both the observers considered the sets of images to have equivalent quality and comparable diagnostic information.
HOW TO READ AND REVIEW A MEDICAL MANUSCRIPT.

Scientific publication is an indisputable evidence of research and is a structured document with five sections: abstract, introduction, material/methods, results, discussion and conclusion. The clinical relevance of the paper is of vital importance and should carry a specific message to facilitate diagnosis or treatment either directly or indirectly. The research objective in itself should be targeted to provide solution to a clinical problem. Thorough review of current literature is one of the most important aspects and is the deciding factor in analysing the role and relevance of paper under consideration. Plagiarism and redundant publication should be strongly discouraged. Always remember, ‘intellectual honesty’ is the best policy while ‘writing’ an article. Other vital aspects include ethical and authorship issues related to the scientific paper. The mentor has a tremendous role to play in a scientific publication and is one of the most satisfying aspects of medical profession. By communicating and guiding the young investigator, the mentor satisfies the Hippocratic obligation of passing knowledge to the next generation.

While performing the reviews for the medical manuscripts, Journal Editors perform a crucial role for society and the humankind. Being virtual ‘gatekeepers’ of medical knowledge, Editors regulate the inflow of medical knowledge so as to ensure that the science evolve and progress in the right direction in the best interest of patients. Peer and editorial review process is an indispensable part of indexed bio-medical journals. It is important for the researcher to know and understand the fine-prints of these processes so as to ensure that their research is duly published and acknowledged.

This presentation at the 72nd IRIA conference at Chandigarh during the dedicated session on Radiology journalism will address the important points in Manuscript Reviewing which all Academic Radiologists need to know and understand.
Elbow Ultrasonography US can help clinicians in the assessment of a wide variety of elbow disorders.

INDICATIONS:
1. Tendon overuse syndromes caused by aging, microtrauma, or vascular compromise.
   (Lateral epicondylitis, Medial epicondylitis, Triceps-tendon enthesopathy),
2. Traumatic changes (Partial or total tendon ruptures, Ligament tears, Fractures, Dislocation),
3. Inflammatory diseases (Bursitis, Arthritis), and
4. Neuropathies (Ulnar or radial nerve entrapment neuropathies, nerve instability). It can also detect
5. Joint effusions,
6. Synovial hypertrophy, and
7. Associated marginal joint erosions.

Anatomy:

The elbow joint is composed of three communicating joints that share a common synovial membrane.

1. The humero-ulnar joint - Between the trochlea of the humerus and the trochlear notch of the ulna.
2. The humero-radial joint - Capitulum of the humerus and the radial head.
3. The radio-ulnar joint - The radial notch of the ulna and the radial head.

The synovial membrane of the elbow forms several synovial pouches. The anterior coronoid recess, the
radial recess (located at the level of the radial neck), and the large posterior joint recess found within the
olecranon fossa.

There are two major ligaments that stabilize the elbow joint in the coronal plane: the lateral collateral
ligament and the ulnar collateral ligament.

Synovial bursae are found within the periarticular tissues. The olecranon bursa overlies the posterior aspect
of the olecranon. The cubital bursa, located between the distal biceps tendon and the radial tuberosity.

The common tendon of the extensor muscles of the forearm attaches to the lateral epicondyle while the
flexor muscles originate from a shorter tendon that inserts into the medial epicondyle. The strong triceps
tendon inserts into the posterior aspect of the olecranon process. At the anterior aspect of the elbow, the
distal biceps brachii and brachialis tendons can be seen inserting into the radial tuberosity and the ulnar
tuberosity, respectively.

Examination Technique:

A complete assessment of the elbow requires transverse and longitudinal images of all four aspects of the
joint: Anterior, medial, lateral, and posterior. The joint is studied in both the flexed and extended positions.

The patient seated and the elbow placed on an examination table or with the patient supine. A high-
frequency linear transducer of 10 – 15 MHz is ideal. Various US techniques such as extended field of view,
spatial compound sonography, and harmonics may enhance diagnostic imaging. For the most superficial
structures, a compact linear (“hockey stick”) probe or large amounts of gel are useful.
1. Pathology.

Tendon overuse syndromes: Hypoechoic foci within the affected tendon are associated with loss of the normal internal fibrillar pattern. Hyperechoic areas can also be seen and are related to either fibrosis or calcification. The tendon is frequently thickened, and there is often evidence of enthesopathy manifested by bone irregularity and small, focal calcifications.

**Exclusion of joint effusion is a fundamental step:** it rules out most intraarticular disorders and supports the diagnosis of periarticular involvement.

US can be used to differentiate lateral epicondylitis from posterior interosseous nerve entrapment, chondromalacia, and osteochondritis dissecans of the humeral condyle. Medial epicondylitis can be distinguished from medial epicondylose osteophytosis or medial collateral ligament tears.

2. Traumatic pathology

The most frequent traumatic lesions of the elbow are partial or complete ruptures of tendons (or ligaments, cortical avulsions, fractures, and dislocations.)

US features of complete ruptures include the absence of the tendon in the expected location and the presence of a fluid collection in the gap left by retraction of the proximal tendon stump. The stumps of the acutely ruptured tendon are surrounded by variable amounts of fluid. In the presence of subacute or chronic lesions, there may be an irregular, hypoechoic halo representing granulation tissue and fibrosis. The US findings in cases of incomplete rupture are intratendinous hypoechogenicity and tendon thinning or thickening. Intrasubstance triceps ruptures are relatively rare, while tendon avulsions from the olecranon are more frequent.

3. Inflammatory disorders

The normal paraarticular bursae of the elbow region are not visible on US because of their thin walls and the absence of significant internal fluid, but acute and chronic bursitis can both be easily detected by US. It allows clear visualization of the internal structure of the inflamed bursa, and it can also be helpful in choosing the correct treatment. Most cases of bursitis in this region involve the olecranon and cubital bursae. The former appears as a subcutaneous lump posterior to the olecranon and can be easily diagnosed clinically. US shows thickening of the bursal wall associated with an intralesional, anechoic effusion that will be more or less pronounced depending on the cause of the inflammation (microtraumatic events, infections, rheumatoid arthritis, gout).

4. Neuropathy

The most frequent neuropathy in the elbow is caused by ulnar-nerve entrapment inside the cubital tunnel. US can identify the site of constriction and the proximal swelling of the nerve, which is characterized by internal hypoechoogenicity and loss of the normal fascicular appearance. Dynamic US scans can reveal subluxation of the ulnar nerve when the elbow is flexed even when the nerve returns to its proper place in the sulcus during joint extension.

Compression of the posterior interosseous nerve inside the radial tunnel is usually caused by thickening of the arcade of Frohse or the presence of synovial cysts or ganglia in the radial recess.

This entrapment disorder is associated with US evidence of nerve-fiber swelling and increases in the caliber of the nerve.
Conclusion: Ultrasonogram is an important imaging modality in the evaluation of elbow joint. Being superficial joint excellent anatomic details, pathological conditions and useful for ultrasound guided interventions.

Dr. Pankaj Gupta

Techniques of CT and MR enterography

CT and MR enterography have become the preferred imaging techniques in evaluating patients with suspected small bowel diseases. The techniques employed for CT and MR enterography vary widely across the institutes throughout the world. The most important requisite for an accurate interpretation of CT or MR enterography is the ability to achieve adequate distension of the entire small bowel. This should be achieved in a high percentage of patients undergoing these studies. Patient acceptance is the most important factor determining the success of these imaging tests. The various contrast agents used for luminal distension include polyethylene glycol, water-methyl cellulose solution, mannitol, and low-density (0.1%) barium solution. The volume of the fluid ranges between 1.5 and 2 litres. The use of one agent over the other is a matter of debate and institutional preference. The CT and MR enterography studies also employ intravenous contrast administration. Though CT enterography is one of the more commonly performed procedures, MR enterography provided advantage of not exposing the patients to the ionizing radiations. It is preferred for patients requiring serial imaging studies including patients with Crohn's disease. Virtual CT enteroscopy is a novel technique that represents a modification of the standard CT enterography. This involves distension of the small bowel loops via insufflation of carbon dioxide.

Dr. Pankaj Sharma

Modified Atlanta Classification

Atlanta Classification was introduced in 1992 for acute pancreatitis and modified in 2012 to update the terminology and provide simple functional, clinical and morphologic classifications. This revised classification is directly applicable only to adults (>18 years of age). In Atlanta classification, only two categories were present: Mild or Severe pancreatitis depending on presence or absence of organ failure. In Revised Atlanta classification, third category was added: Moderately Severe acute pancreatitis and this category has substantial morbidity, but less mortality and transient organ failure lasting less than 48 hours.

80-90% of acute pancreatitis is due to Interstitial Edematous Pancreatitis and 5-10% due to Necrotizing Pancreatitis. It is important to remember that pancreatitis-related collections are not always fluid filled and evaluation for nonliquefied components is essential for differentiating collections that contain only fluid (Acute Peripancreatic Fluid Collection and Pseudocysts) from those that contain necrotic nonliquefied debris (Acute Necrotic Collection and Walled Off Necrosis).

Dr. Pradeep Parakh

IRIA 2019, Chandigarh - 19.01.2019 Hall A (12 – 12.20)

Peripheral Venous Doppler Lower Limb – Clinical Indications

Indications of venous ultrasound: USG is highly helpful in diagnosing cases of DVT, Varicose veins, chronic venous insufficiency & post phlebitis syndrome, vein mapping prior to by pass grafts. Veins of lower extremity are: superficial, deep and perforating veins
Superficial veins are: great and short saphenous veins have thick muscular walls and are seen directly below the skin.

Deep veins have thin muscular walls, accompanied by arteries and are paired in legs. Perforators pierce the deep facia and does not accompany arteries, flow is from sup to deep veins.

Since the availability of Ultrasound and Colour Doppler equipments in almost every corner of the country, the Doppler examination has become first choice to diagnose some of the very important clinical conditions like acute DVT which needs emergent medical attention. For this CD is the best diagnostic modality to diagnose it, in which deep veins of the lower limb are dilated, non compressible due to presence of thrombus in the lumen of the vein and no flow, no augmentation, no respiratory variation is seen in the vein. While in chronic cases thrombus shrinks and becomes echogenic and is more attached to the wall of the vein, calibre of the vein is reduced, walls are thick and irregular, intra luminal lesions or fibrous cord like structures can be seen and valve abnormalities, partial flow can be seen in recanalization of the vein.

Patients are examined in supine position, examined with high frequency linear transducer using a low velocity scale. Technique include gray scale imaging to know the anatomy and compressibility of vein with CD & SD with augmentation

In chronic venous insufficiency, valvular insufficiency in venous system leads to reflux or reversal of flow leading to venous hypertension in distal segment. It manifests as oedema, dilated and tortuous veins, leg pain, thickening and pigmentation of skin and ulceration.

Retrograde flow is demonstrated by valsalva maneuver by releasing distal compression and we see abnormal reflux by sustained reflux of more than 0.5 sec (normal closure time of valve is < 0.5 sec).

However it has certain limitations as technique is operator dependent and intensity of valsalva maneuver and compression can not be standardized.

Predisposing factors for DVT are: venous stasis due to immobilization, paralysis or paresis, accidental surgical trauma or major surgery, ongoing cancer treatment & leg swelling or oedema.

**Dr Pramod Lonikar**

*Manik Hospital, Aurangabad, Maharashtra.*

**Unconscious Patient- Imaging Approach & Diagnosis**

**Unconscious patients always poses a diagnostic challenge for Radiologists.**

Unconsciousness is a mental condition state that involves complete or markedly reduced responsiveness to the people and other stimuli.

**Unconscious Patients are categorized under Traumatic & Non traumatic types.**

A systematic approach is needed for diagnosing, which helps in deciding treatment protocols in these patients including surgical interventions. These imaging protocols also helps in following up of progress of disease process.

For which history taking by radiologists is paramount in deciding imaging modalities & approaching towards diagnosis, as imaging findings are overlapping in many cases.
Ultrasound of the Pediatric Chest

The clinical applications of chest ultrasound (US) have significantly increased in recent years. Initially US had mainly been used to assess for presence of pleural fluid. With improvement in technology in the recent past its clinical applications have increased.

Plain radiographs continue to be the cornerstone of pediatric chest imaging.

US has several beneficial advantages such as availability, portability, lack of ionising radiation and should be performed after careful chest X-ray assessment.

Color, power, and pulsed Doppler capabilities permit the visualization of vessels without the need for contrast administration.

The main indications for lung US include:
1. Postnatal study of lung malformations detected in utero
2. Evaluation and follow up of consolidation
3. Assessment of an opaque hemithorax
4. Misleading chest X-ray findings to determine the solid or cystic nature of a focal mass
5. Image palpable wall lesions
6. Clarify inconclusive plain film findings.

Computed tomography (CT) and magnetic resonance (MR) provide excellent images of chest conditions that are easily understood by clinicians. These modalities may not be available and are relatively expensive. Hence ultrasonography (US) has become a well-established tool to supplement plain film findings.

CNS Infections: Role of advanced MR techniques

Central nervous system (CNS) infections are a devastating condition varying from acute to chronic, and needs immediate attention of the clinicians and radiologists for an accurate localization. Prompt detection of intracranial infections may have a significant impact on patient outcomes with regard to morbidity and mortality. Routine MRI techniques help in the localization of the disease, however need support from the advanced MRI techniques like SWI, magnetization transfer MRI, perfusion and diffusion based techniques besides the use of spectroscopy based method to reach accurate diagnosis. Based on the imaging, appropriate empirical therapy may be initiated, complications may be managed appropriately and prognosis to be offered. In some cases, a specific infectious pathogen can be suggested based on typical imaging findings and clinical scenario. In rest of the patients, broad category of infection may be offered among a range of possible etiologies. In this presentation, the author will present an overview on the role of advanced MRI techniques in achieving these goals.
“USG ASSESSMENT OF RHEUMATOID ARTHRITIS”

In 2001, the first guidelines for musculoskeletal ultrasound in rheumatology were published by the EULAR Working Group for Musculoskeletal Ultrasound [Backhaus et al. 2001]. However, there remained a lack of consensus regarding standardized ultrasound definitions of pathology as well as scanning methodology.

This prompted a group of interested international rheumatology ultrasonographers to form Outcome Measures in Rheumatology (OMERACT), an ultrasound task force. This group developed the first consensus set of definitions for ultrasound pathologies based on the OMERACT filter [Boers et al. 1998] in the inflammatory joint diseases in 2005 [Wakefield et al. 2005], which has provided an initial framework for subsequent studies.

Rheumatoid arthritis is a chronic, systemic, auto-immune disease characterized by joint inflammation and destruction.

The disease is usually symmetrical, and involves large and small joints, and it can lead to irreversible destruction.

It affects about 1% of population worldwide, with a prevalence of about 0.7-0.8% Indian population being affected. There is an increased prevalence amongst women (4:1).

As per the new ACR/EULAR 2010 Guidelines of diagnosis of Rheumatoid arthritis, ultrasound can be used as an adjunct to clinical examination and laboratory investigations.

Over the last 20 years, ultrasound has established as a very useful tool for Musculoskeletal Disorders in general, and Rheumatoid arthritis in particular.

High resolution ultrasound has the advantages of easy availability and low cost, being non-invasive, no ionising radiation being involved, with a good patient acceptability, dynamic imaging and multiplanar imaging, repeatability, with an advantage of capacity to image multiple small joints/multiple sites can be assessed in one sitting, and in OPD, and is useful in local injection guidance. (Radiographics Nov/Dec 2015)

Hallmark of Rheumatoid Arthritis on ultrasound is synovitis, characterised by synovial hypertrophy on grey scale and hyperemia on power Doppler. Bony erosions, and tendon involvements and rheumatoid soft tissue nodule formation can be assessed with High resolution ultrasound.

Role of ultrasound in rheumatoid arthritis in particular is in the following points-

1. Global inflammatory activity can be assessed
2. Evaluation of sub clinical inflammatory process- sonography is better than clinical examination
3. Monitoring response to therapy with DMARDs (methotrexate, hydroxychloroquin etc /Biologics)
4. Evaluation of sub-optimal treatment responses;
5. Evaluation of patients in “Clinical Remission” —over 30% of patients fulfilling remission criteria according to DAS/ACR/EULAR criteria still had progression in joint damage (Saleem B Annals of Rheum 2011)
6. Detection on subclinical synovitis in suspected RA/Established RA.
7. Injection guidance
Dynamic High resolution ultrasound is the preferred technique, using dynamic manoeuvres and power Doppler.

**GRADING OF SYNOVITIS ON ULTRASOUND**

**OMERACT: semiquantitative score 0 - 3 SYNOVITIS**

**OMERACT: semiquantitative score 0-3 Szkudlarek et al. Arthritis Rheum 2003**

**OMERACT: semiquantitative score 0-3. Naredo E, et al. ARD 2012**

For gray scale synovitis (i.e. hypoechoic synovial hypertrophy), many authors have used the following scale: Grade 0 = absence of visible synovial hypertrophy, grade 1 = mild hypoechoic synovial hypertrophy, grade 2 = moderate hypoechoic synovial hypertrophy (with some amending to a hypoechoic bulge above the line of the adjacent bones) and grade 3 = marked hypoechoic synovial hypertrophy (with some amending that this is extension to one of the two diaphyses or more). Additionally, a 0-3 score for power Doppler of small joint inflammation is commonly used ranging from 0 = no Doppler signal into the synovial hypertrophy to 3 = severe, when more than 50% of the synovial hypertrophied lining shows Doppler signal. In particular, the most commonly scoring system for power Doppler scores the severity as follow: grade 0 = absence of signal, grade 1 = up to three single vessel signals or two single vessel plus one confluent signal, grade 2 = moderate, signal occupying less than 50% of the synovium, grade 3 = marked, vessel signals more than 50% of the synovial area. A number of studies have shown good intraobserver and interobserver agreement for power Doppler scores with lesser degrees of agreement for gray scale scores (Naredo et al 2008, Ellegaard et al 2009, Hammer HB 2010)

**SCORING IN BONE EROSIONS**

Erosions are generally taken as an intra-articular step-down discontinuity of bone, which are documented in two perpendicular planes, measuring at least 1mm across. (Wakefield RJ. Et al Arthritis Rheum 2000; Møller U. Et al Arthritis Res Ther 2006 ; Szkudlarek M et al Arthritis Res Ther 2006 ; Gutierrez M. Et al Rheumatology 2010)

**Different nomenclatures are available for erosions.**

**semiquantitative score 0-3**

The high resolution dynamic ultrasound pick up sensitivity of ultrasound is as high as that of MRI, and is about Seven times more sensitive than skiagrams for erosions assessment!

**Sites to find bone erosions**

-1,2 and 3rd and 5 th mcp jts; and 2 and 3 pip jts of wrist also, radial aspects of 2nd and 3rd mcp, lateral aspect of 5 th mcp jts; Lateral aspect of 5 th mtp; Medial aspect of 1 st mtp; In the pip jts, erosions along medial and lateral aspects; Metacarpals earlier erosions along dorsal aspect, and along phalangeal bases, later volar also; In feet dorsal erosions appear earlier than planter erosions, In knees along medial and lateral joint margins;Elbow –in region of capitullum/radial head region;Ankle more common at talonavicular joint. Sometimes erosions co exist with synovitis-Active erosions

**SCANNING PROTOCOLS IN ULTRASOUND IN RHEUMATIOD ARTHRITIS**

*The first scoring systems involved upto 68 joints Several different scoring systems have been studied and validated *The validated Spanish 12 joints score system including feet
included B mode and PD with a semiquantitative score according to OMERACT (Outcome measures in RA) recommendations, studied (E Nadero , Arthritis Rheum 2008)

*The validated Berlin score examines seven joints, including hands and feet, with a PALMAR view in the hands for B mode(M Bachaus, Arthritis Rheum 2009)

RA and other inflammatory polyarthritis can involve tendons and bursae

Scoring systems limited to tenosynovitis/including synovitis have been evolved(E Nadero Annal Rheum Dis 2012)

*German 7 joints score includes tenosynovitis of wrists and fingers. But their prognostic significance has not yet been fully evaluated(M Bachaus, Arthritis Rheum 2009)

SWiss SONAR Score (SWiss Sonography in Arthritis and Rheumatism) analyses 22 joints, similar to those in DAS score, but excludes thumbs and shoulders

Included palmar views on B mode, with semiquantitative assessment in accordance with berlin score, and dorsal view in Pd-10-15 min of scanning time

Scheel et al 6 joint count 2nd through 4th mcp and pip jts for evaluation of treatment efficacy (Arthritis Rheum 2005)

2010 Eular/ACR new guideline for diagnosis of RA propose that USG with PD is a useful adjunct tool for diagnosis.

Contrast enhanced ultrasound has also been used in limited studies to assess active Synovitis, and has been found useful.

**Limitations of Ultrasound in assessing Rheumatoid Arthritis Disease activity:**

1. User Dependent
2. Lack of Expertise-Long Learning Curve
3. Echo window required
4. Cannot assess bone in RA
5. High end equipment requirement.

Future of High Resolution Ultrasound in Rheumatoid arthritis in disease activity assessment, as has been established in state of the art publications and validation studies, and should be used by the rheumatologist, like a stethoscope in the hands of a clinician, monitoring the basic and advanced therapeutics of the disease and monitoring the disease activity as described. Although the learning curve is there, dedicated radiologist, in musculoskeletal ultrasound in general, and ultrasound in rheumatoid arthritis in particular, would be an arsenal in the armamentarium of management of a chronic disease process, which is affecting about one percent of the population.
Mediastinum: Anatomy and masses

The mediastinum is divided into convenient compartments to develop a differential diagnosis. Mediastinal anatomical classification on the radiograph into anterior, middle and posterior mediastinal compartments will be discussed based on Felson's classification. On the lateral radiograph the anterior and middle compartments can be separated by drawing an imaginary line anterior to the trachea and posteriorly to the posterior border of the heart and inferior vena cava. The middle and posterior compartments can be separated by an imaginary line passing 1 cm posteriorly to the anterior border of the vertebral bodies. The value of recognizing various lines and stripes will be addressed to locate the site of the mediastinal mass based on PA chest radiograph and the corresponding correlations will be shown on CT.

The common lesions in the anterior mediastinum are usually of thymic or lymph node origin.

In children, germ cell tumours are common tumours. The 4 T's make up the mnemonic for anterior mediastinal masses: Thymomas, Teratoma (germ cell), Thyroid masses and Terrible Lymphoma. The characterization of these tumours bases on internal contents and imaging findings will be discussed during the talk.

The most common middle mediastinal masses includes foregut duplication cysts (bronchogenic cysts and duplication cysts) or lymphadenopathy. Congenital anomalies of arch may present as mass in the middle mediastinum. Various examples and the relevant imaging findings will be discussed.

Most posterior mediastinal masses are neurogenic in origin. They arise from nerve roots, like schwannoma or neurofibroma or they may arise from the sympathetic ganglia, like neuroblastoma. Posterior mediastinal masses may be of lymph node origin, vertebrae or descending thoracic aorta. Cystic posterior mediastinal lesions includes neuroenteric cysts, cystic schwannomas and meningoceles. The imaging differential diagnosis of these masses with examples will be shown.

Sonography of Salivay Galnds

The major salivary glands are paired parotid, submandibular and sublingual glands.

The minor salivary glands are numerous ~450 to 1000, distributed in the head and neck region.

The major salivary glands are Predominantly superficial structures that are readily accessible to ultrasound (US) assessment.

US has several qualities making it an ideal first-line technique for salivary gland evaluation, including wide availability, low cost, safety, excellent spatial resolution, real-time assessment, and image guidance for needle biopsies and therapeutic aspirations.

US cannot assess tissues that are deeply sited or obscured by bone, including deep lobe of parotid and deeply sited lymph nodes, or evaluate specific features of malignancy, including perineural spread and bony invasion.
USG technique:

- High frequency probes 5–12-MHz linear transducers. In large tumors and lesions located in deep portions of the glands, 5–10 MHz transducers may be useful.
- Entire salivary glands and all lesions have to be evaluated in two perpendicular planes.
- Entire neck should also be scanned to assess lymph nodes and look for concomitant or related disease.

PAROTID GLAND:

Facial nerve is the anatomical reference to divide the parotid gland into superficial and deep lobes in the parotid space.

Retromandibular vein is the sonography marker to the facial nerve as it lies lateral to the vein.

Extends from the external auditory canal superiorly to the level of the angle of mandible inferiorly.

Distal branches of the ECA are within the gland posterior to the vein.

Intraparotid lymph nodes predominantly seen in the superficial lobe.

Stenson’s duct: emerges from the anterior aspect of the gland and seen as two parallel echogenic lines within the superficial lobe opens at the level of upper second molar tooth.

Distal ICA seen near the deep margin of the parotid gland.

Submandibular gland:

Paired glands located in the posterior aspect of the submandibular space posterolateral to the mylohyoid muscle, which partially indents it and divided into the superficial and deep lobes.

Facial artery and vein course obliquely along its lateral aspect.

Wharton duct exits the gland and has antigravity drainage, passes between the mylohyoid muscle and hyoglossus muscle and courses medially to its orifice at the sublingual caruncle medial to the sublingual gland. Lingual vein also courses along the duct.

Sublingual gland:

Paired glands located in the anterior aspect of the sublingual space lateral to the genioglossus and geniohyoid muscles and anteromedial to the mylohyoid muscle.

The submandibular duct runs on the medial aspect of the sublingual gland.

Approach and role of USG in salivary gland pathologies:

US examination should first determine whether an abnormality is salivary because many extrasalivary masses, such as epidermal (sebaceous) cysts and enlarged upper cervical lymph nodes, commonly mimic salivary masses clinically.

If a salivary abnormality is identified, its precise sonographic features in conjunction with the clinical presentation usually permit classification into one of several diagnostic categories, which include inflammatory conditions (including infections, obstructive sialadenitis and autoimmune disease), neoplasms and other nonneoplastic masses.

ENDOVASCULAR MANAGEMENT OF GI BLEEDING:
Dr. Rajeev Suri

1. Epidemiology and etiology of GI bleeding
2. Brief overview of diagnostic modalities for GI bleeding to define bleeding source
3. Overview of existing and newer embolic agents and stent grafts
4. Evidence based review of superselective endovascular management of upper and lower GI arterial bleeding with provocative measures
5. Evidence based review of endovascular management of variceal bleeding to include TIPS, BRTO, CARTO
6. Summary and take-home points for management of GI bleeding

Dr. Rajesh Gothi

MD( AIIMS) Senior Consultant Radiologist

Holy Family Hospital, New Delhi

Good old chest X-rays, Are their days over?

This is a natural question in an era of rapidly changing technology. Cutting edge medicine is looking for faster and more accurate ways of reaching a diagnosis and solving clinical queries. The pace of life is such today, that what was good enough yesterday, is no longer good enough today and will certainly not remain good enough tomorrow.

Radiology, being a technically derived subject, is bound to see changes as we go along.

Future generations would wonder how an X-ray chest could ever be relied upon to make a diagnosis and may possibly admire our guts for writing down a diagnosis based merely on a chest X-ray.

So, are the days of a chest x-ray over?

Not yet!

Looking at the 2 year statistics of the radiology department at my 350 bedded general hospital, I found a third of the work load was of Chest X-ray (single view).

This is probably true of every centre in the country. Some, especially dedicated chest hospitals may be doing even more.

So, chest x-ray being done away with, is an unlikely scenario in the near future.

Dr. Rajesh Kannan

Imaging algorithms in congenital heart disease

To plan effective management of congenital heart disease, one needs the clearest understanding of the anatomy. Echocardiography and angiography are the traditional imaging modalities used to diagnose congenital heart disease. Although echocardiography and angiography are the dominant imaging modalities in patients with congenital heart disease, magnetic resonance...
(MR) imaging and computed tomography (CT) are valuable noninvasive adjuncts. MR imaging and CT are effective in demonstrating the complex cardiovascular morphology present in congenital heart disease, especially the extra cardiac morphology.

**Introduction:** As a result of significant improvements in survival of children with congenital heart disease, the population with these diseases is rapidly growing. This has resulted in an increasing need for diagnostic and interventional procedures that require imaging of the heart. Echocardiography remains the most commonly used tool for this purpose. However, echocardiography may be limited by poor acoustic windows in some patients. In particular, extra cardiac structures such as the great arteries and great veins may be difficult to profile. Historically, diagnostic cardiac catheterization was indicated when lesion location or severity could not adequately visualized by echocardiography. However, cardiac magnetic resonance imaging (CMR) can now often answer unresolved anatomic questions noninvasively.

The ability to image in arbitrary planes is complemented by true 3-dimensional MR angiography (MRA) to yield superior anatomic and functional data for both intra cardiac and extra cardiac structures. Populous developing nations like India have a huge disease burden of CHD, many of the patients being older, with uncorrected or partially palliated complex lesions. Despite its powerful diagnostic advantages in this specific clinical milieu, cardiac MRI is yet to find widespread acceptance, the reasons being poor awareness regarding CMR and its clinical utility, infrastructural costs and lack of trained Personnel. CMR offers several advantages over other imaging modalities, including soft tissue contrast, lack of ionizing radiation, a capacity for true three dimensional imaging, accurate flow quantification, and freely selectable imaging planes. These advantages and continued advances in MR hardware, software, and imaging techniques are bringing CMR into more widespread use in pediatric cardiology.

**Technical aspects:** Cardiac magnetic resonance of the pediatric patient involves a unique set of technical challenges above and beyond those encountered in adult imaging. Anatomical structures are smaller, demanding greater spatial resolution; heart rates are high, demanding higher temporal resolution; and patients may be sedated or uncooperative, rendering breath-hold imaging strategies useless. Most patients under 8 years who undergo a cardiac MR study will need either intravenous sedation or general anesthesia with endotracheal intubation. Endotracheal intubation with pharmacologically induced paralysis is needed if breath-holding is desirable. Phased-arrays coils are used universally for cardiac imaging, since they provide optimal signal-to-noise ratio (SNR) and the ability to utilize parallel imaging techniques. Commonly used imaging planes include axial planes for an overview of cardiovascular anatomy or evaluation of branch pulmonary artery stenosis and anomalous pulmonary venous return, conventional vertical long axis, four chamber and short axis planes for functional analysis, and customized double-oblique planes for evaluation of baffles and conduits and coronaries.

Black-blood, white blood cine and 3D angiography offer complementary insights into congenital pathophysiology. Black-blood imaging offers superior resolution, contrast, and decreased sensitivity to metal artifacts. White blood cine imaging provides physiologic context to the anatomy, demonstrating flow patterns, valve motion, qualitative assessment of stenosis/regurgitation, and cardiac function. Contrast enhanced MRA (CEMRA) offers superb depiction of small vessel disease while also yielding the best three-dimensional representations of vessel relationships. Taken together, these tools can answer many questions formerly studied by diagnostic catheterization. Quantification of blood flow is done using velocity-encoded cine MRI (VEC-MRI). Since this method is based on the principle of phase shift, it is also called phase-contrast imaging. This is used to determine volumetric flow data by imaging the vessel of interest in cross-section. From this set of images, instantaneous flow (i.e., mL/sec during the respective heart phase) is calculated by drawing an ROI around the vessel and integrating velocity over the vessel area in each time frame. This can, for instance, be used
to calculate the cardiac output by assessing flow through the pulmonary valve. Peak velocity measured by this method can be used to calculate pressure gradients using the modified Bernoulli equation (peak pressure gradient=4×peak velocity^2). Acquisition of time-resolved 3D flow data in a 3D volume can be used to investigate complex flow patterns like post fontan shunts.

Cardiac MRI in congenital heart disease can be used for both anatomical as well as functional cardiac assessment.

Anatomical assessment: Anatomic characterization represents the first component of a carefully-planned, integrated CMR assessment of CHD. For identification of anatomy according to the system of sequential segmental analysis, MRI is an excellent technique.

Common indications for anatomical assessment with MRI in congenital heart disease are

Abnormalities of the aortic arch (coarctation, interruption, double arch, common arterial trunk, vascular slings)

Pulmonary artery anomalies (aorta-to-pulmonary collaterals, pulmonary sling, peripheral pulmonary stenosis)

Anatomy of the pulmonary veins, including anomalous pulmonary venous drainage, & pulmonary vein stenosis, often post-intervention and intracardiac

Baffles, such as may be present after atrial redirection procedures for transposition of the great arteries (Mustard and Senning operation) or the Fontan procedure for univentricular hearts, venovenous collaterals

CMR has really become a standard-of-care for evaluating the aortic arch as well as arterial-bronchial relationships. MRI can be used in the evaluation of various aortic arch anomalies, coarctation of aorta and truncal anomalies.

In addition to the evaluation of arch abnormalities, CMR represents a standard-of-care for pulmonary artery evaluation. Not only does it offer high resolution static and dynamic imaging of stenoses, but CMR can assess the functional significance as well through phase-contrast volumetric flow measurements. Although white blood cine techniques work well for proximal stenoses, distal pulmonary obstruction is often best highlighted by CEMRA.

In addition to characterizing great artery location and stenoses, CMR is also ideally suited to evaluating the great veins. These connections are usually easily defined by CEMRA in the coronal plane, however white blood cine imaging is often sufficient for diagnosis. The inability to distinguish between arteries, veins, and bronchial structures (except by tracking them) makes black-blood imaging generally less useful in pulmonary vein questions.

Two dimensional MR imaging is superior to angiographic techniques, either invasive or noninvasive, for characterization of systemic venous abnormalities because it may be difficult or impossible to deliver effective contrast concentrations to the veins of interest. As a result, CMR is superior to echo and to cardiac catheterization for defining venous abnormalities for pre surgical planning in heterotaxy patients. CEMRA may be a useful adjunct to two-dimensional imaging, particularly for defining veno-venous collaterals, but injection sites must be matched to the anatomic question.

Black blood images can be used in the diagnosis of heterotaxy syndrome to assess viscero atrial, bronchial situs and other associated anomalies.
Although MRI is most useful for extracardiac abnormalities, it is also quite helpful in characterizing complex intracardiac relationships when echo views are restricted or inconclusive. Since poor exercise tolerance and ventricular failure represent a final common pathway for many forms of CHD, delayed hyper enhancement imaging to assess scar may provide significant prognostic information for adults with CHD. Recent work suggests the delayed gadolinium enhancement of the systemic right ventricle, perhaps serving as a surrogate marker for myocardial fibrosis, correlates with right ventricular failure and arrhythmias in adult atrial switch patients.

**Functional Assessment**

1. **Imaging of basic function**: In addition to morphology, modern CMR techniques allow the visualization of function and flow in a temporally resolved manner. Among the pathologies where these methods play a major role are shunts, septal defects, aortic coarctation, anomalies of the pulmonary arteries, and valvular regurgitation. Information on blood flow in the major vessels such as aorta, pulmonary arteries, central veins, and surgical conduits, is obtained from velocity-encoded cine (VEC) MRI. Information on tissue motion is readily available from cine steady-state free precession (SSFP) MRI in arbitrary orientations. Finally, for a more accurate evaluation of tissue motion and calculation of strain data, myocardial tagging is available.

For ventricular volumetrics, a number of adjacent images are acquired in the short axis orientation covering the entire heart from apex to base. By contouring the endocardial borders of the ventricles on end diastole and end systole, parameters like end diastolic, end systolic volumes and ejection fraction can be calculated. Several studies have shown very small values for inter study variability of MRI for quantifying ventricular volume and mass. This renders it the optimal technique for monitoring ventricular function in patients over time and offers a distinct advantage to echocardiography, especially when evaluating RV volume and function.

Cine MR images are also employed to evaluate valvular function. The high velocity jet caused by valvular stenosis and regurgitation may be identified on SSFP images as flow void (dark structures caused by intravoxel phase dispersion in the presence of turbulent flow. Even though no volumetric numbers of jets are available with this method, extent and duration of the jet allow drawing semiquantitative conclusions on the severity of the defect.

2. **Velocity-encoded MRI**: Functional and VEC-MRI are useful for the evaluation of left-to-right shunts, especially for partial anomalous pulmonary venous connection, sinus venosus atrial septal defects (ASD) and supracristal ventricular septal defects (VSD). These lesions may be more problematic for echocardiography compared to other left-to-right shunts. VEC cine MRI may be employed to measure the pulmonary and aortic flow and to calculate pulmonary to systemic flow ratio (Qp/Qs).

MRI is the procedure of non-invasive choice for definitive diagnosis and assessment of the severity of coarctation. Velocity-encoded cine MRI can be applied to demonstrate the presence and estimate the volume of collateral circulation to the descending aorta below the coarctation site. This is accomplished by prescribing two imaging planes perpendicular to the aorta; one is located about 2 cm beyond the coarctation, and the other at the level of the diaphragm. In the normal aorta, volume flow is greater (about 5–7% greater) at the proximal site. On the other hand, in presence of a hemodynamically significant coarctation, volume flow is greater at the diaphragm because of retrograde flow through intercostal and mammary arteries and other collaterals into the distal aorta. The presence of greater volume flow at the diaphragmatic level is considered a functional indicator of hemodynamic significance of the coarctation. VEC cine can also be used to estimate the gradient across the coarctation.

VEC-MRI offers the unique capability to assess differential flow in the right and left pulmonary artery in patients with a disparity of blood flow between the right and left pulmonary artery. Such disparity of flow can occur in patients with pulmonary stenosis, hypoplasia, or atresia, or in patients with tetralogy of Fallot. Pulmonary valve insufficiency may be seen as flow jets into the RV outflow tract on SSFP images.
Quantitative assessment of both forward and regurgitant flow is obtained from VEC-MRI in a plane approximately 2 cm distal to the pulmonary valve, allowing for calculation of regurgitant fraction.

**Post operative evaluation**

In post operative CHD patients, repeated assessment of the function of the left and right ventricles or single ventricle is required during follow-up. Quantification of residual shunts and/or valvular lesions may also be important in the follow-up of these patient groups.

MRI is a particularly useful technique for these purposes. Firstly, MRI provides an unobstructed and intrinsically 3-D view of the heart, which is particularly useful for quantification of right ventricle and single ventricular function. The right ventricle is located behind the sternum, which is a problem for echocardiography. The shape of the right ventricle is complex and may vary considerably in congenital heart disease. The altered geometry of ventricles makes it unattractive to assess cardiac chamber dimensions with echocardiography in patients with right or single ventricular lesions. Secondly, in various situations with haemodynamic relevance, quantification of flow through valves and/or large vessels contributes to clinical assessment. Phase-contrast MRI has been validated as a useful technique to quantify flow. In contrast to echocardiography, phase-contrast MRI may provide quantification of actual flow volume, which may be very useful in different situations.

Cardiovascular magnetic resonance (CMR) has evolved during the last 2 decades as the reference standard imaging modality to assess the anatomic and functional sequelae in patients with repaired TOF. Postoperative TOF is one of the most common diagnoses in patients referred for CMR. The goals of CMR in patients with repaired TOF include quantitative assessment of bi ventricular volumes, imaging the anatomy of the right ventricular outflow tract, pulmonary arteries, aorta, and aortopulmonary collaterals, quantification of PR, cardiac output, and pulmonary-to-systemic flow ratio and finally assessment of myocardial viability with particular attention to scar tissue in the ventricular myocardium aside from sites of previous surgery (e.g., ventricular septal defect and RVOT patches). Cine and VEC MRI have been found to be preferred techniques for monitoring RV function and pulmonary regurgitation in patients with tetralogy of Fallot. RV functional parameters derived from CMR have been used to detect early signs of deterioration of RV function in the presence of severe pulmonary regurgitation. Recovery of RV function has been shown with CMR after pulmonary valve replacement.

Another common application is assessment of flow through intra cardiac baffles and Fontan operation. MRI can be used to assess cause of Fontan failure and baffle obstruction. A promising new development is imaging of flow in the heart and large vessels in 4-D. This has been a research tool that has led to increased insight in intracardiac and large vessel flow patterns and that may be relevant for long-term outcome. Currently, assessment of 4-D flow has not been incorporated in clinical workflow in most institutions. This may rapidly change as soon as quantification of 4-D flow will become a practical possibility.

**CT versus MRI in CHD**

Cardiac MRI gives anatomic and functional information without exposing the patient to ionizing radiation. However, administering long sedation and anesthesia in critically ill children in the closed MR environment carries significant risks. CT has the advantages of easy availability and very short scanning times. The drawbacks of CT include patient exposure to ionizing radiation and the risks of iodinated contrast material.

The decision to image with CT versus MR imaging should be based on institutional equipment, scheduling, and availability as well as the patient’s ability to cooperate. The need to tailor the examination to answer the specific questions being asked may also guide the choice of CT versus MR imaging.
Conclusion: MRI has become a very important additional imaging tool in the clinical management of congenital heart disease. Its main strengths are anatomical imaging, which is of particular importance in the large vessels, for retrosternal structures (and in patients with poor acoustic windows). For functional imaging, intrinsically 3-D assessment of the size and function of heart chambers with complex geometry, such as the right ventricle and single ventricles is an established reference technique.

Velocity-encoded MRI has various indications on congenital heart disease, particularly in the assessment of intracardiac shunt size and quantification of valve regurgitation.

In summary, CMR currently offers a wide range of clinical applications which show distinct advantages in the pediatric population, where invasive exams and X-ray exposure are to be avoided. Availability of CMR has the potential to positively impact the development and maturation of surgical practices in selected CHD programs in developing nations like India.

References:
Bowel & Mesenteric injuries

Bowel and mesenteric injuries are the third common type of injury from blunt trauma abdomen, although penetrating trauma can also lead to these injuries. Often there is missed or delayed diagnosis of these injuries due to multiple factors. All bowel & mesenteric injuries are surgically significant. The injuries that require surgical intervention include complete and seromuscular tear, devascularized bowel, active mesenteric bleeding and mesenteric injury associated with bowel ischemia. CT is the most sensitive and specific diagnostic modality for diagnosis of these injuries and it helps us to diagnose the injuries which require surgical intervention and ones which can be managed conservatively. The most common features of these injuries are Intraperitoneal & retroperitoneal fluid.

Specific findings of bowel injury are extraluminal air, extraluminal contrast, bowel wall defect and Intramural Air. Less Specific findings of bowel injury are Bowel wall thickening and abnormal enhancement.

Features specific to mesenteric injury are injury to the mesenteric vasculature and mesenteric extravasation. Less specific findings of mesenteric injury are mesenteric Infiltration and mesenteric hematoma.

Imaging & Staging of Pancreatic Cancer

Pancreatic cancer is an aggressive malignancy with dismal prognosis and its incidence is increasing. Strategically located deep in the retroperitoneum, it can potentially involve many crucial arteries, veins and nerves catering to liver, spleen, stomach and bowel. Ductal adenocarcinoma is the most common non-endocrine pancreatic malignancy. After colorectal malignancies, pancreatic carcinoma is the second most common malignancy of the gastrointestinal tract. Pancreatic adenocarcinoma is the fourth most common cause of cancer-related deaths in the US. There have been many advances in the imaging and surgical management of pancreatic malignancies. Nevertheless, patient survival is dismal owing to early lymphatic and perineural spread. Pancreatic carcinoma has a propensity to spread via celiac and mesenteric neural plexus and this results in preclinical dissemination.

Multidetector computed tomography (MDCT) is the investigation of choice for diagnosis and staging of pancreatic cancer. Thin sections, multiplanar reformation and high spatial resolution enable accurate delineation of tumor extent on MDCT. Transabdominal sonography may also detect larger lesions and depict local invasion, however the accuracy is much less. Magnetic resonance imaging (MRI), endoscopic ultrasound (EUS) and positron emission tomography–CT (PET-CT) are also useful in the diagnostic assessment of pancreatic malignancy. However they are used as problem solving tools and for niche indications.

Imaging Findings

Pancreatic cancers are solid scirrhous tumors with reduced perfusion compared to normal parenchyma. They are infiltrative and incite surrounding inflammation and desmoplastic reaction. These lesions tend to obstruct and constrict the ductal structures, causing jaundice and pancreatitis. Pancreatic head is the commonest location (60-70% cases) and thus biliary obstruction is frequent in pancreatic adenocarcinomas. Head is the part of pancreas to the right of SMV while body is to the left. Also, head lesions are detected
at a relatively earlier stage because of biliary obstruction, whereas body and tail lesions may grow large before producing significant symptoms. Thus, lesions in the body and tail region are large at presentation and have areas of necrosis / haemorrhage within. Pancreatic carcinoma commonly metastasizes to the liver, peritoneum, lungs and bones.

Pancreatic cancers are usually solid hypoechoic on ultrasound and upstream ductal dilatation (diameter of pancreatic duct > 2mm) may be seen. Margins are ill-defined and irregular. On colour Doppler examination, no significant internal vascularity is seen. Larger lesions may have necrosis within and show infiltration of surrounding structures. Lesions in the pancreatic head often result in biliary dilatation.

On the late arterial phase CT or MRI, the masses are hypodense in more than 90% cases. In addition to the attenuation difference, larger masses also produce a contour bulge of the pancreas, and the fat planes with adjacent structures may be lost. 5-10% of the pancreatic carcinomas are isodense to the surrounding parenchyma and thus difficult to detect based on attenuation values. The problem is further compounded because these isodense cancers are frequently small (< 2 cms.) and may not deform the pancreatic contour.

MRI is useful in such cases with lesion being hypointense on T1W FS images, against background hyperintense parenchyma. MRI may visualize up to 79% of isodense pancreatic lesions. T2W images depict the mass as having intermediate signal intensity and are not much helpful in demonstrating the mass; but heavily T2W images depict ductal dilatation and obstruction quite well. Calcification is unusual in pancreatic adenocarcinoma. Pancreatic adenocarcinomas show heterogeneous diffusion restriction on DW MRI and their ADC values are lower than surrounding parenchyma. Addition of DWI to conventional sequences increases the sensitivity of detection of pancreatic cancer.

The secondary findings include dilatation of the pancreatic duct with or without biliary dilatation. Biliary dilatation occurs in case of lesions located in the pancreatic head as well as may occur due to metastatic lymph node enlargement compressing the suprapancreatic portion of common bile duct. The pancreatic duct may be abruptly cut off with upstream dilatation and may be the only clue to diagnosing small isodense and non-contour deforming lesions. Double duct sign is seen in cancers located in the pancreatic head and represents dilatation of both pancreatic and biliary ducts due to obstruction of both PD and adjacent intrapancreatic part of common bile duct. Long standing lesions may cause distal parenchymal atrophy as well. Both pancreatic phase and venous phase images are important for accurate assessment of staging. A characteristic feature of liver metastases from pancreatic adenocarcinomas is flow-related phenomenon, seen on the late arterial phase images. This can either be in the form of thin peripheral contrast enhancement around hypodense metastases or perfusion abnormalities like transient hepatic attenuation difference. Liver metastases are best detected on T2W and diffusion-weighted MR sequences. Peritoneal dissemination is suggested by the presence of ascites, omental thickening and peritoneal nodularity. Peritoneal nodules are better visualized on DW MRI and PET-CT.

**Differential Diagnosis:**

Focal pancreatitis (including autoimmune type) is an important diagnostic consideration especially because secondary changes of upstream ductal dilatation or atrophy may be seen. Mass-forming chronic pancreatitis (MFCP) is chronic inflammation usually involving the pancreatic head. History of repeated episodes of acute abdomen and presence of calcifications indicates underlying chronic calcific pancreatitis. Pancreatic duct in the latter shows long smooth narrowing or irregular beaded appearance. The “Duct penetrating sign” refers to non-obstructed attenuated duct, which traverses the mass instead of getting cut-off and is used to differentiate an inflammatory pancreatic mass from malignancy. DW MRI and perfusion CT can also help to differentiate focal chronic pancreatitis from malignancy. EUS may be helpful in these cases and guided sampling may be done.
Autoimmune pancreatitis is characterized by elevated serum IgG4 levels and is treated with steroids and does not require surgery. The focal form can mimic malignancy on imaging. Absence of pancreatic duct dilatation, diffuse involvement, halo-like peripancreatic smooth hypodensity and extrapancreatic manifestations of IgG4-related sclerosing disease may help in differentiating from carcinoma. The pancreatic and biliary ducts may show irregular wall thickening and enhancement. Homogeneous enhancement (similar to surrounding parenchyma) and duct penetrating sign may help in differentiating mass-forming autoimmune pancreatitis from carcinoma.

Paraduodenal / Groove pancreatitis is a type of chronic focal inflammation localized to the space between the pancreatic head and the second part of duodenum. It is seen more often in middle aged men with history of alcohol abuse. Imaging appearance is in the form of ill-defined sheet-like thickening and bulky pancreatic head with delayed enhancement. There is a pure form which affects only the pancreato-duodenal groove and a segmental form which affects the groove and may extend medially to involve the pancreatic head. Cystic changes may be seen especially in the medial duodenal wall along with duodenal wall thickening. Pancreatic ductal dilatation is usually not seen.

Neuroendocrine tumors are usually small in size and show hypervascularity on the pancreatic phase imaging. Ductal dilatation is uncommon, as opposed to pancreatic carcinomas. Non-functional neuroendocrine tumors are large and heterogeneous with areas of necrosis and calcification within. They may appear similar to ductal adenocarcinomas in the body and tail region because the latter also have large heterogeneous appearance. Cystic pancreatic tumors also come in the list of differentials in this scenario.

Metastases to pancreas are not common and most of these patients have metastatic lesions elsewhere in the body also. Primary malignancies which can metastasize to the pancreas include lung, breast and renal carcinomas and melanomas. Metastases can be solitary, multiple or diffuse infiltrating. Enhancement characteristics are similar to the primary lesion,

Lymphomatous involvement of the pancreas occurs frequently by direct infiltration from adjacent enlarged lymph nodes and is more common in non-Hodgkin lymphoma. Other manifestations include single / multiple homogeneous focal masses showing little contrast enhancement. Ductal dilatation is infrequent, as is necrosis and calcification.

STAGING OF PANCREATIC CANCER

After diagnosis, the next step is to assess the resectability of the lesion and also patient’s suitability for pancreaticoduodenectomy. Surgery is beneficial only if R0 resection (negative margins on pathology) is possible. Thus it is important to avoid unnecessary laparotomy in rest of the patients since there is little survival benefit. The criteria to determine resectability rely more on specificity than sensitivity to avoid denying the benefit of surgery to potentially resectable patients. CT and MRI are equally accurate in the staging of pancreatic cancers. The spread of pancreatic cancer depends on its location. Anteriorly located head lesions spread towards gastroduodenal and common hepatic arteries while posterior lesions cause early involvement of SMV-PV and replaced / accessory right hepatic arteries (arising from SMA). SMV is more commonly involved in head lesions, compared to SMA. This is because SMV is nearer to the head and also because arteries have thick muscular walls compared to thin walls of veins. Tumors located in the uncinate process have a propensity to grow along jejunal branches of SMA and SMV and thus perineural spread is common. Tumors located in the body and tail region have a tendency to infiltrate splenic vessels and hilum of the spleen. In advanced cases, stomach, gall bladder and duodenum may also get involved.

There are three categories as per National Comprehensive Cancer Network (NCCN) criteria: resectable, borderline resectable and unresectable. Location of the tumor and vascular involvement are the important determining factors for categorization. It is important to note that arterial encasement (contact > 180 degrees or half the arterial circumference in cross-section) is an important criterion of unresectability of the
pancreatic mass. Infiltration of the surrounding structures (stomach, transverse colon, spleen, etc.) does not make the tumor unresectable, though surgery becomes more extensive.

The lesion is resectable if there is neither extrapancreatic infiltration nor distant metastases. Thus there is a clear fat plane separating the tumor from main arteries (celiac axis, common hepatic artery CHA and superior mesenteric artery SMA). The contact with the surrounding veins (superior mesenteric vein SMV and portal vein PV) is also absent or there is just abutment (≤ 180 degrees contact without contour irregularity). No venous encasement or tumor thrombus is seen.

Unresectable tumors either have distant metastases (including non-regional lymphadenopathy) or local invasion. Liver and peritoneal cavity are the common sites of metastases. Arterial invasion is in the form of encasement (contact > 180 degrees circumference) of SMA, celiac axis or contact with first jejunal branch of SMA. Unresectable venous involvement includes unreconstructible SMV-PV due to infiltration / occlusion or contact with the most proximal draining jejunal branch into SMV.

Borderline resectability in terms of venous involvement includes encasement or abutment of short-segment SMV-PV (usually up to 2 cms.) with contour irregularity or venous thrombosis but amenable to surgical reconstruction. The prerequisite for reconstruction is that the two venous ends should have single lumen and thus branches cannot be attached to a single lumen.

Identifying variant vascular anatomy is also important and should be conveyed to the surgeon. Tumor contact with variant vessels (replaced right hepatic artery from SMA, low origin of CHA from celiac axis with abnormal course inferior to portal vein, high insertion of jejunal branches on SMV near PV confluence) can make resection / reconstruction difficult.

Few authors have tried to correlate the appearance of venous contact of the tumor to the likelihood of successful R0 resection. Latter is successful in those having smooth mass effect or unilateral focal mass effect with narrowing of SMV-PV. Patients with bilateral narrowing and circumferential encasement have high probability of positive surgical margins. Encasement of SMV leads to ‘tear-drop’ shape of the vein and suggests unresectability. Dilated peripancreatic vessels has been suggested to indicate surrounding local invasion.

Metastatic lymph nodes can be identified by size criteria (> 1 cm in short axis), morphology (round shape) and / or presence of central hypodensity (necrosis). Unequivocal lymph node enlargement beyond the extent of Whipple resection (i.e. except celiac axis) makes the mass unresectable. For lesions in the pancreatic head and neck, nodes along celiac axis, peripancreatic and periportal regions can be removed during surgery. For body and tail cancers, nodes along CHA, celiac trunk, splenic vessels and splenic hilum come in the operative field. If nodal involvement is confirmed at surgery, then adjuvant chemotherapy is indicated. The overall accuracy of MDCT in predicting resectability of pancreatic cancer is 88-93%. The problem areas include microscopic peritoneal implants and metastases to normal-sized lymph nodes. Former are even more difficult to detect in the absence of ascites. Some centres routinely perform laparoscopy just prior to surgery to detect these peritoneal metastases. In cases of mismatch between surgery and imaging, metastases were found to be the most common cause of unresectability, rather than local invasion. CT is very accurate in diagnosing unresectable disease (89-100% positive predictive value); however, accuracy is lower for predicting resectability.

Perineural invasion is a hallmark of ductal adenocarcinomas, although it may be seen in ampullary cancers and cholangiocarcinoma as well. Perineural invasion may be suggested on CT when there is direct soft tissue infiltration along a known perineural pathway and has poor prognosis. The most common route of spread is along the plexus pancreaticus capitalis for cancers of the pancreatic head and uncinate process. Plexus pancreaticus capitalis 1 (posterior hepatic plexus) extends from the right celiac ganglion, courses behind the portal vein up to upper medial border of uncinate process. This is involved in pancreatic head lesions. Plexus
pancreaticus capitalis 2 extends from SMA plexus, courses along posteroinferior pancreaticoduodenal artery and jejunal trunk of SMV, reaching up to the uncinate process. This plexus is usually involved in cancers of the uncinate process.

EUS may also be helpful in suggesting vascular invasion. The features suggesting vascular invasion include loss of normally hyperechoic vessel wall, vessel irregularity / occlusion and direct visualization of intravascular thrombus.

Learning Objectives:
1. Understand the imaging manifestations of Pancreatic cancer
2. Differential diagnosis and features which help to distinguish it from mimics
3. Learn the staging of pancreatic cancer. Features which decide the categorization into resectable, borderline resectable and unresectable disease
4. Learn imaging manifestations of perineural invasion

References:

Imaging of Common and Uncommon penile scrotal emergencies

Learning objectives: To enlist common and uncommon penile and scrotal emergencies Imaging modalities impacting the effective diagnosis are highlighted with key imaging features.

Content organization: Emergent conditions of the male genitalia are primarily infectious, traumatic, or vascular. Infectious conditions, such as epididymitis and epididymio orchitis, are well evaluated at ultrasonography (US), and their key findings include heterogeneity and hyperaemia. Tension haematocoele, Pyocele and abscess can be seen on US. Fournier gangrene is best evaluated at computed tomography, which depicts subcutaneous gas.
Vascular conditions, such as testicular torsion, infarction, penile Mondor disease, and priapism, are well evaluated at duplex Doppler US. The key imaging finding of testicular torsion and infarction is a lack of blood flow in the testicle or a portion of the testicle. Penile Mondor disease is characterized by a lack of flow to and non-compressibility of the superficial dorsal vein of the penis.

Clinical examination and history are usually adequate for diagnosis of priapism, but Doppler US may help confirm the diagnosis.

Traumatic injuries of the penis and scrotum are initially imaged with US, which depicts whether the penile corpora and testicular seminiferous tubules are contained by the tunica albuginea; herniation of contents and discontinuity of the tunica albuginea indicate rupture. MRI is useful because of its ability to directly depict discontinuity of the tunica albuginea.

Conclusion: Radiologists must closely collaborate with emergency physicians, surgeons, and urologists to quickly and efficiently diagnose or rule out emergent conditions of the male genitalia to facilitate prompt and appropriate treatment.

Dr. Rama Anand

ECTOPIC PREGNANCY: COMMON AND UNCOMMON LOCATIONS

Pregnancy is said to be ectopic when the implantation of a fertilised ovum occurs outside of the endometrium of uterine cavity. Incidence is 2% of all pregnancies. Ectopic pregnancy (EP) is the most common cause of pregnancy related mortality in 1st trimester. The risk factors for EP are prior ectopic pregnancy, previous tubal or any other gynecologic surgery, pelvic inflammatory disease, infertility and use of in vitro fertilization, congenital uterine anomalies and the use of an intrauterine contraceptive device.

The diagnosis of EP is complicated by a wide spectrum of clinical presentation varying from asymptomatic cases to hemoperitoneum and shock due to rupture of EP. Patient may develop symptoms as early as 5 weeks of gestation. The classical clinical triad of amenorrhea, abdominal pain & abnormal vaginal bleeding is seen in less than 50% cases, but even these clinical findings are non –specific. The differential diagnosis for a patient with pain and bleeding in the first trimester, include normal early pregnancy, abortion, molar pregnancy, and EP. Early diagnosis and treatment of EP are essential in reducing maternal mortality and preserving future fertility.

Pelvic ultrasound especially the Transvaginal sonography (TVS) has revolutionized the diagnostic process of EP and is considered the gold standard for the diagnosis of EP along with serial β-hCG estimation. With TVS an adnexal mass separate from the ovary can be characterized as an inhomogenous mass (90%), for the presence of trophoblastic ring (50%), gestation sac with or without yolk sac and or embryo. At the same time, the contents of the endometrial cavity and presence of free peritoneal fluid with echoes can be evaluated. The presence of fluid-containing echoes, correlating with haemoperitoneum, has a 93 % positive predictive value for EP. A live extraterine embryo/Fetus is seen in 8 -26% of patients. MRI is used as a Problem solving modality, with indeterminate ultrasound findings. About 80% cases of EP are detected before rupture & more than 50% are diagnosed in asymptomatic women by USG alone.

Majority of EP occur in the fallopian tube (95%), mostly in the ampulla (70%) and Isthmic EP are more likely to rupture. Secondary implantation into broad ligament, abdominal organs or ovary may occur as a result of partial disruption of the initial implantation site in the tube. The other uncommon sites being interstitial segment of tube, Cervix, scar site, ovary and rarely Primary Abdominal Pregnancy. The possibility of an EP is low if an intrauterine G sac is clearly demonstrated, however Heterotopic Pregnancy can occur i.e. IUP with ectopic site pregnancy.
Awareness of the specific ultrasound features of EP in common and uncommon sites is crucial for a correct diagnosis and early management. Ultrasound is also used to triage patients for the most appropriate surgical/medical management, and for follow-up patients on medical/expectant management protocols.

Dr. Ramakrishna N

Imaging of Tendon

Introduction - Structure Etymology – Tendonem : Latin “To Stretch”.

Tendons are a tough band of connective tissue which are defined by their attachment of muscle to the bone. Tendons transfer the mechanical load generated by a muscle to bone, resulting in stabilization or movement across a joint. Consist of cross-linked triple helices of type I collagen, with tightly bound water molecules bridge the strands of the helix.

Introduction - Structure: A complex hierarchical structure composed of collagen macromolecules which are grouped into fibrils, which, in turn, are bundled into fibres and fascicles surrounded by vascularized connective tissue the endotendon. Fascicles are bound together to form the tendon.

Tendon sheath: comprises of two layers of synovium surrounding tendons that pass through tight fibro-osseous tunnels. Paratendon: the tendon elsewhere is surrounded by a thin layer of loose fatty connective tissue.

Blood Supply: Scant. Comes from the myotendinous junction, tendon sheath / paratenon and enthesis.

Introduction - Function: The orientation of the fibres within a tendon depends on the location and tension the tendon is subjected to.

For ex: Patellar tendon where the force is directed along the axis of the tendon, the collagen is predominantly aligned along the long axis of the tendon. Tendons, with origins from more than one muscle such as the Achilles tendon and quadriceps tendon, has a more complex structure which include plait, crossing or up-tying formations.

Pathologies

Tendon pathologies can be broadly divided into two classes: Tendinosis or Tendinopathy/tendonopathy. Inflammatory enthesitis, occurs in spondyloarthritis.

Imaging of Tendon: Ultrasound and Magnetic resonance imaging (MRI) are commonly utilized to evaluate the tendon. Both provide an excellent anatomic overview and soft tissue contrast.

Both modalities demonstrate high accuracy for abnormalities. Sonography is a more rapidly performed examination; it has greater resolution than that of MRI; it allows dynamic evaluation of tendons and muscles; and it can guide percutaneous therapeutic procedures.

MRI has the ability to display a large anatomic region and deeper tendons without the need of an acoustic window.

Sonography is best considered a focused examination, concentrating on the area of pathology, whereas MRI can provide a global assessment of the region of concern.

Sonographic Appearance - Normal High-frequency transducers 10-15 MHz
Tendons appear as a fascicular structure with multiple, closely spaced echogenic parallel lines in longitudinal plane scanning. In the transverse plane scanning they appear as multiple echogenic dots. Fascicles appear brightly reflective when the ultrasound beam is perpendicular to their orientation. If the beam is not perpendicular the echogenic appearance is lost. This phenomenon is called ANISOTROPY and it may simulate disease. Power doppler can be used to evaluate tendon neovascularization.

**Sonographic Appearance - Pathologies Tendinopathy Thickening:**

**Reduced echogenicity**
**Loss of the normal fibrillar echopattern**
**Calcification**
**Tendon neovascularisation on Power Doppler.**

**TEARS:** Sonographic appearance of tears depends on its chronicity. Seen as a hypoechoic area that interrupts the fibres

**Acute:** Anechoic fluid may be visible within the tear.

**Chronic:** Fluid becomes organised and its echogenicity increases Dynamic imaging during muscle contraction or passive movement is useful.

**MRI Appearance:** On conventional pulse sequences, normal tendons are homogeneously low signal intensity. The densely packed collagen bundles results in increased spin-spin interaction, which in turn leads to faster tendon T2 relaxation times than can be detected using conventional pulse sequences.

However, when a tendon is oriented approximately 55° to the main magnetic field, there is an increase in signal intensity, which occurs on short echo sequences. Ordered organization of predominantly type 1 collagen fibers results in structural anisotropy prolongation of relaxation time, referred to as the MAGIC ANGLE PHENOMENON.

**MRI Appearance - Pathologies Tendinopathy:** Thickening. Increase in the signal intensity, seen first on gradient echo images, followed by T1 weighted spin echo images. Post-gadolinium images may show enhancement.

**TEARS:**

**ACUTE:** fluid crossing part or all of the ligament Abnormal ligament course.

**CHRONIC:** Thickening, Scarring and Increased signal.

**EMERGING TECHNIQUES ULTRASHORT ECHO TIME MRI SONOELASTOGRAPHY T2 MAPPING DYNAMIC CONTRAST ENHANCED MRI**

**CONCLUSION**

Ultrasound and magnetic resonance play a crucial role in evaluation of Tendon. Both can be used to identify of normal and abnormal tendons structure. It is important to know the capabilities and limitations of these modalities for diagnosis and prognosis of tendon pathologies.
Dr. Rashmi Dixit

**Optimisation of Colour Doppler**

Benign and malignant tumours of the small bowel are relatively rare despite the relatively long length of small bowel. The talk will focus on the predisposing factors and imaging features of the commoner malignant tumours such as adenocarcinoma, GIST, lymphoma, and carcinoid. Key distinguishing features will be discussed.

Colour Doppler is routinely used for various applications throughout the body. Understanding the principles governing the generation of Doppler signal and images is imperative to obtaining critical clinical information. The Doppler signal is affected both by hemodynamics of blood flow in vessels as well as various equipment driven parameters such as PRF, size and depth of sampling box, colour and Doppler gain, wall filter etc. In addition some artifacts may mimic or obscure pathology.

The talk will focus on how to optimize these parameters and recognize artifacts to avoid pitfalls during imaging.

Dr. Ravinder Kaur

**Chest sonography**

Combination of sonographic artifacts and real images makes accurate diagnosis of many lung disorders possible, particularly when lung sonography is used in the emergency and critical care settings. Lung ultrasound is fast and accurate with higher diagnostic accuracy than physical examination and chest radiography combined, in most acute respiratory disorders.

Sonographic appearances of lung are based on the relative amount of alveolar air content and interstitial/alveolar fluids due to the phenomenon of acoustic impedance. It is also useful when air or fluids are collected in the pleural space.

Normal lung shows echogenic smooth pleural line and A lines which are horizontally placed equidistant lines due to multiple reflections from pleural surface. Movement of visceral pleura over parietal pleura can be seen on real time imaging as ‘lung sliding sign’ which produces ‘sea shore sign’ on M-mode due to movement of the lung. B lines are laser like vertical white lines arising from pleural surface and reaching up to bottom of the screen. Although few B lines can be normally seen in dependent parts of the lung, they are characteristic of alveolar-interstitial syndrome.

Lung consolidations can be translobar or non translobar. Translobar consolidation give ‘tissue like sign’ which looks like liver. Non translobar consolidations give ‘shred sign’ where the interface between aerated and consolidated lung appears irregular. Other signs seen in consolidations are dynamic air bronchogram and lung pulse sign.

Interstitial syndrome can be caused by pulmonary edema, lung fibrosis or interstitial pneumonia. Characteristic feature is presence of three or more B lines closely spaced in one intercostal space. If they are confluent they can give appearance of ‘white lung’ which indicates severe pulmonary edema. Lung ultrasound can also differentiate between causes of interstitial syndrome.
Pneumothorax: Abolished lung sliding on ultrasound has 95% sensitivity and 100% negative predictive value in diagnosing pneumothorax but its specificity is low. Other signs seen in pneumothorax are ‘lung point’, absence of B-lines and ‘bar-code’ sign on M-mode replacing ‘sea-shore’ sign.

Ultrasound is also used to look for pleural effusion, its quantification and to monitor the pulmonary functions in intensive care units. With better understanding of lung ultrasound, easy availability, portability, lack of ionizing radiation, it is being widely used in various lung conditions particularly in emergency settings.

Dr. Rohini Gupta

Background: Chest radiographs are the mainstay imaging modality for pediatric chest imaging. Ultrasound, although available for bedside evaluation and free of ionizing radiation, is mainly limited to pleural conditions, echocardiography and lobar consolidations reaching the pleural surface. Owing to high radiation exposure, CT scan is usually reserved for specific indications like vascular loops, mediastinal masses or presurgical evaluation of congenital anomalies. Typical challenges in radiography of child are high resting respiratory rate, rotation, thymus in small children. Also, smaller children are unable to follow commands. In the era of declining familiarity with conventional radiography, the challenges of pediatric radiograph interpretation are rather overwhelming.

Purpose: It may be a reasonable approach using core differentiating radiographic features. This could be used by radiologists and pediatric intensivists alike to distinguish between the important medical and surgical conditions affecting the pediatric chest. This lecture would cover the following points: basic patterns on chest radiograph, upper airway and pulmonary causes of pediatric respiratory distress, approach to radiograph in a child with mediastinal pressure signs, brief outline about pleural pathology, thumb rules of cardiac evaluation on radiograph, and the common pitfalls to be avoided. We shall finally discuss some interactive cases.

Conclusion: Chest radiography has an indispensable role in pediatrics. Systematic approach can help in easy interpretation and minimize errors in diagnosis.

Dr Rupa Ananthasivan

Manipal Hospital Bangalore Breast Tomosyntheses-Current Status

A major limitation of mammography is the potential overlap of tissue. Overlapping tissue can obscure an area of abnormality and lead to a false-negative finding. In addition, the overlap of normal structures in the breast can create a pseudolesion, which prompts a false-positive result and unnecessary investigations and anxiety to the patient. In Digital Breast tomosyntheses the breast is compressed and held stationary between the compression paddle and the detector and the x-ray tube moves in an arc overhead, executing a series of low-dose exposures at preset intervals, each from a different angle. The result is a series of projection images of usually 1mm which can be viewed slice-by-slice rather like CT cuts which overcomes the problem of overlap. Breast Tomosyntheses is most useful in younger, pre-menopausal women with dense breasts.

The advantages include: Higher pick up of cancers particularly in younger women with denser breasts. Better pick up of architectural distortions and Lobular Cancers. Lesser call back rate and benign breast biopsy rate. Better pick up of multi-focal and multi-centric cancers.

Disadvantages- Higher Cost Longer time for interpretation. Slightly higher radiation dose (within acceptable limits)
Audits in Radiology: how to do it right – a guide for beginners

**Background:** The term ‘clinical audit’ is used to describe a process of assessing clinical practice against standards. Audit in radiology seeks to improve the quality and outcome of patient care through structured review whereby radiological practices, procedures, and results are examined against agreed standards for good medical procedures. The changes are implemented at an individual, team, or service level and further monitoring is used to confirm improvement in healthcare delivery. All audits should be accompanied by a quality improvement plan (QIPs) to achieve the required improvements in practice.

**Learning Objectives:**
- Understanding audit cycle and why do we do it
- Audit in Radiology Practice
- Audit templates
- Tips for successful audit
- Topics for audits

**Key Issues:**

1) Audit cycle comprises of 5 stages and is the basic framework upon which all projects are based. It includes planning for audit, standard-criteria selection, measuring performance, making improvements and sustaining improvements. Each stage of the clinical audit cycle must be undertaken to ensure that an audit is systematic and successful.

2) Selecting a topic: It should be relevant, demonstrate potential for benefit to practice and patient, make economic and efficient use of resources, and with evidence of variation in current treatment approaches, should demonstrate outcomes and feasibility of implementation of results.

3) **Tips for a successful audit:**
- Keep it simple and relevant
- Get everyone involved
- Selecting the ‘subject’ & formulating the ‘objective’
- No needless data
- Accurate statistics
- Share the learning with colleagues and organization
- Actions are intended to ‘remedy’ any variations from standards.
- Re-audit to ensure improvement in clinical care

4) **Advantages of performing audit are:**
- To compare clinical care provided against standard practice and learn about opportunities for improvement
- To uphold professional standards
- Helps quality improvement
• Educational for the participants
• Keeps up to date with evidence based practice.
• Increased job satisfaction.
• Increasingly seen as an essential for good professional practice.

5) Limitations of an Audit:
• Problems with data collection.
• Problems in implementation of audit suggestions.

Conclusion: Audit in radiology is one of the important methods to understand and ensure the quality of the service it provides. As part of clinical governance, healthcare organizations are accountable for continually improving the quality of their services. Clinical audit, correctly and professionally conducted, is a powerful tool to improve patient care, experience and outcome.

Dr. Sandeep Tirath

Role of Interventional Radiologist in the management of Pulmonary Embolism (PE):
The pathophysiology and risk stratification of pulmonary embolism will be presented. Evidence based management of various PE categories will be discussed.

Various relevant clinical trials, evidence, techniques and their synthesis in the clinical practice will be discussed in a case review format.

Dr. Sandhya Dhankhar

Abstract for Basics of Fetal Echo

Congenital heart disease is a leading cause of infant morbidity and mortality from birth defects with incidence of 8 per 1000 live births. Nearly 1,80,000 children are born with heart defects per year in India and rate of recurrence increases if there is history of previous child with heart defect in the family or mother has CHD.

Fetal echocardiography is broadly defined as a detailed sonographic evaluation that is used to identify and characterize fetal heart anomalies before delivery. Basic Fetal Echo which includes four chamber view and outflow tracts are included in the anomaly scan done in the second trimester (18-20 weeks) to diagnose cardiac anomalies. The objective is to identify those cases, which need a dedicated fetal echo for proper diagnosis; hence timely referral can be done. Additional views are needed to identify complex heart anomalies like aortic arch views, bicaval view, three vessel tracheal view (3VT), so proper knowledge and training should be there to identify complex heart defects and syndromes.

The optimal timing for performance of transabdominal fetal echocardiogram is 18-22 weeks gestation. A preliminary fetal cardiac screening can be attempted as early as 12-14 weeks of gestation for early detection of cardiac defects.

Technical requirements of fetal echocardiography are stringent and can be performed with special grey scale presets and Color Doppler settings optimized for fetal echocardiography. Each view contributes to information and stepwise evaluation of fetal heart is important for proper diagnosis of fetal heart abnormality.
Despite of limitations, fetal echocardiography can identify most of CHDs, which have major pre and postnatal implications. This is necessary to identify high-risk group of fetuses with complex heart defects and would require tertiary hospital care for delivery.

Dr. Saneej Kanhirat
MBBS, DMRD, DNB, MNAMS, EDiR Consultant Radiologist, Starcare Hospital & ARMC IVF Fetal Medicine, Kozhikode.

Fetal spine imaging

Prenatal ultrasound is a well-established method for fetal spine evaluation. Advances in ultrasound has made visualization of fetal spine in more detail than ever before. Neural tube defects are most common spine malformations and it accounts for approximately 1: 2000 births. The use of 3D imaging has made imaging of spine in ways not previously possible.

Spinal abnormalities can be divided into open neural tube defects (NTD), closed NTD, vertebral abnormalities and multiple abnormalities.

Examination of spine includes evaluation in three planes – axial, sagittal and coronal. Sometimes direct coronal may not be easily obtained. In that case 3D Multiplanar reconstruction helps.

There are three primary ossification centers in spine, one for body and one each for posterior elements.

Use of high frequency linear probe is invaluable in assessing the neural tube defect, tethering of cord and meningocele contents.

Ultrasound diagnosis of NTD involves identification of divergence of posterior ossification centers, U shaped spinal arch with or without bulging meningocele sac. The steps in assessment of an NTD involves, determination of level of defect, measuring the meningomyelocele (MMC) sac size, skin defect and sac thickness. After that the contents of the sac are identified, like CSF, neural elements (placode), fat etc. The level of the conus is checked to rule out any tethering. Any associated anomalies like talipes, ventriculomegaly and kyphoscoliosis are searched for. Follow up ultrasound examination is scheduled every 2 to 4 weeks to monitor the evolution of each abnormality.

There are cranial signs of open NTD during first and second trimester. The signs that can be seen during NT scan includes absent intracranial translucency, Crash sign, dried up brain and enlarged choroid plexuses. The second trimester cranial signs are lemon sign, banana sign, ventriculomegaly and microcephaly.

Prenatal classification of spinal anomalies includes open NYTD, closed NTD, vertebral anomalies and multiple anomalies or syndromes. Vertebral anomalies include hemivertebra, coronal cleft, block vertebra, unilateral bar, diastometamyelia and wedge vertebra.

The following is the classification system suggested by AJUM.
The demand for imaging has continued to increase over the past two decades. The Royal College of Radiologists’ report of 2017 highlights that in the last 5 years, there has been an increase of 30% in the overall reporting workload in the UK. Radiologists in the USA have equated their working to as if they are running within a ‘Gerbil wheel’ having to interpret images every 3-4 seconds for eight hours a day. In addition to increasing image data sets, Radiologists have to review a range of other clinical information such as the patient’s history, previous Radiology results, lab test, tumour markers, etc. Fortunately, over the past two decades, there have been significant advances in the processing power of computers, which are now capable of 320 Trillion deep learning operations per second (TOPS). In order to meet the increasing clinical demands,
Radiologists might consider delegation of certain repetitive tasks to the trained machines. The main focus of this talk will be on the challenges faced by healthcare professionals and potential technological solutions.

**Current Status of Artificial Intelligence & Computer Aided Detection.**

Automated image analysis is becoming more affordable and reliable. Technological advancements such as Big Data, CAD and Deep Learning have promised exciting opportunities. However, our research and other studies show a wide variation in the performance of commercially available tools. Some programmes actually increase a doctor’s work by highlighting too many false positive findings. This talk is an overview of the present status of AI and CAD and its current limitations. Common pitfalls and practical tips on how to embrace these technologies will also be discussed.

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**Dr. Sanjeev Kumar, Delhi**

**Orthogonal imaging techniques in Heart Diseases**

Imaging in cardiac disease poses special challenge as compared to other body part because of issues of cardiac and respiratory motion. The goal of imaging in heart disease are many fold including anatomical assessment, functional assessment, tissue characterization /etiologic assessment, prognostication, treatment planning and therapy monitoring. Hence imaging play central role in management of heart disease. CT and MRI are most important orthogonal imaging technique used for comprehensive evaluation. There are advantages and disadvantages of both these imaging techniques and they plays complimentary role rather than competitive. Various common disease state where it find clinical application are Ischemic Heart Disease, Valvular heart disease, Cardiac arrhythmia Assessment of cardiomyopathies, Congenital Heart Disease, Evaluation of Cardiac masses etc. Not only it helps in diagnosis but also plays important role in treatment planning. Judicious use of these imaging technique in various disease states will result in improved patient outcome.

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**Dr. Saugata Sen**

**TEXTURE IMAGING---BASICS AND APPLICATIONS**

Texture imaging developed in the later part of the last decade as a software tool to enhance our visual impression of an image. The radiologist now had a new arsenal to enhance the written report with some sort of quantification.

The development of texture was based mainly on certain theories for example grey level co-occurrence matrix and run length matrix, more often used in industrial engineering. Extrapolation of these algorithms on images were performed to enhance some sort of output to aid clinical use.

The output was in terms of statistical analysis, for example standard deviation, kurtosis, entropy, etc. Hence, the radiologist has a quantitative tool to play with.

The uses can be summarised into subclassifying pathology to grade and stage leading to prognosis of tumours. There are reports that texture imaging can predict pathology and genomics as well. Predicting and evaluating prognosis also shows promise with texture imaging with various publications on the same. As for the non-oncological uses, the quantification of liver fibrosis and liver fat has also been attempted apart from evaluating osteoporosis.
My attempt in the talk will be as attempt to evaluate the tool in context of various international publications and my personal experience at Tata Medical Center, Kolkata and putting forward an opinion as to whether the it is ready for clinical use.

**Dr. Shikha Khandelwal**

**Perianal fistula**

**MR imaging is the choice of investigation to accurately demonstrate perianal anatomy.**

In the lec we will review the anatomy of the perianal region, causes of perianal fistulas, previous methods for preoperative assessment and useful MR imaging protocols for this evaluation.

MR imaging–based grading system for perianal fistulas (the St James’s University Hospital classification) will be discussed in detail with relevant cases.

Ideal reporting format with labeled diagrams will also be discussed.

**Dr. Shivanand G**

**Imaging After Loco-regional Treatment of HCC**

Accurate assessment of tumor response is extremely important in oncology practice for prolonging survival. Imaging techniques of multiphasic CT and MRI are generally recommended and lately, use of contrast enhanced ultrasound (CEUS) has also been used with promising results.

Due to the differences in the principles of imaging techniques, contrasts used, these modalities have some limitations, advantages and accuracies in the therapeutic assessment. Response evaluation entails detection of any viable tumor tissue which on contrast imaging techniques (CEUS, MPCT, MRI) is seen as an enhancing area at the tumor site, while the non-viable tissue lacks enhancement. One of the major limitation of MPCT is the difficulty in accurate assessment of the residual disease in post lipiodol TACE patients. Lipiodol is radiodense and is seen as a hyperdensity in the tumor site on MPCT, the appearance that is similar to the hyperenhancing viable tumor tissue following contrast injection. This at times leads to masking of the small viable tissue on MPCT resulting in misinterpretation.

MRI has the highest accuracy in these patients as the assessment is not affected by the lipiodol presence. Contrast sequences can be complimented with diffusion-weighted sequences (DWI) to improve the diagnostic accuracy. DWI helps to differentiate inflammatory enhancement (T2-shine through) from the viable tumor (diffusion restriction). Evaluation by CEUS is also not hampered by the lipiodol presence and thus CEUS can diagnose even a small viable tissue with high accuracy.

Multiphasic CT or MRI is done at 1, 3, 6 12 months post procedure for detection of residual disease on the basis of mRECIST criteria. Response assessment by this criterion is based on the percentage of necrosis, viable tumor tissue and not on the overall tumor size shrinkage. This is because the locoregional therapies produce tumor destruction and accurate interpretation of the viable and non-viable cells would give the true picture of efficacy of the therapy in the form of complete or partial response. According to the mRECIST criteria, tumor response is categorized as- Complete Response (CR) is the disappearance of any intra tumoral arterial enhancement in all target lesions, partial Response (PR): >30% decrease in sum of diameters of all viable (enhancing) target lesions, progressive disease (PD) is > increase in the sum of diameters of all viable (enhancing) target lesions and any case that does not qualify for either PR or PD is stable disease (SD).
If the imaging findings suggest PR or PD, then depending upon the disease stage at that point of time, the decision of further treatment is taken. When CR is achieved, the patient is kept under regular clinical and imaging follow up. On MPCT/MRI, assessment of tumor morphology, resorption of ethiodized oil, overall liver size, development of new lesions or metastases are looked for. Completely treated tumor invariably shrinks in size over period of time.

Dr. Shyam Kumar N Keshava

Oration - Dr M L Aggarwal Emergency Interventional Radiology

Emergency Interventional Radiology may be life saving. Most of the indications include massive haemorrhages, where embolisation procedures are required. Other examples include a sudden vascular occlusions like stroke or peripheral arterial occlusions, where thrombolysis / thrombectomy procedures are required. Even iatrogenic complications following surgery or other invasive procedures are not uncommon. Patients with obstructed infected systems show dramatic improvement by procedures like percutaneous biliary drainage or nephrostomies.

Taking appropriate decisions and performing Interventional procedures in a short time is really challenging from various dimensions. In a hurry, one should not bypass the important steps. If the patient is having massive haemorrhage, one needs to have a reasonable idea regarding the source of bleeding based on the clinical, scopy and cross sectional imaging. Sometimes contrast dose to the patient can result in complications. If set protocols are in place, like for stroke management, - the decision making may be easier. A team approach in decision making is recommended for the best benefit. Consenting the patient or close relatives is essential. The other challenges include, - availability of the material, patient work up, man power, equipment, cost, anaesthesia, availability of support from other specialities etc.

Though the emergency Interventional radiological procedures are challenging, at the same time they are more “rewarding” procedures, where a rapidly deteriorating patient can improve with minimally invasive procedures.

Dr. Smita Manchanda

Assistant Professor, AIIMS, New Delhi)

Preoperative evaluation of squamous cell carcinoma tongue (T1-T3): Is ultrasound enough? Correlation with magnetic resonance imaging and histopathological staging

Background: The eighth edition of the American Joint Committee on Cancer (AJCC) Staging Manual, Head and Neck Section (2017) has introduced significant modifications from the prior seventh edition. Many previous studies had highlighted the different biological behavior of deeply invasive but small tumors and hence, now the T category for oral cavity cancer incorporates depth of invasion (DOI) and not tumor thickness. It is essential to distinguish a thick, exophytic, but less invasive tumor from one that is ulcerated but deeply invasive. Radiological evaluation by USG (intra and extraoral) and MRI can play a key role in the preoperative staging of carcinoma tongue.

OBJECTIVES: 1. To assess the correlation between the depth of tumor invasion by intraoral USG and MRI with histopathological depth of invasion in carcinoma tongue (T1-T3)

2. To assess the predictive value of USG and MRI for neck node involvement
Materials and Methods: This is a prospective study of biopsy-proven squamous cell carcinoma tongue (T1-T3) in the age group 20-70 years, planned for surgical treatment. This ongoing study was started in February 2017 after obtaining institutional ethical clearance. Intraoral sonography was performed using the 6-13 MHz linear probe (Hockey stick), and the DOI was measured along a perpendicular line from the mucosal surface to the deepest point. Nodal status was also evaluated by high-resolution ultrasonography using the 2-10 MHz linear array probe. Contrast enhanced MRI neck was performed in all the patients on a 1.5 T MR scanner using a 16-channel neurovascular coil and the DOI and nodal status were evaluated. The tumor and lymph nodal status was assessed on T2WI, DWI and post gadolinium T1WI. As per the institution protocol all patients underwent resection of primary lesion and ipsilateral elective neck dissection (Level - I to IV). The DOI was assessed by both gross and microscopic examination and complete histopathological staging was performed. The statistical correlation between DOI measured by USG, MRI and histopathology was assessed by intraclass correlation coefficient (ICC). The strength of agreement for DOI between USG and MRI was also assessed separately by ICC. The agreement between the two methods for lymph node evaluation was assessed by kappa coefficient.

Results: Significant correlation was seen between depth of invasion by USG, MRI and microscopic measures (p<0.001). Between the two, agreement of USG with histopathology (ICC 0.79) was more than of MRI with histopathology (ICC 0.67). For the depth of tumor invasion the strength of agreement between USG and MRI was excellent (ICC 0.84) though both modalities tend to overestimate the depth. For the prediction of cervical lymph node metastases, the diagnostic accuracy of USG was 92.5% and of MRI was 87.5% and 0.66 (p < 0.01). In the diagnosis of cervical lymph node metastases, the strength of agreement between ultrasound and magnetic resonance imaging was excellent (kappa coefficient=0.85).

Conclusion: Ultrasonographic evaluation is reliable and cost-effective tool to measure the depth of invasion and an accurate predictor of occult cervical nodal metastasis in carcinoma tongue, giving comparable results to MRI.

CLINICAL RELEVANCE/APPLICATION: According to the new AJCC (8th edition) guidelines, T staging of carcinoma tongue now depends on the depth of invasion and excludes greatest surface dimension and tumor thickness. USG could be considered as a cost effective modality for complete preoperative assessment of carcinoma tongue (T1-T3).

Dr. Srikanth Moorthy
MD Professor, Dept of Radiology, AMRIta Institute, Cochin Imaging HCC for intervention
IRIA 2019, Chandigarh 19th January

1) Achieve the correct arterial phase for CT imaging A mid or late arterial phase is essential. Commonest mistake is triggering the scan at the aortic arterial phase. This results in a very early arterial phase. The nodule can be missed and/or true extent of the tumour is not appreciated both of which impacts management.

2) CT vs MRI which is better ?
For nodules >2cm sensitivity is the same. Similar sensitivity and specificity for nodules 1-2 cm in size. <1cm MRI has higher sensitivity with lower specificity.

3) Arterial anomalies and extrahepatic arterial supply to the HCC.

4) The value of CEUS. Can be very useful in confirming enhancement/washout in a specific nodule with equivocal CT/MR findings.
5) **The importance of follow up**
   of small < 1-2 cm nodules  Small nodules can be followed up with CT/MR at 3 monthly intervals. Small nodules can disappear (!) or change their character again impacting treatment decisions.

6) **Imaging features of prognostic value. a)**
   Capsule is a feature of progressed HCC. However capsule indicates better response to ablation or TACE compared to a similar size lesion with no capsule.
   b) Corona enhancement is due to contrast spilling into peritumoral portal radicles. Increased chance for peritumoural recurrence.
   c) Fat within a nodule is more typical of HCC than any other primary tumour. It is a feature of early HCC and carries a better prognosis.
   d) Micro and macro vascular involvement. Larger tumours, illdefined margins, multiple tumours. Important to look for small segmental/subsegmental venous involvement.
   e) HCC-Cholangiocarcinoma mixed pattern. Atypical enhancement. Sustained arterial without washout. Poor response to treatment and poor prognosis.
   f) Degree of enhancement of the tumour in hepatobiliary phase on Gadoxetate scans has been reported to directly correlate with tumour differentiation.

7) **Challenging tumour locations.**
   Near large PV or HV branches, GB, Heart, Colon, Stomach, Dome of diaphragm. May need multimodality planning and approach to target for ablation.

8) **Post treatment follow up protocol**
   After 1 month – residue and reintervention. Then 3 monthly thereafter. If no recurrence, 6th monthly after one year (authors practice).

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**Dr. Srikanth Narayanaswamy.**

**MBBS, MRCRCh, FRCR, CCT (UK), Dip SEM (UK), Dip FM (FIFA) Consultant Musculoskeletal Radiologist and Sports Physician Sakra World Hospital & YOS Sports Health Specialists Bangalore**

**Labro-Ligamentous Injuries Of The Shoulder**

Labro-ligamentous injuries of the shoulder have been increasingly recognised as an important cause of the shoulder pain, particularly in athletic population. These injuries can occur secondary to a single traumatic episode or due to repetitive micro trauma. MRI and MR arthrogram is the imaging modality of choice for evaluating suspected labroligamentous injuries. MRI may also show normal anatomic variants of the labrum that are easily mistaken for pathologic findings on MR images. Early diagnosis and timely intervention of these injuries are important in reducing the risk of permanent disability.

**Learning points of this lecture include:**

1) To outline the technique and discuss imaging findings in patients with labro-ligamentous injuries of shoulder
2) Discuss MRI anatomy of labrum and normal variants mimicking pathology.
3) To understand primary and secondary MR signs of labro-Ligamentous tears.
**Objective:** To illustrate how ultrasonography and its imaging feature plays important role in making diagnosis of common soft tissue masses in paediatric population.

**Methods:** The cases illustrated are variety of soft tissue lumps and bumps in children that were collected at a referral tertiary diagnostic setup.

**Results:** Imaging approach analysis of variety of most common pathologic conditions including pseudo-tumors, vascular lesions and other soft tissue masses in pediatric age group are discussed, along with their Doppler, elasto and few with per\post operative corelation.

**Conclusions:** Establishing USG imaging features that provides important information in paediatric soft tissue disorders with grey scale, Doppler, elasto are critical in diagnosing and planning management further.

**Key words:** Pediatric soft tissue; pseudotumor; HRSG; arteriovenous malformation; elastography; lumps and bumps;

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**Dr. Subramaniyan Ramanathan**

**Qatar**

**Biostatistics: How much is required?**

**Learning objectives:**
- Types of data
- How to choose the test?
- Descriptive statistics
- Inferential statistics – P value, CI
- Diagnostic accuracy – Sensitivity, specificity
- Sample size

**Outline:**
- Biostatistics - Definition
- Why should we know?
- How to choose the test?
- Descriptive statistics
- Pictorial representation
- Inferential statistics
- P value vs CI
- Diagnostic accuracy
- ROC
- Reliability tests
- Sample size
- Statistical softwares
Sarcoidosis is a noncaseating granulomatous idiopathic multisystem disorder but most commonly (90%) involved are hilar & mediastinal lymph nodes & lungs (usually bilateral symmetrical involvement). Pulmonary involvement accounts for most of the morbidity & mortality due to sarcoidosis. Sarcoidosis can affect any age but peak is in young adults & middle aged (2nd to 4th decade). Frequency of sarcoidosis is higher in monozygotic than dizygotic twins & in people of African-American descent. Blacks are 12 times more likely to develop sarcoidosis than whites & black females twice more susceptible than black males. It is virtually not seen in Chinese & South East Asians.

**Basic Pathology:** Bilateral symmetrical hilar & mediastinal lymphadenopathy & numerous noncaseating epitheloid granulomas forming micronodules in lungs which are distributed along the lymphatics in the bronchovascular (BV) sheath & to a lesser extent in the interlobular septa & adjacent to pleural surfaces. Nodal enlargement usually resolves within 6-12 months & recurrence after resolution is unusual. Noncaseating interstitial granulomas either resolve completely or leave fibrotic scarring, so final CXR may return to normal to severe irreversible fibrosis. Generally lung volumes are normal in early stage of disease & in late stages only the volume loss due to fibrosis is seen.

**Imaging Modalities:** Main stay of imaging is chest X-ray (CXR) & high resolution computed tomography (HRCT) chest. CXR is abnormal at sometime in 90% of patients. Contrast enhanced CT (CECT) & FDG-PET are problem solving tools to differentiate between sarcoidosis, tuberculosis & thoracic Castleman disease. Gallium 67 isotope scan is done to differentiate between inactive lung fibrosis & active sarcoidosis.

**Staging of Pulmonary Sarcoidosis on CXR:** Stage 0 - normal CXR (10%); Stage 1 - only lymphadenopathy - hilar or mediastinal (50%); Stage 2 - lymphadenopathy + lung parenchymal opacity (30%); Stage 3 - only diffuse lung parenchymal opacities (10%); Stage 4 - irreversible pulmonary fibrosis with bullae & distortion of pulmonary structures without evidence of hilar/mediastinal lymphadenopathy. Low stages at presentation have a better prognosis than high stages. Higher the stage of sarcoidosis the greater the likelihood that the patient will experience chronic respiratory deficits. Staging does not represent temporal sequence & also does not quantitate the extent of parenchymal disease.

**Imaging Features of Thoracic Lymphadenopathy in Sarcoidosis:** Lymphadenopathy is the most common intrathoracic manifestation of sarcoidosis occurring in 75-80% patients at some point of time & in 95-99% bilateral symmetrical enlargement of hilar (both tracheobronchial & bronchopulmonary) lymph nodes (LNs) - looking like potato tubers on CXR & paratracheal LNs is seen. If hilar lymph LN enlargement is very asymmetrical or anterior mediastinal LNs are enlarged then other diagnosis be considered.

If there is U/L paratracheal LN enlargement, than it is usually right sided & on left it is occasionally seen & then the aorto-pulmonary window (APW) LNs are enlarged. Other mediastinal LNs enlarged can be anterior prevascular, posterior & subcarinal which are not seen on CXR but seen on CT in 50% patients.

LNs in can be tiny to massive in size & on CXR have lobulated well demarcated outline due to discrete, rounded nodal shape of LNs & not form nodal masses. Clinically significant adjacent airways & vascular compression is extremely unusual though LN enlargement is often massive.

Lymphadenopathy always precedes pulmonary shadowing. On CXR in 90% patients LN enlargement is maximum on first CXR & in 95% disappears usually within 6-12 months. Recurrence of LN enlargement is
rare after development of lung opacities. In 5% patients LN enlargement persists indefinitely.

On CXR eggshell calcification in enlarged LNs is seen in ≤ 5% patients but seen in upto 40% of patients on CT after 10 yrs & only when there is associated pulm disease. Other causes of nodal eggshell calcification are – Silicosis, Scleroderma, Amyloidosis, Blastomycosis, Histoplasmosis, Tuberculosis & postradiated lymphoma. LN calcification is uncommon (5-10%), coarse & central in Castleman’s.

Enlarged LNs in sarcoidosis enhance poorly on CECT & rarely nodes can be necrotic/low in attenuation or enhance on CT. In Castleman’s disease they enhance prominently (homogenous on NCCT) & also enlarged LNs in later are FDG avid on PET scan. TB LNs show central hypodense caseation & enhance peripherally on CECT.

4% of patients presenting with lymphadenopathy develop parenchymal opacities within 1 year & only 1/3rd of these have persistent fibrotic shadowing & 2/3rd get cleared completely.

**Imaging Features of Lung Parenchymal Changes in Sarcoidosis:** Interstitial involvement by the granulomatous process though histologically present in all cases but is seen on CXR in 50-70% of cases. Parenchymal changes-opacities are seen as LNs enlargement is subsiding (in lymphoma such abnormalities tend to progress in unison). On CXR parenchymal opacities are usually predominant in peri-bronchovascular (BV) regions of mid zones (MZs) & upper zones(UZs) of lungs but can be seen in all zones.

**Nodular Pattern:** in 75-90% of patients with parenchymal opacities most common pattern on CXR is nodular pattern of moderately well defined, rounded/irregular perivascular & subpleural nodules in MZs & UZs of 2-4 mm dia rarely exceeding 5mm in dia. Very small aggregated numerous opacities (nodules) sometimes look like

ground glass opacities (GGO) or appear as miliary shadows. Larger nodules well or poorly demarcated of 10mm dia may be seen & nodules upto 20-30mm size are rarely seen in UK but seen in USA in Africa-Carribeans. On CT small satellite nodules often seen at the periphery of these large nodules/masses - galaxy sign.

Patchy air space consolidation: this is the 2nd most common pattern & seen in 10-20% of patients with parenchymal opacities. Sometimes air-bronchograms & ill-defined margins, that commonly break into a nodular pattern is seen. Consolidation can be diffuse & occasionally subpleural predominance is seen.

**Collapse:** is seen very rarely in about 01% of any lobe but commonly of middle lobe: Fibrotic shadowing: parenchymal opacities clear completely in most cases (2/3rd cases) & in 1/3rd progress to fibrosis. Healing frequently involves fibrosis which may progress whilst the disease remains active. The commonest pattern of pulmonary fibrosis in sarcoidosis on CXR is of a few inconspicuous linear MZs scars. Coarse linear shadows, ring shadows, traction bronchiectasis & bullae may be seen in more severe cases. Occasionally confluent fibrotic areas develop like PMF & on HRCT a typical perihilar & posterior mid zone pattern is evident. Complications of fibrosis like coarse linear opacities (MZs & UZs predominance), volume loss, bullae, traction bronchiectasis & PMF represent permanent fibrotic shadowing. In late stages of sarcoidosis fibrosis is pronounced in the apical & posterior portions of upper lobes & superior segments of lower lobes.

**Cavitation:** nodules can cavitate & true cavities are very rare < 0.6% in sarcoidosis.

**Parenchymal abnormalities on HRCT in Sarcoidosis:** Typically in MZs & UZs, multiple, widespread, well or poorly / irregularly marginated, small 1-5mm nodular opacities (can be upto 10 mm) distributed in a perilymphatic fashion predominantly along BV interstitial bundles & subpleurally & to a lesser extent, along interlobular interstitial septa. MZs are most profusely involved.
Irregular thickening of BV bundles & thickening of interlobular septa. Irregular & beaded interfaces. Granulomas along the interlobular septa can produce an appearance resembling “beaded septum” sign seen in lymphangitis carcinomatosa.

A reticulonodular pattern results from a combination of nodules & thickened interlobular septa. Larger ill defined nodules of 10 mm may coalesce to form larger opacities ± an air-bronchogram & seen as multiple round mass like consolidations.

Patchy areas of GGO (like IPF) results from microscopic interstitial granulomas below resolution of HRCT & seen in basal subpleural regions.

Occasional interlobular septal thickening (as in IPF) is seen mainly in basal subpleural regions. In advanced cases fibrosis seen as fibrotic conglomerate masses with air-bronchograms mainly in perihilar regions of MZs & UZs (alveolar or acinar sarcoid). Associated with areas of fibrosis are bronchial distortion, volume loss, honeycombing, fibrocystic changes, bullae, traction bronchiectasis & hilar reticulation.

Air trapping is a common HRCT feature resulting from small airway obstruction & well seen on expiratory HRCT scan as black (lower attenuation) areas.

Reversible changes on HRCT are ground-glass, nodular/ irregular linear opacities and interlobular & septal thickening.

Irreversible changes on HRCT are cystic air spaces & architectural distortion. Other Thoracic Findings in Sarcoidosis

Rarely because of mediastinitis due to sarcoidosis SVC syndrome is seen & not due to enlarged LNs in sarcoidosis.

Pleural thickening & pleural effusion are unusual & does not occur in isolation. Pleural effusion seen in 2% only is usually small, commonly U/L (can be B/L) & lasts for weeks or months. Spontaneous pneumothorax is also unusual.

Bronchostenosis is unusual & mild stenosis may be single or multiple & mainly affects larger airways to segmental level due to intrinsic mural nodules.

Rarely Endobronchial disease may result in fibrotic strictures causing segmental or even lobar collapse.

Conclusion: Suspect sarcoidosis whenever asymptomatic patient presents with bilateral hilar lymphadenopathy and normal blood counts. Sarcoidosis is traditionally staged according to its appearance on CXR. Nodal enlargement is better seen on CT. CECT & FDG-PET scanning helps in differentiating various causes of lymphadenopathy. Parenchymal opacities are well shown on HRCT & HRCT features have a high sensitivity & specificity for the diagnosis of sarcoidosis. HRCT is not recommended as part of initial diagnostic workup in patients with suspected sarcoidosis & its greatest use is in patients who present with an atypical CXR. Gallium 67 isotope scan is indicator of activity & extent of disease in involved LNs & lungs. It is also used to differentiate between inactive lung fibrosis & active sarcoidosis lesions.
Cystic lesions of Pancreas:

Cystic lesions of pancreas (CPNs) are very common and majority are incidentally discovered. There are several types, some contain cancer, some have malignant potential and others are benign. Their prevalence in an asymptomatic population is reported as 2.4-13.5 %, with increasing incidence with age. They are being increasingly detected due to increased use and improved quality of cross-sectional imaging. They include non-neoplastic lesions like pseudocyst and neoplastic tumors. Though many of the cystic pancreatic tumors have typical imaging features, however, accurate characterization can be difficult at times due to overlap of morphologic features on imaging.

Morphologically, based on CT & MRI imaging features, they can be classified into 4 categories:(1)Unilocular cyst for example intraductal papillary mucinous neoplasm (IPMN) & mucinous cystadenoma (2) Microcystic lesion for example Serous cystadenoma (3) Macrocystic lesion for example Mucinous cystadenoma, IPMN and lymphoepithelial cyst & (4) Cyst with solid component, for example mucinous cystic neoplasm (MCN: mucinous cystadenoma, mucinous cystadenocarcinoma), IPMN, solid pseudopapillary neoplasm (SPN) & solid neoplasms with cystic degeneration (adenocarcinoma, neuroendocrine tumors) As an initial step, pseudocyst needs to be excluded. Patients with pseudocysts usually have history of acute or chronic pancreatitis, whereas patients with cystic tumors usually lack such a history.

For both initial detection and characterization of cystic pancreatic neoplasms (CPNs) computed tomography (CT) and magnetic resonance imaging (MRI) are excellent modalities. The improved resolution and high quality reformations, a bi- or triphasic MDCT, with minimum pancreatic & portal venous phase, now allows reliable detection of CPNs of a few millimeters, with good visibility of ductal morphology. The advantages of CT are its high spatial resolution, easy availability, fast acquisition (thus reduced artefacts), better pickup of calcifications & easy interpretation by radiologists & clinicians.

MRI is a problem solving tool. Its advantages are its better specificity & sensitivity. MRCP further helps in showing the ductal morphology better. Coupled with in-phase & out-of-phase T1 weighted images and contrast enhanced series, it leads to complete evaluation of pancreatic pathology. The role of diffusion weighted imaging (DWI) in CPNs characterisation is still controversial because of freedom of water diffusion in fluid filled cystic lesions. Due to better soft tissue contrast resolution on MRI & MRCP, the cyst fluid content, internal septations, mural nodules & relationship with duct can be better seen. Moreover, it is advantageous in patients requiring repeated imaging, due to lack of radiation exposure. However, it has the disadvantages of having low spatial resolution, low sensitivity for calcification and motion artefacts.

With increasing use of endoscopic ultrasonography (EUS) these lesions can be better defined and characterized. As many times there is overlap in imaging findings, ancillary testing like cytologic evaluation & tumor marker assessment is necessary to reach a definitive diagnosis. Awareness of the strengths & weaknesses of the cross-sectional imaging modalities and varying spectrum of imaging findings of the commonly encountered CPNs is important for making a diagnosis & narrowing down the differential diagnosis. This can prevent unnecessary invasive procedures or expedite surgical intervention where required.
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**Dr Sumer Sethi, MD**

**Radiology Learning beyond Classroom for the facebook generation**

**Founder: Telerad Providers, DAMS, eMedicoz app**

World is changing faster than ever before and in the last few years, technologies like machine learning, 3D Printing, AR-VR are rapidly evolving the science of radiology.

In this changing time, current generation has new needs from the education system and is looking for resources tailored to their way of life. Social media engagement plays an important role in this generation’s lifestyle and education has not been left untouched.

This talk will summarise the changing needs and potential new ways to harness the power of social media and collective learning in Radiology education.

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**Dr. Sunil Kumar**

SGPGIMS, Lucknow

**White Matter Diseases in Children**

White matter changes in children pose a stiff challenge to the Radiologist. White matter in a normal newborn is completely different from an adult brain on imaging due to process of myelination. It is only around 2 years when the appearances become similar barring a few small areas. MRI is the modality of choice to image brain owing to its many advantages over other modalities such as CT. One such advantage that is exploited is the difference in appearance of myelinated from unmyelinated white matter.

Familiarity of normal appearance on T1 and T2 weighted images at various intervals in a newborn up to 2 years is essential to differentiate a normal brain from a brain with white matter abnormalities. Fortunately myelination follows a set pattern. T1 images are useful till the age of 1 year whereas T2 images become important in the second year. Myelination progresses posterior to anterior, inferior to superior, and centre to periphery.

Normal white matter changes that can mimic abnormalities include terminal zones of myelination, perivascular spaces, ependymitis granularis etc.

Diseases that can produce white matter changes are numerous and vary from inherited conditions to acquired disorders such as trauma, ischemia, toxins, infections etc.

In the inherited conditions, the fault generally lies at the gene level that affects the produced protein due to enzyme defect. This may be due to accumulation of abnormal products or due to insufficient normal product. Ultimate effect is that normal neuronal function is hampered.

There are many classifications that are based on clinical syndromes, biochemically based, organelle based or based on histochemical staining pattern. Advanced changes may lead to similar imaging appearances. Clinical presentation is often non specific. Genetic or acquired white matter diseases can occur at different ages and can be progressive or static. The diagnostic workup is complicated, costly and upto 50-60% cases may never be diagnosed.

The differentiation between delayed myelination and permanent hypomyelination is important. Permanent hypomyelination can be defined as an unchanged pattern of deficient myelination on two MRIs at least 6
months apart in a child older than 1 year, as myelin is usually not sufficient in the first year of life to diagnose permanent hypomyelination with confidence. If an MRI shows severely deficient myelination in a child older than 2 years, it generally indicates permanent hypomyelination.

MRI offers recognition of patterns that can at the very least limit the differential diagnosis to only a few conditions. Involvement of subcortical white matter versus deep or periventricular involvement, predominant frontal versus posterior involvement, presence of cysts, involvement of brain stem, involvement of gray matter nuclei such as globus pallidus or thalamus, multifocal or confluent involvement, are all imaging discriminators that can be applied to arrive at a shorter working list. Additional sequences such as diffusion weighted imaging and MR spectroscopy may also be helpful in a few specific conditions. Clinical pointers such a large head, peripheral neuropathy or lens abnormalities etc may also serve to narrow down the possibilities.

In conclusion, familiarity of MR in infants and children up to 2 years, and a systematic application of MR findings with the support of a few clinical findings may go a long way in diagnosing a white matter disease in a child.

Dr. Sunitha Maddula

Ocular ultrasound in vitreo-retinal diseases

Any condition that causes opacification of the light conducting media may obscure visualisation of the posterior segment at clinical examination. High resolution ultrasound/B scan provides reproducible noninvasive visualization of the anterior and posterior chamber of the eye. Trauma, Cataract and vitreous hemorrhage are most common pathologies causing hindrance to the clinician for evaluation of the posterior chamber. Ultrasound helps the clinician planning surgical management and to prognosticate. It is Quick, simple, widely available modality and enables dynamic study. With appropriate training qualified professionals can perform ocular USG using a systematic protocol for evaluation of vitreoretinal diseases

Dr. Suresh Saboo

Based on Brother hood

One time premium depending upon life member of IRIA Then yearly small premium In event of unfotunate death of scheme member, IRIA SSS will pay lumsum amount to

nominee of member, right now IRIA SSS can pay 9 to 10 LAKHS This scheme is better than any insurance scheme in world

Defaulters in IRIA SSS are expelled out of scheme as per by laws. Right now we have more than 850 members in scheme

Dr. Suresh Thakur

An approach to spinal canal lesions

The spinal canal, is the cavity within the vertebral column superiorly opening at the foramen magnum and inferiorly opening at the sacral hiatus. The complex anatomy of spinal canal present a diagnostic dilemma
unless a careful methodological approach is followed. The spinal canal can be evaluated by compartment approach. The three anatomically distinct spaces, are the intramedullary compartment, the intradural extramedullary compartment and the extradural (epidural) space. The other simplified approach is tissue based like cord, meninges, CSF etc. Imaging modalities are conventional radiography which has a limited role. CT remains the best modality to assess the osseous structures and especially important in planning interventions. A spinal ultrasound is an evolving modality especially in first three months of life. It is preferred in cases of occult spinal dysraphism or suspected spinal cord anomaly. MRI is the modality of choice for the assessment of lesions within the spinal canal as it has exquisite anatomical contrast and structural resolution. The advanced MRI sequences like DTI & SWI are very important tools in trauma patients to predict the prognosis & long term outcome. The anatomic structures, namely the intervertebral disc, neural foramina, ligamentum flavum, ventral rootlets, and dorsal rootlets, are better depicted on 3D T2-SPACE. The diagnostic dilemma posed by confusing CSF pulsation artifacts is also resolved by this 3D sequence. MR perfusion imaging like DCE-MRI is becoming a precious tool for the advanced imaging of the spinal canal to differentiate between infective and primary neoplastic or metastatic pathologies. The digital subtraction angiography (DSA) is modality of choice in diagnosing & treating the spinal vascular lesions like AVM or AVF etc. The simplified algorithm and advanced imaging modalities are making complex anatomy and pathologies of spinal canal as trouble-free region.

Dr. T B S BUXI

Mesenteric Pathology – State Of The Art Imaging

- Mesentery is a double fold of peritoneum that attaches the intestine to the posterior abdominal wall.
- The root of the small-bowel mesentery extends diagonally from the duodenojejunal junction in the left upper quadrant to the ileocecal valve. Its root is a bare area continuous with the anterior pararenal space of the retroperitoneum. Communications from root of mesentery to retroperitoneal spread of fluid or malignancies take place.
- Among the radiological investigations MDCT is the modality of choice for evaluation of mesenteric pathologies.
- Mesentery is better depicted in an oblique coronal plane than axial plane – obtained by curved Multi Planar Reconstruction – it depicts the anatomy with better resolution.
- Mesenteric pathologies are broadly categorized into primary neoplasms, secondary neoplasms, inflammatory, vascular and trauma related pathologies.

Dr. Taylor Chung

Saturday, Jan 19; 11:20 - 11:40 AM, Hall C Pediatric Imaging

Keynote Talk: Application of Compressed Sensing in Routine Clinical Pediatric MR Examinations By: Taylor Chung, MD

Compressed Sensing is a relatively new MR acquisition acceleration technique that has recently become available commercially. It can be utilized in addition to parallel imaging to further increase the speed of
acquisition independent of the types of pulse sequence. This faster acquisition can be traded off to increase spatial or temporal resolution. In this 20-minute presentation, the concept of compressed sensing will be explained initially and then follow by examples of application of compressed sensing in clinical pediatric MR examinations which were acquired with pre-commercial package provided by MR vendor on a research agreement approved by Institutional Research Board.

Lt Col (Dr) U Rajesh

Armed Forces Medical College, Pune

TOPIC: IMAGE OPTIMIZATION IN CT CORONARY ANGIOGRAPHY

CT Coronary angiography has emerged as an excellent imaging modality for non-invasive evaluation of coronary arteries. This has been facilitated by technological advances, which have led to acquisition of large images data sets with excellent spatial and temporal resolution. Technique and image optimization play an important role in performing CT Coronary angiography. The steps to perform the same can be broadly into three: 1) Patient preparation, 2) Inside the CT suite and 3) After data acquisition. Patient preparation is paramount in achieving optimal diagnostic quality images. Appropriate indication should be ascertained and adequate instructions should be given to the patient, both verbal and in the form of an instruction leaflet. Patient should be made to practice breath holding. Oral metoprolol should be administered to control heart rate with target heart rate of <60 bpm.

Once the patient is inside the CT suite, ECG leads should be placed and intravenous access should be secured. Coronary calcium scoring should be done because the accuracy of CT Coronary angiography varies based on the location and quantity of coronary calcium. In case heart rate is not controlled by oral metoprolol, intravenous metoprolol should be administered. 0.3 mg of sublingual nitroglycerin should be administered to effect coronary vasodilatation. Different contrast injection protocols have been used but bolus-tracking method is preferable because of its efficiency and practicality. Prospective or retrospective ECG gating can be used to reconstruct motion-free images of the coronary arteries. After data acquisition, medium smooth image reconstruction filters should be used for evaluation of coronary arteries. For evaluation of stents or highly calcified coronaries, sharp image reconstruction filters should be used.

In every CT Coronary angiography study, properly laid out protocol from patient preparation to post processing techniques should be followed. This will not only yield excellent images but also reduce the radiation dose.

Dr. Uma Debi

Title: Contrast reaction and management

In most radiology practices iodinated and gadolinium-based contrast media are used on a daily basis. These agents often are nearly always safe and effective when administered correctly, and are essential to providing accurate diagnoses. However, various reactions to contrast media may occur and can be life threatening. Therefore, it is critical for faculty and staff to know how reactions to contrast agents manifest and how to treat them promptly. The decline in renal function seen occasionally after intravenous administration of iodinated contrast agents is poorly understood and likely multifactorial, and its association with the contrast medium may be overemphasized. However, it is important that radiologists be aware of current understanding and strategies to decrease the incidence of renal dysfunction. Nephrogenic systemic fibrosis, a skin disease, is an adverse reaction related to use of some gadolinium-based contrast agents in patients
with chronic renal failure. The use of enteric contrast agents and contrast agents during pregnancy and nursing are also taken care of. Current knowledge for safe use of contrast media and key concepts that all radiologists should know. MR IMAGING OF BONE MARROW

Dr. Varaprasad N. Vemuri
MD, FICR

MR IMAGING OF BONE MARROW

Bone Marrow is a framework of trabecular bone. The complex and dynamic bone remodeling process occurs in an orderly predictable fashion by the result of a systematic delicate balance between Osteoblastic and Osteoclastic activity.

At birth complete marrow is red marrow and by the age of 25 to 30 adult pattern of marrow, predominantly yellow marrow will be seen. This process is Bone marrow conversion.

In this lecture will discuss the MRI patterns and recognition of physiologic process of Marrow Conversion along with few pathological states, both benign and malignant.

- Marrow reconversion
- Marrow Ischemia
- Marrow edema
- Marrow depletion
- Marrow replacement
- Marrow Infiltration

Dr. Vasanthakumar V

Artificial Intelligence

Impact of AI on Radiology Teaching & Training

Artificial intelligence (AI) is an innovation which will transform radiology in many ways. Apart from the potential to the completely disrupt the existing radiology practice, it can essentially re-invent the radiology teaching and training methods.

This lecture will be divided under the following headings:
- Current status of AI in Radiology
- Potential for AI in radiology practice in near Future
- Potential for AI in radiology teaching and training
- How will radiology resident training be affected by AI
- AI Survival Guide to residents
- What to learn and how to learn to adopt to AI revolution
- Conclusion
Breast interventional procedures may be diagnostic or therapeutic. Image guided breast biopsy is preferred over surgical biopsy as it is faster, cheaper and highly accurate. Percutaneous Breast Biopsy can be done under ultrasound, mammographic (Stereotactic), or MRI guidance. Ultrasound is the preferred guiding modality as its widely available, cheaper, faster. Horizontal approach is used with needle parallel to chest wall. For lateral entry, patient is placed in supine or SO position and for medial approach, patient is put supine with I/L arm raised above head. 5-10 cc of 1% LA is given and needle entry site is 1cm from transducer edge. Patient should be informed before firing. Needle is removed and sample processed in 10% formalin (not needle). Vacuum Assisted Biopsy has the advantage that single insertion can yield multiple, larger cores; facility of marker clip placement and there are less chances of needle tract contamination. It can also be done under Stereotactic, Ultrasound and MRI guidance. In USG Vacuum Assisted Biopsy, we hit the lesion from side/below the lesion. Stereotactic Biopsy/VAB is done for suspicious microcalcifications, mass or architectural distortion seen on mammography but not seen on US.

It uses X-ray imaging for localization and targeting. Angled images (15 degree plus and minus) are taken for 3D location of lesion. It can be performed on add on erect or prone table systems. Erect system is less expensive, occupies less space, provides better access to posterior chest and axillary region but has the disadvantage of more vasovagal reactions. Prone tables provide more working space to the radiologist, and are easier for the patient. They have the disadvantage of occupying more space. MR Guided Biopsy is done for suspicious masses not identified by other imaging techniques. Special breast coils and needle guide (aiming device) are needed and patient is put in prone position. Grid type localization device is used and lateral access only is possible with MR compatible needles (titanium). Disadvantages are that it's difficult and time consuming, needs special hardware and contrast administration.

Wire Localization is done as a pre-operative procedure for non-palpable lesions prior to therapeutic lumpectomy. It guides the surgeon to accurately reach and remove the lesion. It can be done under mammography, ultrasound or MR guidance. If the lesion is visualised under ultrasound, it's the most commonly used modality for localisation device placement. Two types; hook wire and j wire; are available. Hook wire is advanced such that the tip is beyond the lesion and thick portion of the wire is seen anchored within the lesion. The role of the radiologist has risen in treatment of breast abscesses, incision and drainage no longer being recommended. Percutaneous drainage has several advantages which include early amputation and minimal scarring. Some novel therapeutic procedures like High Intensity Focussed Ultrasound and Cryotherapy are emerging techniques adding to the radiologists' armamentarium.

**SECTION B: BREAST INTERVENTION**

1. **GENERAL PRINCIPLES**

Breast interventional procedures may be diagnostic, therapeutic, or both.

Gynaecological cancers constitute half of all female cancers. In India, carcinoma cervix constitutes 80%, ovarian malignancies constitute 15% and rest comprise 5% of gynaecological malignancies.

Carcinoma cervix is seen in reproductive age (30-45 yrs). Patient presents with discharge PV, bleeding PV, pelvic pain or lower urinary tract symptoms. Histology is usually squamous cell carcinomas (90%). TVS is of limited value. CT is used in advanced disease and for assessment of lymph nodes. MRI is an excellent modality for detecting stromal invasion, parametrial involvement and depiction of relation to pelvic organs.
Ovarian tumors are classified into epithelial (serous and mucinous tumors, endometroid and clear cell carcinomas, Brenner tumor), germ cell (mature and immature teratomas, dysgerminomas, endodermal sinus tumors, embryonal carcinoma), sex cord-stromal (fibrothecoma, granulosa cell, Sertoli Leydig cell) and metastatic. Pointers towards malignancy are mural thickening, nodularity, papillary projections, septations >3mm, solid component, involvement of pelvic organs or the sidewall, peritoneal, mesenteric, or omental disease, ascites, lymphadenopathy. Epithelial tumors are primarily cystic and when malignant are associated with a varying amount of solid component. Teratomas demonstrate fat on both CT and MRI. Malignant germ cell tumors are large, complex solid cystic masses. Sex cord-stromal tumors may be small solid or large multicystic tumors. Endometrial carcinoma usually occurs in post-menopausal women and presents with vaginal bleeding. TVS is the initial modality to identify abnormal endometrial thickening. Diagnosis is established with EB. MRI is useful for pretreatment initial staging and gives information on depth of myometrial and cervical stromal invasion. Carcinoma vulva and vagina are rare, being mostly squamous cell carcinomas. Goal of imaging is to delineate the local extent, lymph node status, complications like vesicovaginal or rectovaginal fistulas.

To summarize multidisciplinary care is required for patients with gynecologic cancer and radiologists should collaborate closely with gynecology and radiation oncology colleagues.

Dr. Vidur Mahajan

Artificial Intelligence: A Primer

Artificial Intelligence is the new buzz-word across the world in all industries. Similarly, it has started to create significant interest in radiology. In my talk I will aim to achieve the following:

- Give a primer on the history of AI, what it is and how it works
- Give insight into the types of AI - specific, general and super-intelligence
- Broad categories of AI applications, irrespective of industry
- Impact of AI across the radiology value-chain: a framework on how to think about AI impacting radiology

Preparing your Radiology Practice and IT Department for Big Data and AI

With more and more AI algorithms getting developed for radiology, it is important to start thinking about how to ‘AI-ready’ your departments. I will cover the following points during my talk:

Preparing your department to develop AI algorithms

- The ‘standardisation’ problem
- Optimising your RIS-PACS to enable AI development
- Identifying problems to solve using AI
  Preparing your department for deployment of AI algorithms
- Validation of AI algorithms - do they even work?
- Hardware for AI deployment
- Integration with RIS-PACS for AI deployment
Imaging of Sella

The sellar and juxtasellar region is an anatomically complex area where a number of neoplastic, infectious, inflammatory, developmental and vascular pathologies can occur. Differentiation among various etiologies may not always be easy, since many of these lesions may mimic the clinical, endocrinologic and radiologic presentations of pituitary adenomas. The diagnosis of sellar lesions involves a multidisciplinary effort, and detailed endocrinologic, ophthalmologic and neurologic testing is essential. CT and, mainly, MRI are the imaging modalities to study and characterize normal anatomy and the majority of pathologic processes in this region. At least 30 different lesions occur in or around the pituitary gland, arising from either the pituitary gland itself or the structures that surround it. These include the cavernous sinus and its contents, arteries (the circle of Willis), cranial nerves, meninges, CSF spaces (the suprasellar cistern and third ventricle), and brain parenchyma (the hypothalamus). Pituitary tumors account for up to 15% of all intracranial masses, and pituitary adenomas are reported to account for 90% of sellar and parasellar lesions. Clinically active pituitary adenomas occur at a prevalence of 1:1064 to 1:1288 to the general population. Other sellar lesions include nonneoplastic cystic lesions, germ cell tumors, gliomas, lymphomas, meningiomas, metastatic tumors, vascular lesions, granulomatous and inflammatory lesions, and infections including bacterial abscesses as well as pituitary hyperplasia.

A correct diagnosis of such lesions thus implicates a multidisciplinary approach, requiring detailed endocrine, neuroimaging, and ophthalmological studies. Correct diagnostic orientation is crucial in order to choose the proper treatment for each different case.

Histological confirmation is not necessary in formulating a management plan in most cases. It is indeed redundant (and may be even dangerous) when clinical, endocrine and/or radiological features are clear-cut.

MR is the imaging of choice for the pituitary gland. In order to optimise the study it is necessary to perform thin sections (2mm or 3mm) targeted to the pituitary fossa and performed in both the sagittal and coronal planes. T1 weighted sequences before and after intravenous contrast are the main-stay of pituitary imaging. Coronal T2 weighted sequences can also give added information but are less sensitive in the detection of adenomas.
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Abstract ID: 30

ABSTRACT TITLE: CT CHARACTERIZATION OF PORTAL VEIN THROMBOSIS (NEOPLASTIC VERSUS BLAND)

PRESENTING AUTHOR: BHAVANA N

CO-AUTHOR: DR ABDUL GAFOOR, DR JOJI REDDY, DR HARINATH, DR SURESH

AIM: The purpose of this study was to investigate the role of CT and thrombus density (measured in Hounsfield units) in distinguishing between neoplastic and bland portal vein thrombosis (PVT) on portal venous phase CT.

Methods: A Retrospective study of 62 patients with cirrhosis who went MDCT Triple phase in the Department of Radio diagnosis, Kurnool medical college and Government general hospital, Kurnool are taken for study. CT performed in GE BRIGHT ELITE CT scanner. Images were assessed for location, extent, enhancement, neovascularity, and maximal diameter of PVT. Assessment of PVT was performed by estimation of CT textural features using CT texture analysis software and measurement of attenuation values.

Results: Out of 62, 37 patients had malignant and 25 patients had benign PVT. CT scans of patients with malignant PVT showed direct extension of hepatocellular carcinoma into the portal vein in 9 patients. In 24 patients with malignant PVT, CT scans showed PVT adjacent to tumor; CT scans showed tumor PVT remote from hepatocellular carcinoma in the remaining four patients with malignant PVT. Measurement of thrombus density also reliably distinguished neoplastic and bland thrombus. As compared to other studies sensitivity and specificity for the CT characterization of malignant PVT of 82% and 100%, respectively.

Conclusion: Neoplastic and bland thrombi can often be differentiated by radiologists. CT attenuation values allow reliable differentiation between neoplastic and bland thrombi on a single portal venous phase CT examination.

Abstract ID: 217

ABSTRACT TITLE: MDCT EVALUATION OF SMALL AND LARGE BOWEL WALL MASS LESION WITH HISTOPATHOLOGY CONFIRMATION.

PRESENTING AUTHOR: RAVI KUMAR

CO-AUTHOR: (None)

PURPOSE: AIMS & OBJECTIVES

1. To study the MDCT characteristics of wall thickening and enhancement pattern of Neoplastic and Non Neoplastic lesions of small and large bowel wall lesions.

2. To evaluate the effectiveness of MDCT in differentiating Neoplastic and Non Neoplastic lesions of small and large bowel wall.

3. To evaluate the effectiveness of MDCT among neoplastic lesions in differentiating them into Benign or Malignant lesions.
**Materials And Methods:** Hospital based prospective correlative study of 52 patients with bowel wall lesions on MDCT and biopsied for Histopathological correlation.

**Results:** Among the 52 cases MDCT diagnosed 28 as neoplastic and 24 as Non Neoplastic, Histopathology confirmed these lesions with 27 as Neoplastic & 25 Non Neoplastic. Hence in our study CT had a sensitivity of 96.29%, specificity of 92.00%, positive predictive value of 92.85% and a negative predictive value of 95.83% in differentiating Neoplastic and Non Neoplastic Lesions with P value of 0.001 this association is considered very significant statistically.

**Conclusions:**
1. MDCT is an excellent modality in the diagnosing Neoplastic and Non Neoplastic lesions of Small and Large Bowel wall.
2. MDCT can differentiate benign and malignant lesions based on degree of wall thickening which is statistically significant.
3. MDCT can differentiate benign and malignant lesions based on type of wall enhancement on post contrast study which is statistically significant.
4. MDCT is helpful for some extent to differentiate benign and malignant lesions based on symmetric or asymmetric of wall thickening but this differentiation is not statistically significant in our study.
5. Among Non-Neoplastic lesions MDCT can differentiate between Infective, Inflammatory and Ischemic lesions.

**References:**

**Abstract ID:294**

**ABSTRACT TITLE:** CT FINDINGS OF IDIOPATHIC ABDOMINAL COCOON: A REPORT OF SIX PATIENTS.

**PRESENTING AUTHOR:** RAJEEV N PRIYADARSHI

**CO-AUTHOR:** DR UTPAL ANAND, DR RAMESH KUMAR, DR PREM KUMAR

**Purpose:** Idiopathic abdominal cocoon (IAC) is a rare but distinct entity that refers to encasement of small bowel by a membranous structure. Because imaging characteristics of this condition are often subtle and non-specific, the diagnosis is usually established intraoperatively. We herein describe computed tomographic (CT) characteristics that may lead to preoperative diagnosis of this disease.

**Method:** The imaging findings of 6 patients with IAC, who underwent surgical exploration and diagnosed histopathologically, were reviewed retrospectively.

**Results:** There were 4 female and 2 male. The age ranged from 13 to 62 years (median 26 year). The median duration of symptoms was 23 month (range 7-68 month). The common clinical presenting features were recurrent abdominal pain (n=5) and small bowel obstruction (n=3). All patients had received empirical antitubercular treatment for 6 to 9 month before admission, but their symptoms continued. The CT scan detected encased and clustered small bowel loops in all patients, membrane like structure encasing the
small bowel in two patients, and left paraduodenal hernia in one patient. During laparotomy, a white membrane-like sac enveloping the variable length of small bowel was identified in all cases. Histopathological examination revealed fibrocollagenous tissue with chronic inflammatory cells in all cases.

**Conclusion:** Though the preoperative specific diagnosis is difficult, the clustered and encased appearance of bowel loops is the most sensitive imaging findings on CT. When this finding is detected by CT, patients are best treated by surgery.

**Abstract ID:545**

**ABSTRACT TITLE:** MDCT EVALUATION OF ANATOMICAL VARIATIONS IN CELIAC AND HEPATIC ARTERIES.

**PRESENTING AUTHOR:** RANJITHA KULKARNI

**CO-AUTHOR:** DR VIJAY KUMAR K R, DR ARUL T DASAN, DR ARPITHA J

**AIM:** To evaluate and estimate the prevalence of variations of by MDCT celiac artery and hepatic artery in South Indian population.

**Materials and Methods:** A cross sectional study of 120 patients were carried in the Department of Radiodiagnosis, Bangalore medical college and research institute. Patients of all age groups, undergoing contrast enhanced CT of abdomen for various indications were included. Patients with derangement of the target vascular area were excluded in the study. CT was performed with Philips ingenuity 128 slice machine. Assessment of celiac artery and hepatic artery was done by evaluation of thin sections, maximum-intensity-projection images and volume-rendered images.

**RESULTS:** 92 patients had normal trifurcation pattern of celiac artery and 18 patients had non classical pattern in which 10 had type V, 4 had type 2 and 2 had type 3 and remaining 2 had type 6 pattern of uflaker’s classification. Michelle type I was commonest variant of hepatic artery found in 88 patients, followed by type III in 18 patients and 15 patients had type V pattern.

**Conclusion:** Celiac artery and hepatic artery variations are quite frequent. Classical trifurcation pattern is the most commonly seen pattern of celiac artery. In non classical pattern separate origin of CHA(type V) is more common followed by origin of Left gastric artery from aorta(type II).In hepatic arteries type I is more common followed by type III and type V.

**Discussion:** Knowledge of normal anatomical variants in Celiac artery and hepatic artery are necessary pre operatively to decrease complications and the morbidity rates.

**Abstract ID:584**

**ABSTRACT TITLE:** EVALUATION OF ABDOMINAL TUBERCULOSIS BY 3T MR ENTEROGRAPHY AND DIFFUSION WEIGHTED MR IMAGING

**PRESENTING AUTHOR:** PRINCE DAS

**CO-AUTHOR:** DR. RASHMI DIXIT, DR. ANJALI PRAKESH

**Purpose:** Abdominal tuberculosis is a major cause of mortality and morbidity in India and is usually evaluated by contrast enhanced CT. Large proportion of the patients are young and hence radiation exposure is of
concern. In addition, in some patients, contrast may be contraindicated or repeated studies may be required to look for resolution of lesions where MR may be useful. The aim of the study is to describe MRI features in abdominal tuberculosis including DWI.

**Materials and methods:** The study included 50 patients of abdominal tuberculosis. MR enterography including contrast enhanced and diffusion weighted imaging was done on 3-Tesla MR system (Magnetom Skyra Siemens).

**Result:** Of the 50 patient with abdominal tuberculosis, lymphadenopathy was seen in 38 (76%), bowel wall thickening in 33 (66%), peritoneal tuberculosis in 27 (54%) and solid organ involvement in 2 (8%). Most patients had multiple findings. On DWI diffusion restriction was seen in all the involved lymph nodal groups, bowel wall thickening, and omental and peritoneal thickening with Mean ADC value of 0.858 +/- 0.163, 0.852 +/- 0.11 and 0.92 x 10^-3 +/-0.13mm2/sec respectively.

**Conclusion:** We conclude that conventional MR imaging can provide valuable information about all manifestations of abdominal tuberculosis. Diffusion imaging and ADC values provide important adjunct information regarding the disease.

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**Abstract ID:660**

**ABSTRACT TITLE:** A STUDY TO COMPARE THE VALIDITY OF ULTRASONOGRAPHY AND MAGNETIC RESONANCE IMAGING WITH HISTOPATHOLOGICAL DIAGNOSIS IN THE EVALUATION OF ADNEXAL MASSES

**PRESENTING AUTHOR:** TANUSRI DEBBARMA

**CO-AUTHOR:** DR ASHIM DE

**Aim:** To study the spectrum of diverse nature of adnexal mass lesions. To assess the relative role of USG and MRI in the evaluation of adnexal mass lesions, and compare them with clinical outcome or operative findings wherever possible.

**Methods:** A cross-sectional study of 50 patients were carried in the Department of Radio-diagnosis, AGMC & GB Pant Hospital, Agartala. Patients from all the age groups with clinically suspected adnexal masses were included. Patients with contraindications to contrast MRI and patient who refuse to give consent for the study were excluded.

**Discussion:** In determining the organ of origin and identifying specific tissue characteristics MRI had better agreement than ultrasonography with the final HPE diagnosis. USG had a sensitivity of 90%, specificity of 70% and diagnostic accuracy of 94% in detecting malignancy. We also observed that USG proved to have a very high sensitivity (96%) and low specificity (66%) in detecting benign lesion in this study. MRI had a sensitivity of 91%, specificity of 94% and a diagnostic accuracy of 94% in detecting malignant adnexal lesions. MRI also had a better sensitivity (94%) and specificity (100%) in detecting benign lesions.

**Conclusion:** The advantages of MRI in the evaluation of adnexal masses are its capabilities to accurately determine the organ of origin and to characterize specific tissue contents. Although ultrasonography may be the best available screening tool for detection of adnexal masses, all lesions with complex or indeterminate sonographic finding should be further evaluated with MRI for better characterization.
Abstract ID: 682

**ABSTRACT TITLE**: COMPUTED TOMOGRAPHIC EVALUATION OF SOLID ORGAN INJURIES IN BLUNT ABDOMINAL TRAUMA

**PRESENTING AUTHOR**: ROYCE DSA

**CO-AUTHOR**: DR. PARTHASARATHY K.R, DR. KRISHNAPRIYA RAJ, DR. VEERESH PURAD.

**Aims & objectives**: To study the pattern as well as grades of intra-abdominal solid organ injuries in blunt abdominal trauma using CT.

**Materials and methods**: The study was conducted in Department of Radiodiagnosis, SSIMS & RC, DAVANGERE (July 2017-January 2018) Sample size: 40

**RESULTS**: The age of patients in this study ranged from 6 to 90 years, with a mean age of 30.4 years. The majority were males (82.5%) with a male to female ratio of 4.7:1. RTA was the most common mechanism of injury. Most common intra-abdominal solid organ injury was splenic injury followed by liver injury. Multiple intra-abdominal solid organ injuries were present in 4 patients (10%). Hemoperitoneum was found in 95% of patients, in which most of them had moderate hemoperitoneum (55%). Most common cause for splenic injury in our study was fall from height followed by RTA & most common injury was Grade III injury. RTA followed by fall from height for liver injury with Grade II & III injuries being most common injury. RTA followed by fall from height for renal injury with Grade IV injury being most common injury.

**CONCLUSION**: Trauma is one of the leading causes of death in young age group & approximately 10% of all trauma deaths are a result of abdominal injuries secondary to blunt abdominal trauma. Thus a prompt & accurate diagnosis is critical & imaging modalities play a very important role in impeccably characterising grade of organ injury & formulate appropriate management protocols deemed necessary.

Abstract ID: 712

**ABSTRACT TITLE**: IMAGING FINDINGS IN MALIGNANT PANCREATIC TUMORS

**PRESENTING AUTHOR**: SATYAPRAVEEN SAMANTULA

**CO-AUTHOR**: DR. G S KEJRIWAL, DR. MAHESH, DR. SANGRAM PANDA

**Purpose**: Pancreatic tumors range from benign, borderline to malignant and can arise from exocrine, neuroendocrine, intraductal, and stromal elements apart from metastases and nonneoplastic tumor-like conditions (e.g., mass-forming chronic pancreatitis).

**Aim**: of this study is to list out the various imaging findings consistently associated with malignant pancreatic neoplasms on CECT.

**Materials and Methods**: This is a hospital based retrospective study that evaluated 30 patients with diagnosed pancreatic malignancy. Most of the patients are in the age group of 40-80yrs. 16 slice MDCT (Revolution from GE healthcare) is used. Low osmolality intravenous contrast agent with high iodine concentration (370 mg I/mL) at a dose of 1.5 mg I/kg is used. The contrast agent administered by power injector at a rate of 3 - 5 mL/s.
Results: pancreatic mass (n = 28) is the most consistent finding. Ducts dilatation is noted in around half of the patients (n= 17). Other significant imaging findings include obliteration of peripancreatic fat, thickening of celiac axis / SMA, central zone of diminished attenuation, hypoattenuating lesion during arterial phase, collateral venous channels & metastases.

Conclusion: In clinical practice, only a few of the neoplasms (adenocarcinoma, cystic neoplasms, pancreatic neuroendocrine tumors, and metastases) are encountered with any frequency. It is important to recognise the findings on CT which may be the only imaging modality for the diagnosis of pancreatic malignancies which are one of the most aggressive tumors in many imaging centers.


Abstract ID:832

ABSTRACT TITLE: CORRELATION OF GRADE OF NON-ALCOHOLIC FATTY LIVER DISEASE WITH RISK OF CARDIOVASCULAR DISEASE IN TYPE 2 DIABETES MELLITUS PATIENTS

PRESENTING AUTHOR: KAVIT GUPTA
CO-AUTHOR: DR. SUMAN KOCHHAR, DR. REKHA GUPTA, DR.S.S. LEHL

Purpose: Non-alcoholic fatty liver disease (NAFLD) is a leading cause of chronic liver disease, with higher prevalence in diabetic individuals and has been associated with increased mortality, especially due to cardiovascular events. Novel semiquantitative ultrasonographic scoring system- Ultrasonographic Fatty Liver Indicator (US-FLI) has shown strong correlation with histological parameters of hepatic steatosis and Non-alcoholic steato-hepatitis1. US-FLI (scores 0-8) considers 6 ultrasonographic parameters, with NAFLD diagnosed as US-FLI ≥2. This study correlates NAFLD (as assessed by US-FLI) with risk of cardiovascular events, assessed by carotid intima-media thickness (CIMT) in type 2 diabetes mellitus (DM) patients.

Materials and methods: 50 known cases of type 2 DM, with age 20-65 years and duration of diabetes≥2 years were assessed for CIMT, anthropometric indices, biochemical investigations and further categorized into DM without NAFLD (US-FLI score<2) and DM with NAFLD(US-FLI score>2). The latter group was further sub-categorized into mild NAFLD (US-FLI score 2-4) and moderate-severe NAFLD (US-FLI >4). 25 controls without DM or NAFLD (US-FLI<2) were also assessed. Exclusion criteria of the study included alcohol intake>20gram/day, chronic liver disease, hepatotoxic drugs, malignancy or pregnancy.

Results: 24(48%) DM subjects had NAFLD (32% mild NAFLD, 16% moderate-severe NAFLD). CIMT was significantly different between diabetic and control group (p<0.001), diabetics with mild and moderate-severe NAFLD (p=0.014) and Diabetic with no NAFLD and moderate-severe NAFLD (p=0.001).

Conclusion: There is significantly increased risk of cardiovascular disease in diabetics with moderate-severe NAFLD compared to diabetics with no NAFLD or mild NAFLD as assessed by US-FLI.

Abstract ID: 894

**ABSTRACT TITLE**: ABDOMINAL CT ENTEROGRAPHY AS AN IMAGING TOOL FOR CHRONIC DIARRHEA: REVIEW OF TECHNIQUE AND DIAGNOSTIC CRITERIA

**PRESENTING AUTHOR**: NISHANT PATEL

**CO-AUTHOR**: DR.ASUTOSH DAVE. DR.NIKUNJ DESAI.

**Purpose**: Our aim was to evaluate the role of multi-slice CT enterography in chronic diarrhea and its degree of correlation with endoscopy and histopathology.

**Materials and methods**: 30 patients with chronic diarrhea (13 Crohn’s disease, 3 ulcerative colitis, 5 Tuberculous enteritis, 1 Entamoeba infestation, 4 Celiac disease, 2 lymphoma and 2 miscellaneous) were evaluated by CT enterography. Quantitative image analysis included evaluation of bowel caliber and wall thickness. Qualitative analysis included anatomical localization of lesions, assessment of mucosal hyper-enhancement, adhesions, fistula, pattern reversal, lymphadenopathy and other extra-parietal alterations. Accuracy, sensitivity, specificity, PPV, NPV were calculated for Crohn’s, sensitivity and PPV were calculated for lymphoma.

**Results**: Most Crohn’s lesions affected the ileum, while ulcerative colitis affected the colon with involvement of the terminal ileum. Celiac disease affected the jejunum primarily while the ileum was the site of predilection in lymphoma. CT enterography showed a sensitivity of 100%, specificity 0%, PPV 69.70%, NPV 0% and an accuracy of 69.70% for Crohn’s. In lymphoma, sensitivity and PPV were both 100%.

**Conclusion**: CT enterography is a valuable tool in the diagnostic armamentarium of bowel disorders presenting with chronic diarrhea.

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Abstract ID: 995

**ABSTRACT TITLE**: SYMTOMATIC BILIARY PSEUDOLITHIASIS IN ADULT PATIENTS TREATED WITH CEFTRIAXONE

**PRESENTING AUTHOR**: E SIBI

**CO-AUTHOR**: MAJ AMAN ARORA

**Background**: Ceftriaxone is a frequently used antibiotic in inpatients treated for a number of bacterial infections. Biliary pseudolithiasis is a well known asymptomatic and reversible complication of this drug. However, a percentage of patients do present with new onset of abdominal symptoms which can be attributable to presence of pseudoliths.

**Objective**: To evaluate incidence of Pseudolithiasis in inpatients treated with parenteral Ceftriaxone and long term follow up over 01 year to assess resolution and development of abdominal symptoms attributable to Pseudolithiasis.

**Methods**: All patients admitted at our centre and started on Ceftriaxone were subjected to sonographic examination on day 1 and day 7 of treatment. Patients who developed Pseudolithiasis were prospectively followed up at 1 month, 3 months, 6 months and 1 year to see for resolution of pseudoliths or when presented with symptoms.

**Results**: A total of 1490 patients were considered for the study from Aug 2016 till Jul 2017. Out of them 131 (8.7%) patients had developed pseudolithiasis as observed on Sonographic examination performed on day 7 of therapy. Eleven (8.3%) patients had presented with upper abdominal symptoms suggestive of biliary colic.
before resolution of Pseudolithiasis. Ten (7.6%) patients had persistence of Pseudoliths at 1 month after discontinuation of therapy and 1 (0.76%) had persistent calculi at 1 year.

**Conclusion:** Biliary pseudolithiasis is a common side effect of ceftriaxone therapy with biliary colic, cholecystitis and pancreatitis complicating course of primary illness. Further consultations and interventions like cholecystectomy can be reserved only to symptomatic individuals and those with persistent pseudoliths.

**Abstract ID:1004**

**ABSTRACT TITLE:** BRINGING OBJECTIVITY TO BOWEL ASSESSMENT : ARE IODINE MAPS THE ANSWER?

**PRESENTING AUTHOR:** DEEKSHA BHALLA

**CO-AUTHOR:** NAVEEN KALRA, ANMOL BHATIA, RK KOCHHAR, MS SANDHU, NARENDER DHAKA

**Purpose:** To study the role of dual energy computed tomography (DECT) enterography in the evaluation of inflammatory pathology of the bowel; and comparison with small bowel follow through (BMFT)

**Materials and Methods:** A prospective ongoing study of 25 consecutive adult patients presenting to the gastroenterology OPD and clinically suspected to have bowel related inflammatory pathology. After informed consent of the patients, each one was subjected to DECT Enterography and BMFT.

**The study was approved by the institutional ethics committee:** Following data acquisition, the image quality was analysed and distension of bowel graded as good, adequate or poor based on luminal calibre. The number of strictures detected on both modalities was compared; and presence of cecal deformity recorded. In addition, quantitative assessment of iodine overlay images was done to map the absolute and relative iodine uptake in involved segments of bowel versus the normal segments.

**Results:** In ongoing analysis, most patients were found to have adequate distension i.e. either one of the jejunum or ileum is distended. The number of strictures detected, in majority patients was concordant in both studies. However, additional strictures and involved segments were detected on DECT in a few studies. The iodine overlay maps showed higher levels of both absolute and relative iodine uptake in the involved segments.

**Conclusion:** DECT showed a significant advantage in inflammatory bowel pathology, increasing diagnostic confidence even in inadequately distended bowel loops and allowing objective mapping of the involved segments via iodine overlay images, which aids not only immediate management but also eases interpretation of follow up studies

**Abstract ID:1122**

**ABSTRACT TITLE:** COMPARATIVE EVALUATION OF PLAIN ABDOMINAL RADIOGRAPH AND ULTRASOUND IN THE DIAGNOSIS OF INTESTINAL OBSTRUCTION

**PRESENTING AUTHOR:** DARISALAN KYNJING

**CO-AUTHOR:** DR.SUSHIL KUMAR KALE, DR.SAURABH PATIL

**Purpose:** To evaluate the role of plain abdominal radiograph and ultrasound in the diagnosis of intestinal obstruction.
Materials and methods: Between March 2018 to August 2018, 32 (Mean age 39.2 years) clinically suspected and surgically intervened cases of intestinal obstruction were investigated routinely with plain abdominal radiography and ultrasonography (USG) and were prospectively followed up with surgical findings. Reporting of images was done by consultants of the department of Radiodiagnosis. Sensitivity, specificity, positive predictive value, negative predictive value and accuracy were compared using Medcalc version 18.9.

Results: Out of the 32 patients, 29 had intestinal obstruction with surgical cause. Remaining three cases had no obvious pathology during surgery. The comparable sensitivity, specificity, positive predictive value, negative predictive value and accuracy were, respectively, 68.9%, 66.6%, 95.2%, 18.2% and 68.7% for USG and 44.8%, 33.3%, 86.6%, 5.8% and 43.7% for plain radiography. Combination of both investigations gave sensitivity, specificity, positive predictive value, negative predictive value and accuracy were 82.7%, 66.7%, 96%, 28.5% and 81.2% respectively.

CONCLUSION: Sensitivity and specificity of USG and plain radiography individually, in diagnosing intestinal obstruction is less. However, the sensitivity and specificity significantly increases on combination of both investigations, thus making these investigations an important part of diagnosis especially in areas where further investigations such as computed tomography are limited. The study is limited by less sample size and level of obstruction was not evaluated in image interpretation.

Abstract ID: 1127

ABSTRACT TITLE: INJECTION OF AQUEOUS JELLY PERCUTANEOUSLY IN MR FISTULOGRAM
PRESENTING AUTHOR: SAMIR DERE
CO-AUTHOR: DR. AVINASH DHOK

PURPOSE: Perianal fistula is a commonly encountered condition in routine surgical practice. Accurate presurgical mapping of these tracts is vital to prevent recurrence. To evaluate proper course of fistulous tract by injecting aqueous jelly percutaneously prior to MR Fistulogram and compare with intraoperative findings.

Methods and materials: Prospective study was conducted in NKPSIMS in patient with fistula in ano and evaluation was done with the help of GE 1.5 tesla MRI. Sterile aqueous ultrasound jelly was injected through 10 ml syringe and outer sheath of a 20 G venous cannula into external opening of fistula. After the instillation of jelly, MR fistulography of the patients was done.

Results: Thirty five patients in our study had undergone preoperative MR fistulography with aqueous jelly instillation. MR fistulography revealed a total of 40 tracts and showed a sensitivity and specificity of 100% in delineation of type of tract. Thirty nine internal openings were identified with 95% sensitivity, 100% specificity and 96% accuracy. None of the patients reported pain, fever or bleeding post procedure till surgery.

Conclusion: comprehensive delineation of the complex anatomy of perianal fistulae Can be achieved by a safe, cost effective, and accurate technique of instillation of aqueous jelly percutaneously prior to MR fistulography.
Abstract ID: 1129

ABSTRACT TITLE: USG GUIDED BIOPSY OF OMENTAL NODULAR DEPOSITS AND ITS CORRELATION WITH HISTOPATHOLOGICAL EXAMINATION

PRESENTING AUTHOR: AISHWARYA SINGH

CO-AUTHOR: DR. S. S. G. MOHAPATRA, DR. ADYA K PANDA, DR. BEENA DEVI AGARWAL

AIM: To determine predictive value of percutaneous imaging-guided biopsy of omental nodular deposits. To detect the utility of tru-cut biopsy as a diagnostic tool in assessment of nature of omental lesions.

Materials and methods: We retrospectively reviewed all omental biopsies performed under USG guidance from September 2017 to August 2018 in our hospital.

Results: 50 patients were included. Out of these, 22 patients (44%) were diagnosed to have malignancies, 15 patients (30%) had granulomatous inflammation either suggestive or conclusive with tuberculosis, 10 patients (20%) were diagnosed to have inconclusive biopsy results, 3 patients (6%) had an adequate sample for histopathological examination.

Conclusion: USG-guided biopsy of the omentum is a safe and effective procedure. A thickened omentum can serve as an easily accessible site for biopsy, especially in patients who have ascites of unknown etiology and in those with a history of previous malignancy.

DISCUSSION: Omental thickening is usually an indicator of an abdominal pathology such as malignancy or granulomatous inflammation. The omentum is involved by hematogenous spread from lungs, by the lymphatics or direct spread. USG-guided biopsy is gaining widespread acceptance since it is safe and effective for assessment of nature of omental lesions.

REFERENCES:

Abstract ID: 1169

ABSTRACT TITLE: IMAGING CHARACTERISTICS OF HEPATOCELLULAR CARCINOMA

PRESENTING AUTHOR: CH. MADHAVI

CO-AUTHOR: DR. G. S. KEJRIWAL, DR. CH. MADHAVI, DR. SANGRAM PANDA

AIM: To demonstrate imaging spectrum of hepatocellular carcinoma including atypical appearances on multimodal imaging.

Background: As hepatocellular carcinoma typically has a poor prognosis 25% 5yr survival rate, it is of utmost importance to achieve the earliest possible diagnosis and to recommend the most up-to-date optimal treatment strategy in order to increase the survival rate of patients who develop this disease. HCC is commonly seen in cirrhotic patients with 80% occurrence and in patients affected with Hep-B/C viruses. HCC is commonly diagnosed using dynamic CT/MRI without histological confirmation, on the basis of a
characteristic arterial enhancement and portal venous or delayed phase washout. Familiarity with unusual presentations and their imaging findings is critical to ensuring prompt, accurate diagnosis and treatment. Moreover, while imaging techniques have markedly improved in detecting small liver lesions, they often detect incidental benign liver lesions and non-hepatocellular malignancy that can be misdiagnosed as HCC. The common mimickers of HCC in the cirrhotic liver include nontumorous arterioportal shunts, rapidly enhancing hemangiomas, intrahepatic mass-forming type cholangiocarcinoma (CC), angiomyolipomas, focal inflammatory liver lesions and focal nodular hyperplasia-like nodules.

Materials and Methods: This is a retrospective observational hospital based study. 32 subjects were evaluated with male predominance (28) with mean age of 45 years underwent MDCT triphasic scan in 16 slice (GE healthcare) machine, images obtained at 12, 55 and 120 secs after trigger threshold.

Results: hepatic arterial phase hyperenhancement is present in 26 of 32 cases, subjective washout was present in 15 HCC’s (33%) during hepatic venous phase and in 24 HCCs (53%) in delayed phases. washout values are correlated with an elevated &#945;-fetoprotein level (p = 0.01). Delayed phase yielded significant higher mean values.

Conclusion: Recognition of the typical imaging findings can aid in quicker diagnosis and treatment before the tumor is upstaged and identifying common HCC mimickers can reduce false-positive HCC diagnosis.

Abstract ID:1200

ABSTRACT TITLE: MR ENTEROGRAPHY IN EVALUATION OF PEDIATRIC CROHN’S DISEASE ACTIVITY

PRESENTING AUTHOR: RAJASEKARAN

CO-AUTHOR: DR. C. AMARNATH, DR. MONUSHREE, DR. DIVYA, DR. SIVASAKTHI, DR. SIVAVADIVEL

AIM & OBJECTIVE: The aim of the study is to devise a scoring system of MR enterography in pediatric Crohn’s disease by correlating the imaging features with clinical scoring system - PCDAI

MATERIALS & METHODS: 24 children, either suspected of inflammatory bowel disease or undergoing treatment for the same and came for follow up were considered in this study. They underwent MR enterography & imaging features were tabulated and scoring system (MREGS, CDMI) was devised based on severity of the features. The scores were compared with PCDAI (Pediatric Crohn’s disease activity index).

RESULT & CONCLUSIONS: MR enterography showed high sensitivity & specificity in diagnosing the active or chronicity of inflammation. The MRE scores showed significant correlation with clinical score – PCDAI (Pediatrics crohns disease activity index score) and high sensitivity with wall thickness among individual variable.

Abstract ID:1292

ABSTRACT TITLE: IMAGING OF MALIGNANT BILE DUCT TUMORS

PRESENTING AUTHOR: CH. MADHAVI

CO-AUTHOR: DR. CH. MADHAVI, DR. RAGHUTEJA, DR. ANIL KUMAR

Aim: The purpose of this study was to review the different types of malignant tumors of the bile ducts and to become familiar with the typical imaging findings and the spectrum of differential diagnoses.
Materials and methods: This is a hospital based retrospective study that evaluated 30 cases with malignant bile duct tumors. Most of the patients are elderly, the average age was 59 years and jaundice was the usual presenting symptom. As diagnostic imaging techniques, some patients underwent abdominal ultrasonography (n=21), MR cholangiography imaging (n=1) and all of them undergo abdominal CT scanning (n=30). Trans s the initial imaging method to evaluate the common bile duct (CBD) and pancreatic Duct (PD), but it cannot identify the ampulla of Vater itself. - “Double duct” sign with obstruction of both CBD and PD is essentially diagnostic for extrahepatic obstruction and is highly suggestive of ampullary or periampullary tumors. - 10 to 15% of patients with normal common bile duct findings on ultrasonography demonstrate extrahepatic biliary obstruction on a computed tomography (CT) scan - Ultrasonography can also help to reveal metastatic disease in the liver or regional lymph nodes * Contrast-enhanced CT scans: - may assess for the presence of biliary ductal dilation, examine the periamillary region, differentiate between causes of distal biliary obstruction, assess for the presence of malignant-appearing lymph nodes, evaluate the local region of interest and evaluate for possible metastases and establish the relationship of the tumor to nearby abdominal vascular structures.

Results: The malignant bile duct tumors identified were as follows: The hilar cholangiocarcinoma (n = 9) including three cases of the periductal infiltrating type (n=3) and 20 cases were GB CA

Conclusion: Most of the bile duct tumors are malignant. The diagnosis is based on a combination of clinical and imaging findings of the endoscopic ultrasonography, Cholangiopancreatography and abdominal CT scan, which provide in-depth information in support of etiological diagnosis and treatment.
Breast Imaging

Abstract ID:497

ABSTRACT TITLE: COMPARATIVE EVALUATION OF PALPABLE BREAST LUMPS WITH DIGITAL BREAST TOMOSYNTHESIS AND DYNAMIC CONTRAST ENHANCED MRI BREAST WITH ITS HISTOPATHOLOGICAL CORRELATION

PRESENTING AUTHOR: TUSHARIKA SHARMA
CO-AUTHOR: DR. SANGEETA SAXENA

Purpose: of compare performance of Breast Tomosynthesis and DCE-MRI in evaluation of palpable breast masses and to evaluate if ultrasound imaging(used as an adjunct to tomosynthesis)is comparable to DCE-MRI in differentiating benign from malignant breast lesions.

Material and methods: A comparative study with statistical analysis of 24 patients was done including patients aged more than 30 years presenting with clinically palpable breast lump/nipple discharge/nipple retraction/nipple erosion/screening purposes,BIRADS III/IV/V. Already diagnose/on treatment cases/BIRADS I/II/VI,patients with contraindication to MRI were excluded.

Results: -Of the 24 cases examined,we had 16 cases of infiltrating ductal carcinoma,2 cases each of DCIS and lobular carcinoma,1 case each of inflammatory breast cancer, atypical fibroadenoma,fat necrosis,chronic mastitis.

Conclusion: Tomosynthesis with adjunct ultrasound was comparable to DCE-MRI in all breast densities(sensitivity and specificity of former - 100%,75% and latter - 60.7%,93.1% respectively,) For mass evaluation- margins, surrounding architectural distortion, ductal spread, axillary lymph nodes, pectoralis invasion or for calcifications (either with mass or as solitary pathology) DBT - with USG proved comparable or better than MRI respectively . For inflammations additional ultrasound proved comparable to DCE-MRI fordifferentiating between benign and malignant lesions and also for determining the site for biopsy. Tomosynthesis with adjunct USG can prove as a good substitute for DCEMRI in all breast densities with no risk of extra irradiation although these results may not reflect on general population owing to the small size of study group.

Abstract ID:516

ABSTRACT TITLE: “CORRELATION OF ULTRASONOGRAPHIC FEATURES OF BI-RADS IV AND ABOVE BREAST LESIONS WITH THEIR HORMONE RECEPTOR STATUS AND HISTOLOGICAL GRADE”

PRESENTING AUTHOR: SHREYAS RAO G
CO-AUTHOR: DR.VEDARAJU K S , DR. ARUL T DASAN, DR. PRASHANTH K S

Aims & objectives: To evaluate most consistent ultrasonographic features of BI-RADS IV and above breast lesions corresponding with its hormone receptor status(ER+/-, PR+- and Her2+/-) and histological grade(Grade I, Grade II and Grade III ) with predictive values of those features.

Materials and methods: Total of fifty cases over a study period of June 2017 to May 2018 diagnosed as BI-RADS IV and above were reviewed by two separate radiologists and consensus was achieved.
Ultrasonographic features of tumor size, tumor margins and posterior acousticity were taken into account. Margins were categorized as circumscribed and non circumscribed which were further subcategorized into indistinct, spiculated and micolobulated pattern. Acoustic features were classified as enhancement, shadowing, mixed and no significant change.

Ultrasonography guided core needle biopsy were performed and histologic grading were performed on the basis of Nottingham combined scoring system(Grade I, Grade II and Grade III) and hormone receptor status(ER+/-, PR+/- and Her2+/-) were assessed with immunehistochemical stains.

**Results:** Tumors with posterior shadowing were more likely to be of non triple negative subtype (P=0.002), low histological grade (grade I or II v/s grade III, P=0.003) and having at least one positive hormone receptor (P=0.002).

Tumors with circumscribed margins were more often triple negative subtype (P<0.001), high histological grade (grade III v/s grade I or II, P<0.001) and hormone receptor negative (P<0.001).
Abstract ID:233

ABSTRACT TITLE: A NOVEL NON BREATH HOLD CARDIAC MRI PROTOCOL FOR MYOCARDIAL VIABILITY IMAGING: OUR INITIAL EXPERIENCE

PRESENTING AUTHOR: ROHIT AGGARWAL

CO-AUTHOR: DR GEETIKA SINGLA, COL HARKIRAT SINGH, COL R A GEORGE

Purpose: Delayed contrast enhancement (DCE) on cardiac magnetic resonance imaging (CMRI) is a well-established MRI technique for the evaluation of myocardial viability. However, its routine use is limited mainly by lengthy acquisition time and patients inability to hold breath in multiple breath hold sequences. This study analyzes the efficacy of a non-breath hold DCE-CMRI protocol for myocardial viability assessment, with 18-Flourodeoxyglucose Positron Emission Tomography (18-FDG PET) as the reference standard.

Materials and Methods: 40 patients of Ischemic Heart disease referred for PET scan viability imaging were included in the study. After 18F-FDG PET, DCE-CMRI was done for the patients as per a non-breath hold protocol. The protocol consisted of non-breath hold localizers followed by IV contrast administration, the time interval for delayed imaging was used to acquire free breathing cine acquisitions to look for regional wall motion abnormality. At 15 min post contrast administration delayed CEMRI viability imaging was done without any breath hold. MRI & PET images were analyzed using a 17 segment model proposed by American Heart Association.

Results: The total scan time with this protocol was reduced to 20-25 min. A total 680 myocardial segments were assessed. Sensitivity, specificity, positive predictive value and negative predictive value of CEMRI for assessing myocardial viability was 95.5%, 65.59%, 88.0% & 84.72% respectively in relation to PET. Spearmann Rank correlation coefficient was 0.62.

Conclusion: This modified DCE-CMR protocol is a reliable tool to answer the clinically relevant question of myocardial viability with a significant reduction in acquisition time and overcomes the limiting need to hold breath.

Abstract ID:928

ABSTRACT TITLE: COMPARATIVE ASSESSMENT OF EFFICACY OF THE DOPPLER ULTRASOUND CRITERIA OF CAROTID PLAQUE DETECTION & CAROTID IMT(CIMT) MEASUREMENT TO PREDICT CORONARY ARTERY DISEASE (CAD) IN CEREBROVASCULAR ACCIDENT (CVA) PATIENTS

PRESENTING AUTHOR: PRAGYA SINHA

CO-AUTHOR: DR. ADIL KHAN, DR. RAJUL RASTOGI, DR. VIJAI PRATAP SINGH

Introduction: Carotid plaques are considered to have a greater correlation with coronary artery disease (CAD) than CIMT measurement on Doppler Ultrasound (DUS). We aimed to check this hypothesis in patients with recent stroke.

Methods: We evaluated 68 patients who presented to our hospital with a cerebrovascular accident (CVA) for the presence of carotid plaques and evidence of increased CIMT. CT Angiography and coronary calcium scoring (CAC) was done for direct evaluation of CAD. Inclusion criteria- CVA confirmed on NCCT, Age >35y.
Exclusion criteria: 1) Decreased eGFR (<30 ml/minute) 2) Bradycardia considered unsafe 3) Known history of contrast allergy or pregnancy

Results: 64.7% (n=44; M=73%) of the total 68 subjects, were found to have any plaque in the carotid vessels. Mean length of plaque was 7.28mm +/- 9.2 mm. The plaques were longer (F= 9.1 +/- 4.3mm ; M = 6.8 +/- 10.2 mm) and caused a greater degree of stenosis (F=41 +/- 16%; M = 16 +/- 17%) in female patients. 20 subjects had plaques in multiple carotid arteries. Most common location of plaque was at the bifurcation of the left common carotid (n=21) and these plaques tended to extend into the left ICA (n=12) in 57% of cases. In 7 (16%) patients, bilateral plaques were seen. These bilateral plaques were seen in the CCA (n=3) & carotid bifurcation (n=4). Carotid plaques were present in 67%(44/67) of the subjects with CT evidence of CAD. In contrast, cIMT measurement was elevated (>0.8mm) in 79%(53/67) of the patients with CAD (mean 0.93 +/- 0.15 mm)

Conclusion: In our subjects, plaques were most commonly found in the CCA & extended into ICA. cIMT measurement was seen to be better predictor of CAD compared to the carotid plaque burden.

Limitations: Small sample size; selection to CVA patients

Abstract ID: 1144

ABSTRACT TITLE: NATIVE T1 MAPPING IN DIFFUSE MYOCARDIAL DISEASES IN 3T MRI
PRESENTING AUTHOR: VIMAL CHACKO MONDY
CO-AUTHOR: PROF. DR S. BABU PETER, PROF. DR R. RAVI

Purpose:
1. To evaluate normative T1 values in 3T MRI
2. To examine whether native myocardial T1 value can be used to differentiate between normal and diffuse myocardial disease groups

Inclusion Criteria Cases: Subjects with established myocardial disease

Controls: Healthy volunteers who were nonsmokers, had no history of cardiac disease, comorbidities, had a normal ECG and ECHO were taken as controls after obtaining informed consent

Exclusion Criteria: Patients with orthopnea, claustrophobia, MRI non-compatible implants

Materials and Methods: Native T1 mapping was performed in 12 persons with healthy hearts and 26 patients with diffuse myocardial pathologies at 3T in three short axis slices using Siemens Myomap protocol. The average native myocardial T1 value was measured using region of interest drawn in the anterior, septal, inferior and posterolateral walls in each of the slices. The mean of the observed average T1 values were calculated for each group. The ability of T1 mapping to differentiate between healthy and diffuse diseased myocardium was assessed.

Statistical Analysis: The collected data were analysed with IBM.SPSS statistics software 23.0 Version

Results:
1. The mean native T1 value in controls was 1186.47 +/- 45.67 ms
2. The mean native T1 value in cases were: DCM 1341.31 +/- 41.48 ms, HCM 1355.86 +/- 44.67 ms, RCM 1370.37 +/- 90.14 ms and acute myocarditis 1418.68 +/- 8.62 ms
3. There is significant difference in the mean native T1 value between the controls and the group of patients suffering from DCM, HCM, RCM and acute myocarditis (p<0.0005)

Limitations:
1. The number of patients in some subgroups of diffuse myocardial pathologies is rather small
2. T1 mapping was performed in three short axis slices and may not fully represent the entire LV myocardium

Conclusion: The native T1 values in controls in our 3T MRI system for the healthy group was 1186.47±45.67ms. The average native T1 values were significantly higher in diffuse myocardial disease group compared to normal group. The highest T1 values were observed in the myocarditis group

Abstract ID:1250
ABSTRACT TITLE : CARDIAC RISK STRATIFICATION BY CORONARY ARTERY CALCIFICATION SCORING IN SUBCLINICAL HYPOTHYROIDISM
PRESENTING AUTHOR : SHWETA SINGH
CO-AUTHOR : RAJESH VERMA,ASHISH VERMA,PIYUSH GUPTA,NK AGRAWAL

Purpose: It is a well-known fact that overt hypothyroidism accelerates the cardiovascular disease. However, the effects of subclinical hypothyroidism (SCH), being considered as a preclinical state, on cardiovascular status are not clear. This study with the help of coronary ct angiography tries to assess the coronary artery calcium score, which has already been accepted as an effective prognostic indicator of coronary artery disease.

Aims: This study was aimed at assessing cardiac risk stratification by Framingham risk scoring (FRS) and coronary artery calcium score (CACS) by noncontrast cardiac computed tomography in Subclinical Hypothyroidism (SCH).

Materials and Methods: This study was an observational study conducted on thirty treatment-naive SCH patients (aged 30–60 years with no serious concurrent medical conditions), thirty euthyroid (age, sex, and body mass index-matched) controls, and ten healthy controls. All cases were evaluated for coronary artery calcium scoring and Framingham risk score. For statistical Analysis, the qualitative data were analyzed using the Chi-square test. In addition, demographics and Coronary Artery Calcium Score (CACS) were summarized graphically or in a table.

Results: SCH cases had higher thyroglobulin, while there was a trend toward an increase in total cholesterol, low-density lipoprotein (LDL), very LDL, and decrease in HDL levels. All participants had low-risk FRS (10-year FRS < 10%). The mean CACS in SCH was significantly higher than simple obese and healthy controls (47.17 vs. 2.67 vs. 0.00).

Conclusion: This study suggests that subclinical hypothyroidism is an independent risk factor for coronary artery disease in apparently healthy controls. The risk of occult coronary artery disease is increased in subclinical hypothyroidism cases.
Purpose: Peripheral arterial disease (PAD) is a marker of systemic atherosclerosis which contributes to significant morbidity and mortality. Non-invasive imaging modalities play a crucial role in management of patients with peripheral arterial diseases. The aim of this study was to evaluate the efficacy of MDCT angiography and colour doppler ultrasonography in diagnosis of peripheral vascular disease of the lower limb and to provide MDCT angiography effective dose estimation with technical considerations to reduce the effective radiation dose without significantly affecting the image quality and diagnostic accuracy.

Methods: This prospective study included 50 patients with PAD who underwent colour doppler ultrasonography and MDCT angiography. The data was compared and analyzed with respect to degree of stenosis in the infra-popliteal segments, extent of segment involved and to assess collateral circulation.

Results: The detection of extent of segment involved, degree of stenosis in the infra-popliteal segments and presence of collaterals were significantly better in MDCT than colour doppler ultrasonography with a p value of <0.001. Further, we concluded few technical considerations to reduce the effective radiation dose without significantly affecting the image quality and diagnostic accuracy. The mean effective radiation dose was 4.26 mSv in males and 4.38mSv in females which was significantly lower than the DSA.

Conclusion: Non-invasive imaging clearly plays an important role in establishing management plan in patients with PAD with the use of state of art MDCT angiography and advanced post processing techniques such as VRT, MIP. Colour doppler ultrasonography can be used as a routine screening tool, however, for detailed evaluation MDCT angiography is more accurate alternative to DSA in detection of hemodynamically significant stenosis. From the study, it is found that MDCT offers significantly low effective radiation dose when compared with DSA.
Abstract ID:161

ABSTRACT TITLE : ROLE OF QUANTITATIVE CT PARAMETERS IN CHRONIC OBSTRUCTIVE PARENCHYMAL DISEASE EVALUATION

PRESENTING AUTHOR : DAIZY GARG

CO-AUTHOR : DR. SHUCHI BHATT [ASSOCIATE PROFESSOR]; DR. GOPESH MEHROTRA [PROFESSOR], DR. AMIT K VERMA [ASSOCIATE PROFESSOR]

Purpose: Correlation of parenchymal & airway Quantitative Computed Tomography [QCT] parameters with functional parameters of airway obstruction [FEV1, FVC, FEV1/FVC] in COPD.

Material and methods: Cross-sectional study was conducted after due ethical clearance on 64 slice MDCT. 70 patients 35yrs or more with clinical diagnosis of COPD (FEV1/FVC<70% & post bronchodilator FEV1<80% of predicted) were recruited except those with acute exacerbation. Retrospectively, 35 patients with normal chest CT study were taken as controls.

QCT of Emphysema (Mean lung density [MLD], % of low attenuation areas (LAA)< -950 HU); Air trapping indices (% LAA< -850 HU, Inspiratory / expiratory lung volume, Inspiratory / expiratory lung attenuation); Functional small airway disease (Expiratory <-850 HU / Inspiratory lung density < -950 HU) and Bronchial-wall parameters of both (segmental & sub-segmental) bronchi (Inner luminal area (Ai), wall thickness [WT], wall area [WA], wall area % (WA%)) were evaluated.

Results: Mean age was 59.74 years and 61.4% were stage III-GOLD classification. Only 67.8% demonstrated emphysema on visual CT.

Parenchymal (MLD, %LAA-950HU) and airway (Ai, WT, WA, WA % of both bronchi, wall attenuation of segmental parameters showed significant difference between cases and controls.

%LAA(-950HU), WA % of both bronchi showed negative correlation with FEV1, FVC & FEV1/FVC. Negative correlation existed between FEV1 & FVC &

%LAA(-850HU) & WT of both bronchi whereas they correlated positively with Ai[seg] and I/E lung attenuation. FEV1 & MLD had positive correlation. Cut off values for significant QCT parameters were calculated using ROC curves.

Conclusions: QCT parameters can objectively quantify severity of COPD.

Abstract ID:459

ABSTRACT TITLE : CORRELATION BETWEEN MDCT SEVERITY SCORE OF BRONCHIECTASIS AND PULMONARY FUNCTION TESTS.

PRESENTING AUTHOR : RANJITHA KULKARNI

CO-AUTHOR : DR VIJAY KUMAR K R, DR ARUL T DASAN, DR SHWETA R POOJARY

Aim: Evaluation of bronchiectasis by MDCT and correlation of proposed severity score of bronchiectasis with pulmonary function tests.
**Materials and methods:** This prospective study includes 30 known bronchiectasis patients by clinically or CT imaging. All patients were subjected to thorough clinical examination, chest radiography and MDCT imaging. Each CT examination was evaluated for the presence of bronchiectasis and scoring is given for distribution, severity of bronchial dilatation, extent of bronchiectasis, mucous plugging, generations of bronchial divisions and degree of mosaic attenuation. The total CT score was considered as mild (1-9), moderate (10-14) and severe (15-18). Relative pulmonary function tests were done in an interval of one week either before and after CT examination which includes FEV1, FVC and FEV1/FVC expressed as percentage, predicted for the patients age, sex and height. FEV1 is used as a marker of disease severity and also classified into mild, moderate and severe. All data were analyzed with SPSS software using Chi-square test.

**Results:** There was a good correlation between final CT severity scores with PFT represented by FEV1. A significant relationship is seen between the FEV1 and severity of bronchial wall thickness (p value 0.030), severity of extent of bronchiectasis (p 0.021), and severity of mosaic attenuation (p 0.032). On the other hand there was no statistically significant relationship between severity of bronchial dilatation (p 0.50) and mucous plugging (p 0.09).

**Conclusion:** MDCT is sensitive for detecting, scoring and evaluating bronchiectasis. Air flow obstruction in bronchiectasis is significantly linked to the total CT severity scoring of bronchiectasis.

**Abstract ID:1015**

**ABSTRACT TITLE:** “TO ASSESS THE UTILITY OF CT PULMONARY ANGIOGRAPHY-128 SLICED (CTPA) IN A SUSPICIOUS CASE OF PULMONARY EMBOLISM (PE) IN ROAD TRAFFIC ACCIDENT PATIENTS IN CO-ORDINATION WITH CLINICAL (WELL’S SCORE), BIOCHEMICAL (D-DIMER VALUE) AND DEEP VENOUS THROMBOSIS

**PRESENTING AUTHOR:** PRASHANT MODI

**CO-AUTHOR:** DR. VIRAL PATEL DR. MANALI DR. JAYDEEP DOSHI

**Title:** “To assess the utility of CT pulmonary angiography-128 sliced (CTPA) in a suspicious case of pulmonary embolism (PE) in road traffic accident patients in co-ordination with clinical (well’s score), biochemical (D-DIMER value) and Deep Venous Thrombosis (DVT) suspicion.”

**Purpose:** CTPA is now the preferred modality for PE for many clinicians. However it has risks of radiation exposure and contrast-induced nephropathy. The use of a clinical decision rule and quantitative serum d-dimer assay can help locate low-risk patients who may not require unnecessary imaging.

** Aim:** To evaluate which combination of clinical criteria and d-dimer values would give at least a 10% positive rate for acute PE on CTPA to guide further usage of CTPA in such suspicious trauma cases.

**Material and Methods:** A retrospective analytical study was done in the Department of Radio-Diagnosis of a tertiary center in Anand, Gujarat. Patients presenting with symptoms related to PE and who underwent CTPA in our department were enrolled in this study. All the patients also underwent a well’s score evaluation, biochemical investigations (D-dimer) as well as deep venous Doppler study of bilateral lower limbs.

**Results:** Out of 15 suspected case of PE in road traffic accident patient, 5 were positive for PE on CTPA. The prevalence of PE on CTPA was >10% (33.33%) in subjects with positive d-dimer. Similarly, in subjects with intermediate or high well’s score prevalence was 35.71%. Patients with both intermediate / high well score and positive d-dimer had 41.66 % prevalence. Sensitivity of DVT was 40% in predicting PE.
Conclusions: Only patients with both positive d-dimer levels with intermediate or high clinical risk would benefit from CTPA. Patients with a negative or non-positive d-dimer level or low clinical risk would not likely benefit from CTA.

Abstract ID: 1163

ABSTRACT TITLE: IMAGING AND DIAGNOSIS OF TRANSIENT TACHYPNEA OF NEWBORN IN PRETERM NEONATES.

PRESENTING AUTHOR: MOHAMMED IMRAN BASHA SY

CO-AUTHOR: DR. RAVINDER KAUR (PROFESSOR), DR. NARINDER KAUR (ASSOCIATE PROFESSOR), DR. SUMAN KOCHHAR (PROFESSOR AND HEAD), DR. DEEPAK CHAWLA (ASSOCIATE PROFESSOR)

Purpose: Transient tachypnea of newborn (TTNB) is one of the commonest cause of neonatal respiratory distress. It was traditionally diagnosed by chest X ray (CXR). This study is aimed to know the diagnostic accuracy of lung ultrasound (LUS) in TTNB as well as to compare its accuracy with chest X ray.

Materials and methods: From November 2017 to May 2018 thirty preterm neonates were recruited for the study who were diagnosed of TTNB on medical history, clinical manifestations, and chest radiography. Neonates were placed in supine and prone position for the examination and each lung was divided into two regions: anterior and posterior regions and probe was placed perpendicular to the ribs and both the lungs were carefully scanned. The common ultrasonographic manifestations of TTNB were double lung point (DLP), white lungs, pleural line abnormalities, A-line disappearance, comet tailing and compact B lines.

Results: The common ultrasonographic manifestations of TTNB are double lung point (DLP) sign and comet tail artefacts. Out of the 30 cases recruited for the study, 25 cases showed double lung point sign. The sensitivity and specificity of DLP for the diagnosis of TTNB were 80% and 100%, respectively.

Conclusion: LUS can accurately and reliably diagnose TTNB. The DLP has great value in the diagnosis and LUS is more accurate in diagnosis of TTNB than CXR. Thus, we believe that LUS can be widely used in neonatal intensive care units.

Abstract ID: 1191

ABSTRACT TITLE: COMPUTED TOMOGRAPHY GUIDED TRU-CUT BIOPSY OF LUNG MASSES AND ITS HISTOPATHOLOGICAL CORRELATION.

PRESENTING AUTHOR: SIBANI PATRO

CO-AUTHOR: DR. SATYA SUNDAR GAJENDRA MOHAPATRA

Purpose: To correlate radiological findings of lung diseases with histopathological findings. To assess the efficacy, usefulness of tru-cut biopsy as a diagnostic method in lung tumors. To determine the incidence and type of lung cancer prevalent in this region.

Background: Lung cancer is one of the most common causes of cancer-related death worldwide. With the help of CT, an increasing number of lung lesions are detected, characterized. But histopathological diagnosis will be necessary to determine the most appropriate management of these lesions.

Materials and methods: The prospective study of 50 patients who were referred to the Department of Radiodiagnosis, IMS & Sum Hospital underwent CT-guided Tru-cut biopsy and was correlated with
histopathological examination. The study was conducted over a period of 1 year from September 2017 to August 2018.

**Results:** Majority of the cases were malignant. The most common was adenocarcinoma(48%) followed by squamous cell carcinoma(30%), small cell carcinoma(10%), mixed adenosquamous(2%), neuroendocrine tumors(2%).

**Conclusion:** CT-guided tru-cut biopsy is a relatively safe, simple and reliable procedure with high diagnostic yield to establish histological diagnosis. Hence, CT-guided transcutaneous biopsy should be judiciously used with imaging so as to select appropriate treatment options and achieve desirable therapeutic response.

**Abstract ID: 1239**

**ABSTRACT TITLE**: ACCURACY AND SAFETY OF CT GUIDED CORE BIOPSY OF GROUND-GLASS OPAQUE PULMONARY LESIONS

**PRESENTING AUTHOR**: J SRAVANTHI

**CO-AUTHOR**: DR. M. SAI SWETHA, DR. G. S. KEJRIWAL

**Objectives:** To evaluate the accuracy and safety of percutaneous CT guided core biopsy of small pulmonary lesions with persistent ground-glass opacity (GGO). To investigate the diagnostic value of CT-guided biopsy in ground-glass opacity small pulmonary lesions.

**Materials and methods:** The study was conducted from January 2016 to August 2018 and includes 42 patients (19 men, 23 women; age range 25–72 years) with small (<3 cm) & persistent GGO lesions (persisting for at least 3 months) who underwent CT-guided core biopsy were analyzed.

The Pathologic results of CT-guided biopsy were compared with final diagnosis (Surgery, re-biopsy or other biopsy, imaging and clinical follow up).

All patients in the study were subsequently followed up for complications including pneumothorax, thoracostomy tube insertion and hemoptysis.

**Results:** We performed CT-guided biopsy on 42 patients during the study period who had persistent small GGO lesions (size range 0.5–3.0 cm; 1.72 +/- 0.73 cm). A final diagnosis of malignancy was made in 28 cases and benign lesions in 12 cases. 2 benign lesions without confirmative diagnosis because of loss of follow-up were excluded from the study. The overall sensitivity of CT-guided biopsy in the evaluation of these lesions was 85.7%, the specificity and positive predictive value were 100% and negative predictive value of 75%.

The diagnostic accuracy was found to be 90% (36/40) using CT-guided biopsy. Mild procedure related complications were noted in 12 patients among them 10 patients had pneumothorax (25%) & 2 had mild hemoptysis (5%).

**Conclusions:** CT-guided transthoracic needle biopsy is a safe and useful method for diagnosing small & persistent GGO lesions with a high diagnostic yield and thus providing useful information for further patient management.

**Limitations:** Sample size was small and follow-up duration was shorter. Persistent GGO lesions which were not located in the peripheral lung parenchyma or close to large-sized vessels were not reachable or too dangerous for CT-guided biopsy.
Abstract ID: 49

**ABSTRACT TITLE**: ROLE OF TRANSPERIANAL SONOGRAPHY AND MAGNETIC RESONANCE IMAGING IN EVALUATION OF PERIANAL FISTULAE

**PRESENTING AUTHOR**: GURPREET KAUR*

**CO-AUTHOR**: DR AMANDEEP SINGH*, DR (MRS.) KAMLESH GUPTA*, DR M.S. UPPAL**

**AFFILIATION**: * DEPARTMENT OF RADIODIAGNOSIS AND IMAGING, ** DEPARTMENT OF SURGERY

**Purpose**: Transperineal ultrasonography (TPUS) has been proposed as a simple, safe, time-sparing and useful diagnostic technique. A magnetic resonance imaging (MRI) represents the main method for evaluating perianal fistulas. The aim of this study was to evaluate the accuracy of TPUS and MRI for the detection and classification of perineal fistulas.

**Material and Methods**: After taking consent, 30 patients who underwent TPUS and MRI were included in this study. Fistulae and abscesses were classified according to Parks’ and St James classification methods. A concordance was assessed by k statistics.

**Results**: TPUS identified 30 fistulae in 30 patients (13 intersphincteric, 8 transsphincteric, 6 superficial, 4 extrasphincteric and no suprasphincteric). Eight abscesses were found during TPUS examination. Intersphincteric fistula in one patient and deep abscesses in three patients were not observed on TPUS and rather noted during MRI. On MRI, 30 fistulae (11 intersphincteric, 9 trans-sphincteric, 7 superficial, 3 extrasphincteric, no suprasphincteric) and seven abscesses were recognized. TPUS demonstrated intersphincteric fistula in one patient and Superficial and small abscesses in four patients, that were not noticed on MRI.

**Conclusions**: Results on TPUS were as good as on MRI for detecting and classifying perianal disease. Both imaging modalities may be performed at the initial presentation of the patient, but TPUS is a cheaper, time-saving procedure.

**Keywords**: transperineal ultrasound; magnetic resonance imaging; perineal fistula.

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Abstract ID: 112

**ABSTRACT TITLE**: COMPARITIVE STUDY OF CONVENTIONAL AND CT COLONOSCOPY IN PATIENTS WITH LOWER GI SYMPTOMS

**PRESENTING AUTHOR**: BENO JEFFERSON

**CO-AUTHOR**: DR.I.VENKATARAMAN

**Purpose**: To determine the utility, advantages and limitations of virtual colonoscopy in detection and diagnosis of colonic pathologies in comparison to conventional colonoscopy.

**Materials and methods**: This study was conducted in 50 patients over a period of 8 months from November 2017 to June 2018. Patients with lower GI symptoms (abdominal pain, diarrhea, blood in stools, constipation) were referred to the department of radiology. CT colonoscopy was performed and compared with conventional colonoscopy, which was confirmed by histopathological results.
Results: Among these 50 patients examined 10 patients were found to be normal. 19 patients had inflammatory bowel disease (47.5%) out of which 17 were detected by CT colonoscopy and 19 were detected by conventional colonoscopy. CT colonoscopy had 89% sensitivity in detecting inflammatory bowel disease whereas conventional colonoscopy had 100% sensitivity. CT colonoscopy had 83.3% sensitivity in detecting polyps. In our study both CT and conventional colonoscopy had 100% sensitivity and specificity in detecting colorectal malignancy. CT colonoscopy detected extra-colonic manifestation of malignancy in 2 patients. In our study 60% of malignancy were detected below 40 years of age which differs from studies conducted by Jarmillo et al and Halligan et al in which the incidence of colorectal cancer were found rising sharply after the age of 40, and 90% of cases occur over the age of 50.

Conclusion: The conclusion is that virtual colonoscopy is a relatively new technique that has its merits and drawbacks being uncertainty in identifying small polyps. The positives of virtual colonoscopy is assessment of the colon proximal to occlusive stenotic lesions, which is not available in several cases in conventional colonoscopy and also detect metastasis in case of colorectal malignancies. And virtual colonoscopy has better patient acceptance rates due to its easier technique.

Abstract ID: 199

ABSTRACT TITLE: DEMONSTRATION OF FUNCTIONAL DISORDERS OF THE LOWER ESOPHAGEAL SPHINCTER BY ULTRASONOGRAPHIC SWALLOW EXAMINATION.

PRESENTING AUTHOR: DEEPTI BUNKAR

CO-AUTHOR: DR. ANIL KUMAR

Purpose: To assess the efficacy of ultrasonographic swallow examination in detection of functional disorders of gastro-esophageal junction.

Material and Methods: Ultrasonography examination of 139 patients of suspected gastro-esophageal junction disorder were done between March 2007 and December 2017. Ultrasonography examination was done in sitting position using 2 to 5 MHz curvilinear probe. Patients were asked to drink plain water, probe was put in epigastric region, video was recorded while the water passed through the lower part of esophagus and gastro-esophageal junction. Then patients were examined in lying posture to visualize the gastro-esophageal reflux if present. The diagnosis were further supported by barium swallow examination.

Results: Out of 139 cases achalasia cardia was detected in 42 patients, gastro-esophageal reflux in 66 patients and no significant finding or motility disorder were detected in 31 patients.

Conclusion: Disorders of lower end of esophagus specially related with the function of lower esophageal sphincter can be well seen in real time ultrasonography during swallowing without any harmful effect, radiation exposure or intervention. As only plain water is used for the procedure so there was no risk of any untoward reactions associated with other chemicals/drugs. The procedure was locally named sonoswallow examination. Ultrasonography is harmless modality which provides real time functional information and does not cause inconvenience to the patient. primarily we can do ultrasonographic evaluation of gastro-esophageal junction and can decide further action for management or investigation.
Abstract ID: 200

**ABSTRACT TITLE**: LAYER ANATOMY OF STOMACH AND EVALUATION OF GASTRITIS ON ROUTINE ULTRASONOGRAPHY ABDOMEN.

**PRESENTING AUTHOR**: DEEPTI BUNKAR

**CO-AUTHOR**: DR. ANIL KUMAR

Purpose: To evaluate layer anatomy of stomach and diagnose gastritis on routine ultrasonography abdomen.

**Material and methods**: A prospective study was done on high resolution ultrasound scanner by using 3 to 5 MHz curvilinear probe and 7 MHz linear probe between May 2006 and December 2017. Patients were kept fasting for 4 hours prior to examination to get stomach empty and were asked to drink water before ultrasonography except in patients who were kept nil orally. Normal stomach showed 5 layers on ultrasonography abdomen which showed uniform thickness. In patients with gastritis the number of layers visualised in stomach wall were reduced and thicknesses were also variable.

**Results** Total 2466 cases of stomach lesions were diagnosed of which 2394 (~97%) were labelled gastritis on ultrasonography and 72 (~3%) patients had other/mass lesions. In patients with gastritis (n = 2394) all showed involvement of the pylorus and 1176 (~49%) showed involvement of body of stomach along with pylorus.

Out of these 2394 patients 1476 (~61.6%) had gastritis on endoscopy, 754 (~31.5 %) responded to conservative treatment for gastritis without further evaluation, in 164 (~6.9%) stomach mucosa was normal on endoscopy.

**Conclusion**: Stomach wall with layers was well demonstrated on ultrasonography. Various stomach lesions could be diagnosed. Visualization of gastritis on ultrasonography is possible in contrary to general concept that gastritis can be diagnosed only by endoscopy. Only 6.9% of the diagnosed gastritis cases on ultrasonography showed normal mucosa on endoscopy, these also responded clinically when were managed on line of gastritis.

Abstract ID: 243

**ABSTRACT TITLE**: MAGNETIC RESONANCE IMAGING IN EVALUATION IN RECTAL CANCER

**PRESENTING AUTHOR**: PREETI OSAN

**CO-AUTHOR**: DR. VIJINDER ARORA

**Background**: Imaging in rectal cancer has a vital role in staging disease, and in selecting and optimizing treatment planning. MRI is the recommended method of first choice for local staging of rectal cancer for both primary staging and for restaging after preoperative chemoradiation (CT-RT).

**Purpose**: 1. To evaluate the role of MRI in rectal cancer-local staging, sphincter involvement and circumferential resection margin assessment. 2. To assess the response of neo adjuvant treatment where ever applicable.

**Materials and methods**: Thirty patients who are endoscopically or clinically suspected of rectal ca underwent MRI examinations on Philips intera Achieva 1.5 Tesla MRI. Sequences used were TSE T2W sequences in Sagittal, Axial and coronal planes, TSE T1W sequences in Axial plane. Additional sequences were used when required.
Result: MRI correctly diagnosed in 28 out of 30 patients in different T stages (accuracy 93.3%) and in 27 out of 30 patients in different N stages (accuracy 90.0%). Accuracy in the evaluation of mesorectal fat invasion was 97.6%, which in the evaluation of mesorectal fascia invasion was 97.6%, and that in the evaluation of CRM was 100%.

Conclusion: MRI is the modality of choice for staging rectal cancer to assist surgeons in obtaining negative surgical margins. MRI facilitates the accurate assessment of mesorectal fascia and the sphincter complex for surgical planning. Multiparametric MRI may also help in the prediction and estimation of response to treatment and in the detection of recurrent disease.

**Abstract ID: 452**

**ABSTRACT TITLE**: ENDORECTAL COIL VS BODY COIL IN THE ASSESSMENT OF INVOLVEMENT OF MESORECTAL FASCIA IN LOCALLY ADVANCED CARCINOMA RECTUM (T3 AND ABOVE) WITH HISTOPATHOLOGICAL EXAMINATION AS GOLD STANDARD

**PRESENTING AUTHOR**: P. REGINALD WESLEY

**CO-AUTHOR**: DR. J. DEVIMEENAL

**Purpose**: To compare the use of endorectal coil versus body coil in MRI to assess the involvement of mesorectal fascia in locally advanced carcinoma rectum (T3 and above) while using HPE as gold standard

**Materials and Methods:**

**Data Collection**: Patients with carcinoma rectum stage T3 and above

**Study Design**: Prospective Study

**Study Centre**: Department of Radiodiagnosis, Govt. Kilpauk Medical College Hospital, Kilpauk, Chennai

**Sample Size**: 50

**Duration of Study**: 1 Year

**Statistical Analysis**: Descriptive statistical analysis, Sensitivity, Specificity, Positive and Negative predictive value is calculated with and without endorectal coil

**Imaging Protocol**: T1 & T2 sequences in oblique axial plane with body coil T2 W sequence in sagittal and coronal plane T2 sequence in oblique axial plane with endorectal coil. Diffusion weighted imaging in axial plane. A cotton ball is stuck into each ear of patients to decrease the influence of noise. Image acquisition is completed within 10 mins

**Inclusion Criteria**: Patients with carcinoma rectum with stage T3 and above.

**Exclusion criteria**: Patients with stenotic tumours and those who could not tolerate endorectal coils, T4 tumours. Follow up- MRI findings are correlated with histopathological findings

**Results and conclusion**: MRI with endorectal coil has higher sensitivity and positive predictive value in the assessment of involvement of mesorectal fascia when compared with MRI with Body coil alone.
Abstract ID: 494

**ABSTRACT TITLE**: IS IT ALWAYS TUBERCULOSIS? CAN IT BE CROHN’S. EVALUATING ROLE OF CT ENTEROGRAPHY IN DIAGNOSIS AND DIFFERENTIATION OF THE TWO.

**PRESENTING AUTHOR**: SANIYA MUSLIM

**CO-AUTHOR**: DR. MEENU BAGARHATTA

**Purpose**: Intestinal tuberculosis (ITB) and Crohn’s disease (CD) are chronic inflammatory bowel disorders that are difficult to differentiate from one another due to close clinical, radiological, endoscopic, and histological resemblance. The problem is of greatest interest in countries where tuberculosis continues to be highly prevalent, and where the incidence of CD is increasing. This study aimed to evaluate the diagnostic value of CT enterography (CTE) findings in the differential diagnosis between ITB and CD.

**Materials and methods**: A hospital based descriptive type of observational study was conducted on 36 patients age ranged from 15 to 70 years, with provisional clinical diagnosis of TB/Crohn’s. CTE was performed using 128 slice MDCT scanner, 1.5–2 L of oral neutral contrast given over 45–60 mins followed by abdominopelvic CT examination during the enteric phase following administration of intravenous contrast. In CTE, bowel involvement (proximal small bowel involvement, segmental involvement and focal ileocecal lesions), mural change (mural hyperenhancement and stratification) mesenteric changes (comb sign, mesenteric fat stranding) and Mesenteric lymph node necrosis or calcification were assessed. The diagnosis of CD and ITB were established using ECCO guidelines and Paustian’s criteria respectively.

**Results**: 32 out of 36 patients had final diagnosis of Tub/Crohn’s. of the 32 patients 17 were TB and 13 Cohns with a mean age 30±3 vs 39±3 years respectively p=0.36. Significantly more patients with ITB had ileocaecal involvement (70.5% vs 15.3%), short segment involvement (64.7% vs 46.1%) and lymph nodes >1cm (88.2% vs 30.7%) with necrotic centers (76.4% vs 7.6%). Patients with CD had greater long segment involvement (53.8% vs 17.6%), presence of comb sign (86.2% vs 5.7%) and skip lesions (69.1% vs 11.7%). CT Enterography has an overall sensitivity of 94% and 92% for abdominal tuberculosis and Crohn’s disease respectively.

**Conclusion**: CTE is a robust modality for differentiating Intestinal Tuberculosis from Crohn’s disease. It helps in making a diagnosis, defining the extent of disease, presence of active inflammation and complications.

Abstract ID: 615

**ABSTRACT TITLE**: CT ENTEROGRAPHY IN THE EVALUATION OF SMALL BOWEL DISEASES

**PRESENTING AUTHOR**: SUHAS C N

**CO-AUTHOR**: DR RAMESH C PATTANSHETTI, DR CHANDALINGAPPAPA KURI, DR SRIKALYAN DUDDUKURI

**Purpose**: To study the mucosal patterns, bowel wall thickness, luminal distension & occult GI bleeding in various diseases of small bowel.

To study CT enterography findings of pathological processes occurring in small bowel and to discuss the radiological features.

**Methods and material**: Patients of all ages & both gender referred to our department with clinically suspected/diagnosed cases of small bowel diseases.

CT Enterography scans were obtained using oral & IV contrast protocol with informed prior consent. 0.1% w/v suspension of barium sulphate mixed with sorbitol/mannitol is given orally in divided doses. Iohexol is
administered intravenously. Depending upon the clinical suspicion, Single, double or triple phase Scanning is performed. Scanning area included from level of the xiphisternum to proximal 1/4th of shaft of femur. Reconstructed images were obtained and evaluated.

**Results:** In a series of 26 cases, majority of the patients (21) had non-neoplastic pathologies (80.7%). Neoplastic lesions were detected in 19.2% of the patients of which 20% were malignant. There was good correlation between CT enterography and operative findings. Among non-neoplastic pathologies 9.5% were inflammatory bowel diseases.

**Conclusion:** Improved spatial and temporal resolution provided by MDCT combined with good luminal distension provided by negative contrast agents and good bowel wall visualization have made CT enterography the imaging modality of choice for investigating small bowel pathologies. CT enterography not only allows visualization of entire thickness of the bowel wall but also it depicts extra-enteric involvement.

**Abstract ID: 692**

**ABSTRACT TITLE:** STRUCTURED REPORTING FORMAT FOR MRI OF CARCINOMA RECTUM IN ITS LOCAL STAGING - REDUCING THE SWEAT OF RADIOLOGISTS AND SURGEONS

**PRESENTING AUTHOR:** MAHESH KARANJI

**CO-AUTHOR:** DR. AISHA M. MANZOOR, DR. AKHIL M KULKARNI (ASSOCIATE PROFESSOR), DR. PARTHASARATHY K R (HOD AND PROFESSOR), DR. ROYCE DR. KRISHNA PRIYA RAJ

**Aim and objective:** To develop a structured protocol and reporting format for MRI in local staging of MRI rectum, thereby helping the radiologist and surgeon in better understanding and in deciding the correct management plans.

**Materials and methods:** The MRI for carcinoma rectum done using specific protocol stored in InstaRISPACS system in Department of Radiodiagnosis, SSIMS &RC, Davangere for 20 patients were retrospectively reviewed. Reporting was done using the usual descriptive method and structured reporting format and was compared.

**Results:** Structured scanning protocol and format for carcinoma rectum helps save time, energy and better communication with the surgeon. This in turn helps in better management plans.

**Conclusion:** Colorectal carcinoma with annual incidence rate of 4.1 per one lakh population is a major health problem worldwide. With continuously improving treatment options including neoadjuvant radiotherapy and chemotherapy local staging is extremely crucial for determining the treatment modality. MRI is considered to be standard imaging modality for pre-operative local staging with its excellent soft tissue contrast and more over absence of ionizing radiation. Thus a structured reporting format surely reduces the sweat of radiologists and surgeons.
Abstract ID: 718

**ABSTRACT TITLE**: ROLE OF CT IN LOCO-REGIONAL STAGING OF CARCINOMA OF ESOPHAGUS-OUR EXPERIENCE

**PRESENTING AUTHOR**: J KRISHNA PRIYA RAJ

**CO-AUTHOR**: DR. AKHIL M KULKARNI (ASSOCIATE PROFESSOR), DR. PARTHASARATHY K R (HOD AND PROFESSOR), DR. ROYCE D’SA, DR. MAHESH KARANJI AND DR. NAVEEN RATHOD

**Aim**: The aim of our study is to evaluate and describe the various Multi-Detector Computed Tomography (MDCT) findings of carcinoma oesophagus to aid in its diagnosis and Staging. To evaluate the diagnostic accuracy of CT scan for carcinoma oesophagus by comparing CT scan findings with histopathological findings.

**Methods & Material**: A prospective study of 50 patients carried out in the SSIMS and RC Davangere from July 2017 to June 2018. Multi-Detector CT scanner (Toshiba - 16 slice CT) using thin sections. Oral and IV contrast was used. The diagnosis and staging confirmed by post-operative histopathology.

**Results**: Carcinoma oesophagus was commonly seen in the age group between 50 to 60 years with males more commonly affected than females. Alcohol and smoking was the associated risk factor. The lower 1/3rd of oesophagus affected more commonly affected and T2N0Mx was the most common staging found in CT (48%). The wall thickness in the majority of the cases measured between 10-20mm (88%). CT staging was compared with the postoperative histopathological staging. The sensitivity of CT-scan for ‘T’ stage was 73.0%, in ‘N’ stage 80.7% and in ‘M’ stage being 100%.

**Conclusion**: Though various diagnostic techniques used for carcinoma oesophagus, MDCT currently remains the most commonly used diagnostic technique in the preoperative evaluation of local extension of a tumour and to detect lymphadenopathy and distant metastases. Hence, CT plays an important role in detecting and staging carcinoma oesophagus.

Abstract ID: 1030

**ABSTRACT TITLE**: ROLE OF CT SCAN IN SMALL BOWEL OBSTRUCTION

**PRESENTING AUTHOR**: SUMEET ARORA

**CO-AUTHOR**: (None)

**Purpose**: To study the sensitivity and specificity of 16 slice CT scan in cases of intestinal obstruction.

**Material and methods**: The study was conducted on 50 armed forces personnel and their dependants who presented with clinical features of intestinal obstruction at Base hospital Delhi Cantt using a 16 slice Siemens somatom CT scanner. Scans were acquired prior to and after administration of intravenous contrast at 2 ml/sec with a pressure injector after a delay of 70 seconds. No oral contrast was given. CT scans were then evaluated to localise the site, level and cause of obstruction. The findings were correlated with per op findings and/or histopathology.
Results: The sensitivity and specificity of CT in determining the cause and level of cause of obstruction was greater than 90 percent. Adhesions were the commonest cause of obstruction and were confirmed at surgery in 60% of the patients. Other causes such as tumour, volvulus, intussusception and hernia were accurately depicted in all the cases. CT scan correctly depicted the level of obstruction in greater than 90 percent of cases. Strangulated bowel was accurately demonstrated in 2 cases.

Conclusion: CT is very useful in characterising small bowel obstruction from extrinsic, intrinsic and intraluminal causes and accurately depicts the level of obstruction. If facility is available it should be performed on all cases of suspected intestinal obstruction.
Genito-urinary Imaging

Abstract ID: 124
ABSTRACT TITLE: RENAL COLIC MIMICS ON NON CONTRAST HELICAL COMPUTED TOMOGRAPHY
PRESENTING AUTHOR: UTTARA SWATI ANAND
CO-AUTHOR: UTTAM B GEORGE

Objectives: To determine the incidence and spectrum of significant alternative or incidental diagnoses established or suggested on noncontrast-enhanced helical CT (NCCT) performed for suspected colic.

Materials and methods: A retrospective study was conducted on 1010 consecutive adult patients over a period of 3 years (January 1st, 2013 and December 31st, 2016) who presented with clinical suspicion of colic and underwent NCCT KUB. All patients underwent a 128-slice CT scan.

Results: Out of 1010 patients who were scanned, 152 patients were excluded. In total, 858 cases underwent NCCT for renal colic, 64% of whom were males. Six hundred and ninety five patients (81%) had calculi. Non calculus pathology was found in 163 patients (19%). The non-calculus renal abnormalities found in our study were acute pyelonephritis, emphysematous pyelonephritis, and ureteral obstruction from non-calculus causes, ovarian cysts, and cystitis. Alternative diagnosis not related to the genitourinary system which nevertheless required immediate attention include acute pancreatitis, bilateral psoas abscesses, ovarian masses, cholecystitis, diverticulitis, splenic abscess, and appendicitis. On studying data from other similar studies, both regional and worldwide, we found that the results of our study were comparable.

Conclusion: Noncontrast-enhanced helical CT is accurate and rapid in detecting calculus disease in patients with acute flank pain. A wide spectrum of other significant, alternative, and additional genitourinary and nongenitourinary diagnoses can also be reliably established or suggested in patients screened with NCCT KUB for suspected renal colic. These abnormalities were identified in 19% of cases in this series.

Abstract ID: 248
ABSTRACT TITLE: IS SONOSALPINOGOGRAPHY A DIAGNOSTIC OR THERAPEUTIC TOOL? - A GOLDEN OLD TOOL IN A NEW PLATINUM BOX
PRESENTING AUTHOR: RAJUL RASTOGI
CO-AUTHOR: DR. RITIKA AGARWAL

Sonosalpingography (SSG) has long been in radiology as a less commonly used tool for assessing the patency of fallopian tubes in subfertile females. It’s significance is undermined by laparoscopic evaluation (LE) of tubal patency as latter also allows simultaneous therapeutic procedures to restore its patency, if the obstruction exists. But LE is invasive and expensive. Hence, we evaluated the role of SSG not only in diagnosis of tubal obstruction but also its role in diagnosing the cause and if possible relieving the obstruction.

Material and Methods: Fifty subfertile females with normal appearing uterus and ovaries on transvaginal ultrasonography were included in our study. SSG was performed to evaluate tubal patency by recording free peritoneal spill. If peritoneal spill was absent bilaterally then the patient underwent laparoscopic evaluation. However, if unilateral or bilateral peritoneal spill was noted, then patient was recruited for assisted reproductive techniques (ART) and the results were correlated with pregnancy.
Results: Out of 50 patients, SSG was able to demonstrate free peritoneal spill at least unilaterally in 46 patients who conceived with ART. In rest of the four patient, with lack of bilateral spill on SSG, two revealed unilateral partial block while other two revealed bilateral tubal block. In all patients SSG correctly depicted the site of obstruction. In nine, patient it revealed PID (tubercular) by demonstrating flimsy peritubal adhesions and in 14 patients, higher pressure exerted during SSG restored the patency with sharp abdominal pain.

Conclusion: Our study reveals, that SSG is not only a diagnostic Golden Old Tool but a New Therapeutic Platinum tool as well. Hence, SSG should be used more often and can be used to segregate patients who prudently need laparoscopic evaluation.

Abstract ID: 445
ABSTRACT TITLE: EVALUATION OF HEMATURIA IN YOUNG ADULTS USING MDCT UROGRAPHY: A PROSPECTIVE STUDY IN TERTIARY CARE CENTRE IN NORTH INDIA
PRESENTING AUTHOR: MANIK MAHAJAN
CO-AUTHOR: DR GHANSHYAM DEV GUPTA

Aim: To determine the role of MDCT urography in evaluation of hematuria in young adults and to see whether unenhanced images are sufficient for the diagnosis or not

Material and Methods: Young adults (40 years or less in age) who presented with macroscopic or microscopic hematuria and underwent MDCT urography were included in the study. Detailed history and findings of clinical examination were recorded. Non contrast and contrast enhanced scans were performed and urographic findings were recorded in detail and tabulated. All the CT images were reviewed to determine whether contrast enhanced images were necessary for diagnosis or not.

Results: Mean age of patients was 29 years; 97.5% were males. Abnormal MDCT findings were seen in 65 of 88 examinations (73.9%) and clinically significant cause of hematuria was seen in 43 patients (48.9%). The most common clinically significant findings were renal or ureteric calculi seen in 74% cases (32/43); five cases of malignancy were also seen. Thirty six (84.0%) of 43 clinically significant causes were evident on non contrast images. Solitary tiny vesical mass, urinary tract infections, PUJ obstruction and ureteric stricture were detected only on contrast enhanced scans and were not apparent on non contrast images.

Conclusions: Clinically significant cause of hematuria was seen in 48.9 % of Contrast enhanced CT and CT urograms of the young adults. Non contrast images alone were diagnostic in significant proportion of these cases thereby reducing the requirement of additional CT examination and hence radiation exposure in radiosensitive individuals.

Abstract ID: 515
ABSTRACT TITLE: “SONOGRAPHIC GRADING OF RENAL PARENCHYMAL CHANGES AND ITS COMPARISON WITH ESTIMATED GLOMERULAR FILTRATION RATE (eGFR) USING MODIFIED DIET IN RENAL DISEASE FORMULA”
PRESENTING AUTHOR: PRASHANTH K S
CO-AUTHOR: DR. RAVI.N, DR. ARUL T DASAN, DR.SHREYAS RAO G

Aims & objectives: To evaluate the relevance of sonographic grading of renal parenchymal changes in assessing the severity of the renal disease and comparing it to the eGFR calculated using MDRD formula based on the age, gender and serum creatinine value of the patient.
**Materials and methods:** Glomerular filtration rate is another parameter for assessing the reserved renal function and an indicator of prognosis. In clinical practice GFR estimation (eGFR) is done by using a mathematical formula. In our study, we compared the sonographic grading of renal parenchymal changes with eGFR calculated using Modified Diet in Renal Diseases formula based on serum creatinine, age, gender and ethnicity. The adult patients with suspected kidney disease referred for sonography of abdomen during period of June 2017 to May 2018 were our study participants. As per our study design following strict inclusion and exclusion criteria, patients were selected as study participants and for each of the patient’s renal parenchymal status, serum creatinine, age, gender and ethnicity were documented.

**Results:** A total of 80 patients were our study participants, out of which 57.8% were males and 42.2% were females. Our study showed a linear correlation between sonographic grading of renal parenchymal changes with eGFR.

**Conclusion:** We conclude that by evaluating the kidneys with sonography and calculating eGFR using MDRD formula the renal status will be more accurately interpreted.

**Abstract ID:** 542

**ABSTRACT TITLE:** ROLE OF 1H MR SPECTROSCOPY IN CHARACTERIZATION OF ADRENAL LESIONS

**PRESENTING AUTHOR:** NEHA CHOUDHARY

**CO-AUTHOR:** (None)

**Purpose:** To evaluate the adrenal lesions with 1H MR spectroscopy by calculating Choline/Creatine, 4.0–4.3ppm/Creatine, Lipid/Creatine and Choline/Lipid ratios.

**Materials and Methods:** The study sample comprised of 43 subjects with 47 adrenal lesions (adenoma, metastasis, pheochromocytoma, myelolipoma, adrenocortical carcinoma, adrenal cysts and ganglioneuroma) and were evaluated with 1H MR spectroscopy at TE 135 & TE 30 with 1.5-T system. Cho/Cr, 4.0–4.3ppm/Cr, Lip/Cr and Cho/Lip ratios were calculated for each lesion. ROC curve analysis was done for different ratios to determine the best threshold values.

**Results:** The ratios of Cho:Cr, 4-4.3ppm:Cr, Lip:Cr & Cho:Lip for different group of lesions were significantly different. Adenomas and myelolipomas showed large lipid peaks. Pheochromocytoma showed lipid peaks, peaks at 4-4.3ppm & additional peaks at 5-6ppm. Metastasis showed prominent choline & lipid peaks. Adrenocortical carcinoma showed prominent choline, lipid & 4-4.3ppm peaks. For differentiation of adenoma, myelolipoma & pheochromocytoma from carcinoma & metastasis, threshold values of Cho:Cr, Lip:Cr and Cho:Lip ratios were 1.65, 5.00 & 0.23 respectively. Cho:Lip ratio had highest AUC with sensitivity of 90.9% & specificity of 87.1%. For differentiation of adenoma, myelolipoma & metastasis from carcinoma & pheochromocytoma, the threshold value of 4-4.3ppm:Cr ratio was 1.96 with sensitivity of 100% & specificity of 90.9% and had the maximum AUC among all ratios. Adrenal hydatid cyst showed lipid peak & elevated myoinositol. Ganglioneuroma showed raised choline peak suggesting high cellularity.

**Conclusion:** 1H MR spectroscopy can be used reliably in the characterization of adrenal lesions by measuring Cho:Cr, 4-4.3ppm:Cr, Lip:Cr & Cho:Lip ratios.
Abstract ID:1107

ABSTRACT TITLE: THE VALUE OF THREE DIMENSIONAL MULTI-DETECTOR CT HYSTEROSALPINGOGRAPHY IN INFERTILE PATIENTS WITH NON CONTRIBUTORY HYSTEROSALPINGOGRAPHY

PRESENTING AUTHOR: AKHIL ANAND
CO-AUTHOR: DR SHUCHI BHATT, DR MURTAZA SUMBUL, DR RAJPAL RAJPAL

Purpose: Infertility is a common health problem requiring imaging to define the reproductive tract in women. 3D MDCT Hysterosalpingography (MDCT-HSG) offers an easy workup for uterine, tubal and peritoneal factors.

Materials and Methods: Aim was to define spectrum of uterine, tubal and peritoneal factors on 3D-MDCT-HSG and determine its diagnostic accuracy in female factor infertility. A prospective study was conducted on 25 infertile women with non-diagnostic HSG over 18 months. 64- slice MDCT acquired the scan during pre-ovulatory phase after contrast instillation into the uterine cavity. A blinded reviewer interpreted the 3D-MDCT-HSG and results were compared with final diagnosis made on hystero-laparoscopy in 22 patients. Diagnostic accuracy of 3D-MDCT-HSG for various factors was expressed as sensitivity, specificity, positive and negative predictive value.

Results: MDCT-HSG demonstrated definite findings in 96% of patients having non-diagnostic HSG. In this study, tubal, uterine and peritoneal abnormalities were present in 68.75%, 56% and 32% of cases, respectively. 48 tubes in 25 patients were evaluated of which 22 tubes were blocked constituting the commonest finding present in 15 (60%) patients. The sensitivity, specificity, positive predictive value and negative predictive value for uterine factors was 83.33%, 100%, 100% and 96.84%, respectively, for tubal factors 93.55%, 94.68%, 85.29% and 96.83%, respectively and for peritoneal factors 62.5%, 71.43% and 88.46%, respectively. Mean effective radiation dose was 1.76±0.18 mSv in MDCT-HSG.

Conclusion: 3D-MDCT-HSG can detect various factors responsible for female infertility especially tubal and uterine; in cases where HSG fails to clearly delineate the pathology

Abstract ID:1202

ABSTRACT TITLE: CORRELATION OF ADC VALUES OF TRANSPLANT KIDNEY WITH FUNCTIONAL STATUS AND USEFULNESS TO PREDICT DYSFUNCTION

PRESENTING AUTHOR: S DIVYA
CO-AUTHOR: DR.C.AMARNATH, DR.B.SUHASINI, DR.G.SATHYAN, DR.M.PRAVEENKUMAR

Aim: This study is to assess the ADC values of the graft kidney and its applicability in the evaluation of allograft dysfunction in kidney transplant.

Materials and methods: The study was done with 32 patients who had undergone renal transplantation. The duration of the study was from August 2016 to August 2017.

MRI was performed using 1.5T SIEMENS (Symphony) unit. The sequence taken are T2, DWI with B values of 0 , 500 , 1000 in the axial sections. Graft biopsy is performed when altered renal parameters is found.

ADC values are compared with renal parameters, graft tissue biopsy and conclusion is drawn as to its usefulness in predicting transplant dysfunction.

Results: Out of 32 patients, biopsy was done for 11 patients with elevated transplant dysfunction. Out of 11
patients, 6 had rejection, 3 had ATN, 2 had tacrolimus toxicity and recovered gradually after treatment. Remaining 18 patients went uneventfully. In MRI, ADC values were reduced in both cortex and medulla in patients with rejection.

**Conclusion:** DWI is a potential and reliable non-invasive method for the diagnosis of the rejection after renal transplantation.

**Discussion:** Renal transplant biopsy is considered the gold standard in evaluating transplant failure but it is an invasive procedure and has serious complications such as haematuria requiring transfusion, obstruction of the graft by clots, hypovolaemic shock and intraperitoneal haemorrhage that may lead to graft nephrectomy. DWMRI is based on thermally induced motion of water molecules in tissue and a non invasive tool. It has been used with deviation of the ADC values in the cortex and medulla of the allograft, in future suggesting the potential of this method in monitoring
Head and Neck Imaging

Abstract ID: 56
ABSTRACT TITLE: CONE BEAM COMPUTED TOMOGRAPHY (CBCT) IN EVALUATION OF OBSTRUCTIVE SLEEP APNEA (OSA)
PRESENTING AUTHOR: AKSHAY SHAH
CO-AUTHOR: (None)

Background: The most recognized risk factor for obstructive sleep apnea is an anatomical narrowing of the upper airway. In particular, the locus is in the oropharyngeal area. Identifying the exact location of the obstruction in upper airway is important and imaging techniques play a key role.

Aim: To evaluate the use of cone-beam Computed Tomography (CBCT) for imaging the upper airway in Obstructive Sleep Apnea (OSA) and put forth the resources provided by CBCT in the diagnosis of possible physical barriers that can reduce upper airway permeability.

Materials and methods: This prospective study included 30 - OSA subjects and 30 - gender matched controls from July 2017 to June 2018. Age, gender and body mass index (BMI) were recorded. The subjects were evaluated for total airway volume (mm3), smallest cross-section area (mm2), and the anteroposterior (AP) Dimensions at the level of PNS, Soft palate, Tongue, epiglottis and lateral (L) dimensions of the smallest cross-section area using CBCT.

Result: Significant difference between BMI of study and control sample noted with OSA patient having higher BMI (27.7+/−0.25) than controls (22.4+/−1.76). Total air way volume and AP dimension showed significant difference with p - value 0.02 and 0.006 respectively. On the other hand, the smallest cross-section area and the L dimension did not show significant group differences (p - value 0.07 and 0.2 respectively).

Conclusion: CBCT is a useful tool in 3 dimensional evaluation of the overall patency of pharyngeal airway. Isotropic voxels in CBCT provides reliable and accurate linear and angular measurements. Image quality of CBCT providing 3D assessment of structural complexity and relative cost when compared to 2D imaging have allowed more precise and approachable evaluation of upper airway in OSA patients.

Abstract ID: 71
ABSTRACT TITLE: ROLE OF DIFFUSION MRI IN DIFFERENTIATION OF RESIDUAL/RECURRENT NECK MALIGNANCIES AND POST-TREATMENT CHANGES IN COMPARISON WITH HISTOPATHOLOGY FINDINGS
PRESENTING AUTHOR: ANKUSH JAJODIA
CO-AUTHOR: DR DEEPA AGGARWAL , DR S A RAO

Purpose: Role of diffusion-weighted (DW) MR imaging and ADC mapping in differentiating residual or recurrent neck malignancies from post-operative/post-radiation changes with histopathological/cytological correlation and comparison with PET-CT.

Methods and Materials: Prospective observational study for a year in 62 post-radiation/post-operative patients suspected to have residual/recurrent tumour of neck with lesion diameter more than 5mm measured on MRI.
Results: Mean ADC for recurrent / residual tumours: 1.008 ± 0.220 x 10-3 mm2/s - significantly lower than mean ADC value for post treatment changes of 1.69 ± 0.40 x 10-3 mm2 / s (p < 0.0001). The overall diagnostic accuracy, positive predictive value (PPV) and negative predictive value (NPV) of the qualitative assessment for the use of DWI in differentiating tumour recurrence from post-treatment changes were 96.6%, 96% and 83.3%, respectively. Upon quantitative analysis of the DW imaging data, a threshold ADC value of 1.3 x 10-3 mm2/s used for differentiating between post-treatment changes and recurrent cancers showed the highest combined sensitivity of 94%, specificity of 83.3%, accuracy of 93.6%, positive predictive value of 95.9%, negative predictive value of 83.3%.

Conclusion: DW MRI is a promising non-invasive MRI technique used to differentiate recurrent/residual head and neck malignancies from post treatment changes based on ADC values. Advantage short scanning time; safely added to standard MRI protocol with minimum patient discomfort. Complementary use of DW and PET/CT imaging may increase diagnostic confidence for differentiating recurrent disease from radiation therapy-induced changes after 6-12 months in post treatment cases.

Abstract ID: 349

ABSTRACT TITLE: COMPARATIVE STUDY OF ELASTOGRAPHY AND ULTRASONOGRAPHY IN DIFFERENTIATING BENIGN AND MALIGNANT THYROID LESIONS WITH HISTOPATHOLOGICAL CORRELATION

PRESENTING AUTHOR: HITHISHINI H
CO-AUTHOR: DR. RACHE GOWDA

Purpose: To assess the role of elastography and conventional ultrasonography in differentiating benign from malignant thyroid lesions with histopathological correlation.

Materials and Methods: The study was conducted over a period of 8 months in 25 patients referred for ultrasonography and elastography to R. L. Jalappa Hospital. Patients in whom thyroid lesions were detected in routine ultrasound are included. Individuals with clinically suspected thyroid lesions underwent conventional ultrasonography first followed by elastography. Findings were evaluated morphological changes were recorded with conventional ultrasonography and elastography. The results from conventional ultrasonography and elastography were compared with histopathological findings.

Results: The study included a total of 25 patients and it was noted that thyroid lesions were more common in females (n- 23). In all benign lesions, elastography contributed to narrow down the diagnosis made by conventional ultrasound. Elastography is superior in diagnosing malignant lesions. Finally, the ultrasonography and elastography results were correlated with the histopathological findings.

Conclusion: In patients undergoing ultrasonography for diagnosis of thyroid lesions, elastography can be a significant adjunct to conventional ultrasonography imaging and plays an additive role in effective diagnosis of lesions.
Abstract ID: 400

**ABSTRACT TITLE**: ROLE OF SHEAR WAVE ELASTOGRAPHY USING ACOUSTIC RADIATION FORCE AND IMPULSE IN EVALUATION OF THYROID NODULES.

**PRESENTING AUTHOR**: KIRAN U. NAVALGATTI

**CO-AUTHOR**: DR. A. ASHOK KUMAR

**Purpose**: The purpose of this study was to determine the accuracy of shear wave elastography using Virtual Touch Tissue Quantification (VTQ) by Acoustic Radiation Force Impulse Technology (ARFI) in differentiating the thyroid nodules into malignant & benign and also compare the observation with grey scale ultrasound and Doppler findings (TIRADS).

**Materials and methods**: This was a hospital based prospective, analytical observational study carried out on patients who underwent shear wave elastography, ultrasonography and pathological examination of thyroid nodules in our institution from October 2017 to September 2018. We determined the shear wave velocity (SWV), black & white Virtual Touch imaging and SWV map of the thyroid nodule by VTQ technique using ARFI. The observations of elastography were compared with cytological and/or histopathological diagnosis and a reference value of elastographic parameters for benignancy and malignancy were obtained. The accuracy of shear wave elastography in differentiating benign and malignant thyroid nodules was also compared with that of grey scale ultrasound and Doppler findings (TIRADS) using pathological diagnosis as a reference standard.

**Results**: A total of 50 patients with thyroid nodules were included in this study out of which 8 were malignant and 42 were benign. The mean SWV on ARFI imaging in benign nodules was 1.82 ± 0.6 m/s (range, 0.54 to 2.94 m/s) and the mean SWV in malignant nodules was 4.2 ± 1.1 m/s (range, 3.2 to 7.8 m/s). When we used an SWV > 2.80 m/s for the diagnosis of malignant nodules and < 2.8 m/s for the diagnosis of benign nodules, the sensitivity and specificity of ARFI imaging were 100% and 97.6% respectively.

**Conclusions**: Ultrasound Elastography can be used as potential non-invasive tool in differentiating malignant and benign nodules and thus avoid unnecessary FNAC.

Abstract ID: 493

**ABSTRACT TITLE**: ROLE OF MAGNETIC RESONANCE IMAGING (MRI) AND DIFFUSION WEIGHTED IMAGING (DWI) IN CHARACTERIZATION OF JAW LESIONS

**PRESENTING AUTHOR**: RAJESH V

**CO-AUTHOR**: DR JYOTI KUMAR DR ALPANA MANCHANDA DR SUJATA MOHANTY DR RAVI MEHER

**Purpose**: Various jaw lesions include radicular cyst, odontogenic keratocyst, ameloblastoma, odontogenic myxoma and dentigerous cyst. However, there is considerable overlap between the morphological characteristics of various jaw lesions even on MDCT. Magnetic resonance imaging (MRI) provides excellent soft tissue differentiation due to superior contrast resolution and has no radiation risk. Diffusion weighted imaging (DWI), a type of functional imaging technique is based on Brownian motion of water molecules.

This study illustrates the role of MRI and DWI in characterization and differentiation of various jaw lesions from each other.

**Materials And Methods**: A total of 31 patients with radiographically detected jaw lesions were included in the study. After conventional MR evaluation including post contrast assessment, DWI was performed on all
these patients. Results on conventional MR and DWI were then compared with histopathological diagnosis in all these cases.

**Results:** Based on final histopathology, 14/31 cases were diagnosed as OKC’s, 8/31 cases were ameloblastomas, 3/31 cases were dentigerous cysts and 2 cases were fibrous dysplasia and ossifying fibroma and 1 case each of odontogenic myxoma and osteosarcoma. On diffusion weighted imaging, 11/14 cases of OKC, 5/8 ameloblastoma, all cases of ossifying fibroma(n=2) and osteosarcoma showed restricted diffusion. DWI was especially useful in differentiating unicystic ameloblastoma from odontogenic keratocyst.

**Conclusion:** We concluded that Magnetic resonance imaging along with diffusion weighted imaging would be of great benefit in characterization of jaw lesions with only a small increase in time penalty.

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**Abstract ID: 591**

**ABSTRACT TITLE:** ROLE OF SONOELASTOGRAPHY BEYOND SONOGRAPHY IN CERVICAL LYMPHADENOPATHY

**PRESENTING AUTHOR:** RENU YADAV

**CO-AUTHOR:** DR AMITA MALIK

**Purpose:** To evaluate the diagnostic accuracy of sonography including Doppler and sonoelastography in differentiation between reactive and metastatic cervical lymphadenopathy.

**Materials and methods:** Cross-sectional study was undertaken with 50 study subjects after defined inclusion and exclusion criteria as per study needs and imaging limitations. Various US features like size, S/L ratio, presence or absence of echogenic hilum, intra-nodal necrosis including pattern of vascularity were evaluated. With USE color coded elastograms and strain ratio were evaluated. Then accuracy of individual sonographic and sonoelastographic parameters as well as combined were evaluated against HPE diagnosis. Cut-off for all the combined evaluation were determined from ROC curve.

**Results:** Sensitivity of individual sonographic parameters ranged from 81% to 96.3% while specificity was from 50 % to 96.3%. Maximum accuracy of 94.3% was obtained with intra-nodal necrosis and echogenic hilum individually. Color coded elastograms with pattern > 3 suggesting metastatic showed sensitivity of 100% but specificity of 75%. Maximum accuracy was achieved by SR>1.99 with 96.3% sensitivity and 93.02% specificity. Combined USG evaluation had sensitivity of 70.4% and specificity of 87.5%, whereas combined sonoanographic plus elastographic evaluation increased sensitivity and specificity to 92.6% and 100% respectively.

**Conclusion:** Combined sonographic and sonoelastographic assessment is better than individual assessment hence elastographic findings complement sonographic assessment and further increases the diagnostic confidence.

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**Abstract ID: 645**

**ABSTRACT TITLE:** ROLE OF MULTIDETECTOR COMPUTED TOMOGRAPHIC (MDCT) IN EVALUATING PARANASAL SINUS ANATOMY AND ITS VARIATIONS, COMMON AND UNCOMMON SINUS PATHOLOGIES

**PRESENTING AUTHOR:** RAHUL KARTHIK L

**CO-AUTHOR:** DR.AJIT MAHALE
Purpose: To study normal anatomy of the paranasal sinuses and the presence of anatomical variants, with their clinical significance and to assess the incidence of the different types of paranasal sinus diseases in the population reporting to this Institution.

Material and methods: This is a retrospective study of 389 patients referred to the department of radiodiagnosis who were found to have clinically significant paranasal sinus disease and requiring MDCT-PNS scanning. MDCT was done using 16 slice GE BRIVO MDCT scanner. The normal CT anatomy of paranasal sinuses, its variants and the presence of various sinus diseases were evaluated along with their complications. Histopathological correlation was done wherever possible. Statistical analysis was done using SPSS 22 version software. Categorical data was represented in the form of Frequencies and proportions. Chi-square test was used as test of significance for qualitative data.

Results: Out of 389 patients, 307 patients had inflammatory and infective sinus disease, out of which 251 patients have anatomic variants. 26 had sinonasal neoplasms, out of which, 13 were malignant, 5 benign and another 5 were indeterminate mass lesions. 9 had fibro-osseous lesions and the rest had anatomic variants not associated with any pathologies.

Conclusion: This study helped us better understand the normal PNS anatomy and its variants with respect to their clinical significance and also in assessing the efficacy of MDCT in detection and characterization of sinus diseases which will help to achieve better patient management and also increases our specificity and sensitivity in differentiating benign from malignant pathologies.

Abstract ID: 678

ABSTRACT TITLE : “EVALUATION OF THYROID NODULES USING ULTRASONOGRAPHY, COLOR DOPPLER AND ULTRASOUND ELASTOGRAPHY WITH FNAC CORRELATION”

PRESENTING AUTHOR : ANURAJ B N
CO-AUTHOR : DR. NANJARAJ C P 2) DR. RAJENDRA KUMAR N L 3) DR. M R SHASHIKUMAR

Purpose: To evaluate the Gray Scale features and color Doppler findings of thyroid nodules with high frequency ultrasound imaging To determine sensitivity and specificity in concluding benign and malignant lesions on high resolution ultrasonography and color Doppler findings. To study the role ultrasound elastography in differentiating benign and malignant thyroid nodules.

Materials and Methods: Source of data - Patients detected to have thyroid nodule on ultrasonography which is subsequently confirmed by FNAC/histopathology will be included in the study

Duration: from January 2017 to June 2018. Sample Size: 70

Type Of Study: Prospective study.

Results: 1) There were 62 (88.6 %) females and 8 (11.4 %) males in this study with a male to female ratio of 1:7.7. 2) Of 70 nodules, 42 were benign and 28 were malignant. 3) When the nodules showed Elasticity score of 3, 80% of the cases were benign and 20% were malignant. With the Elasticity score of 4, 100% of the nodules were malignant

Conclusion: 1. Presence of any of these features on ultrasonography - taller than wide shape, lobulated/poorly defined margins, hypoechoegenicity and microcalcification was very specific in the range of 92.8% – 100% for malignancy. 2. The risk of malignancy increases as intranodular blood flow becomes more dominant. 3. Sonoelastography increases the confidence in benign versus malignant while evaluating thyroid nodules and also helps in the choice of nodules for biopsy and reduces the number of FNAC procedures.
Abstract ID:786

ABSTRACT TITLE: CROSS SECTIONAL IMAGING OF ORBITAL TUMORS WITH HISTOPATHALOGICAL CORRELATION

PRESENTING AUTHOR: PALLAVI MANNAM

CO-AUTHOR: DR. V.KARUNA, ASSISTANT PROFESSOR DR. D.ANKAMMA RAO, PROFESSOR DR. B.SESHULAKSHMI, PROFESSOR

Objectives: To review the anatomy of orbit To evaluate efficacy of CT in orbital tumors and role of MRI to assess the nature, anatomical extent, morphology and aid in decision making for choice of treatment To correlate with histopathological diagnosis.

Materials and methods: This prospective study of cross sectional imaging of Orbital tumors with histopathological correlation was conducted on 35 patients.

Results and Conclusion: Out of 35 patients, 17 were male and 18 were female. Slight female preponderance is seen in my study. Age of patients range from 2 years to 70 years.Majority of the patients (26 patients) presented with proptosis. Tissue diagnosis (Biopsy), surgery was done in feasible cases. Out of 35 cases, 23 cases were of benign tumors and 12 cases were of malignant tumors. In benign cases, 6 cases were extraconal, 11 cases were intraconal and 6 cases were both intraconal and extraconal in location. In malignant cases, 2 cases were extraconal, 4 cases were intraconal and 6 cases were both intraconal and extraconal in location. 9 cases with benign lesions, 7 cases with malignant lesions are showing optic nerve involvement. 7 cases with benign lesions, 6 cases with malignant lesions are showing extra ocular muscle involvement. Calcification is observed in 4 cases with malignant lesions, 2 cases with benign lesions. All cases with malignant tumours, 20 cases with benign tumors show Contrast Enhancement.

Calcification is noted in six cases, bone changes noted in seven cases, is better depicted on CT.DWI and ADC are useful, reliable, safe and non-invasive imaging parameter that can be used for the differentiation of malignant tumours from benign lesions with high sensitivity and specificity. Orbital involvement from paraorbital mass is seen in one case (frontal mucocele). Contrast enhancement was not seen in 3 cases with benign lesions.

Abstract ID:859

ABSTRACT TITLE: “ROLE OF DIFFUSION TENSOR IMAGING (DTI) IN EARLY DETECTION OF CERVICAL SPONDYLOTIC MYELOPATHY”.

PRESENTING AUTHOR: SACHIN T

CO-AUTHOR: DR SUDHA KIRAN DAS, DMRD, MD ASSOCIATE PROFESSOR

Purpose: To investigate the usefulness of diffusion tensor imaging (DTI) in early diagnosis of cervical spondylotic myelopathy (CSM), since surgery performed in earlier stages was reported to be more successful when compared with later stages of disease. The aim of this study was to compare fractional anisotropy (FA) and apparent diffusion coefficient (ADC) values in patients with CSM in earlier stages, before the appearance of signal increase in T2-weighted sequences.

Methods: This prospective study included 25 patients with CSM without T2 changes on conventional MRI. Quantitative fractional anisotropy (FA) and apparent diffusion coefficient (ADC) maps were generated using
Diffusion tensor (DT) images from the stenotic and non-stenotic segments of the subjects. FA and ADC values were estimated and compared with stenotic versus non-stenotic segments. Paired t-test was used for statistical analysis.

**Results:** In the most stenotic segments, the mean FA value was significantly lower (0.415 ± 0.203 vs 0.717 ± 0.160, P < 0.001) and the mean ADC value was significantly higher (1.777 ± 1.005 vs 1.010 ± 0.458, P < 0.001) when compared to non-stenotic segments.

**Conclusion:** DTI may be a useful diagnostic tool for assessing disease severity in CSM. DTI may offer increased diagnostic sensitivity as compared to standard MRI and enables earlier detection of the disease.

**Abstract ID:** 1155

**ABSTRACT TITLE:** COMPARATIVE STUDY OF ORBITAL DOPPLER PARAMETERS IN DIABETICS WITH RETINOPATHY AND DIABETICS/ HEALTHY CONTROLS WITHOUT RETINOPATHY

**PRESENTING AUTHOR:** THANGA MEENA.M

**CO-AUTHOR:** PROF.DR.D.RAMESH, PROF.DR.R.RAVI

**Purpose:** To compare orbital vessel doppler indices in diabetics with retinopathy and diabetics/healthy controls without retinopathy using the color doppler sonography.

**Inclusion criteria:** Cases of diabetics with retinopathy and diabetics/non-diabetic healthy controls without retinopathy were included in the study.

**Exclusion Criteria:** Previous laser photocoagulation, proliferative diabetic retinopathy and any disease or anomaly of the eye which may affect blood flow velocity.

**Methodology:** This prospective study include the study population as diabetic without retinopathy (non DR), diabetics with retinopathy (DR) and healthy controls who come to diabetology outpatient department after categorizing by fundoscopy. Patients to be in supine position. Sterile gel will be placed in closed eyelid and Colour Doppler imaging(CDI) done. Measurements include Peak Systolic Velocity (PSV), End Diastolic Velocity (EDV), Resistive Index (RI) and Pulsatile Index (PI) in ophthalmic arteries (OA), central retinal artery (CRA) and central retinal vein (CRV).

**Results:** In OA, PSV showed no statistically significant difference across the groups. EDV was lowest in DR group, followed by non-DR group and was higher in healthy controls. The PI and RI was highest in DR group, followed by non DR group and least among healthy controls. In CRA, PSV did not show any statistically significant difference. EDV of Central Retinal artery was much lower in DR group, as compared to non-DR group and healthy controls. PI and RI of CRA also showed declining trend from DR group to non-DR group and healthy controls. In CRV parameters PI and RI values were highest in DR group, followed by non DR group and lowest in healthy controls.

**Limitation:** CDI is operator-dependent and there are many different results relating to the association of blood flow velocities and DR in the literature.

**Conclusion:** Ocular blood flow velocity was decreased with increased RI and PI in diabetic retinopathy group.
Abstract ID:1306

ABSTRACT TITLE: “MULTIMODALITY IMAGING OF CAROTID BODY PARAGANGLIOMAS IN DIAGNOSIS AND PREOPERATIVE ASSESSMENT”.

PRESENTING AUTHOR: SACHIN T
CO-AUTHOR: DR SUMAN T P, MD DR SUDHA KIRAN DAS, DMRD, MD

Purpose: To review the imaging hallmarks of carotid body paragangliomas in diagnosis, preoperative assessment of extent of vascular invasion and to predict the operative morbidity and mortality using Shamblin classification. Due to the complexity of the anatomical location, a thorough understanding of imaging findings is of the utmost importance prior to any surgical approach.

Methods: 14 patients underwent preoperative imaging of carotid body tumors with ultrasonography, Contrast enhanced CT and MRI. On MRI, the tumors were classified according to the Shamblin grades and were correlated with per operative findings. On MRI, the tumors were classified into 3 types based on the arc of vascular contact with the internal carotid artery (ICA); contact ≤180° was categorized as Type 1, Type II tumors had more than 180° and <270°, and Type III tumors had a maximum circumference of contact of 270° or more.

Results: Out of 14 patients, nine were Type II, four were Type 1, and one was Type III. Pre-operative prediction of Shamblin grades correlated accurately with per-operative Shamblin grades in all the 14 operated cases.

Conclusions: Multimodality imaging plays an important role in the diagnosis of carotid body tumors and surgical planning. Imaging of carotid body tumor is not only for diagnosis, but also to ascertain the presence and extent of vascular involvement.

Preoperative assessment of the carotid paragangliomas with Shamblin classification helps in successful therapeutic outcome.
Abstract ID: 549

**ABSTRACT TITLE**: PROSPECTIVE STUDY OF ROLE OF PORTAL VENOUS DOPPLER IN PREDICTING CAPILLARY LEAK SYNDROME IN DENGUE FEVER PATIENTS

**PRESENTING AUTHOR**: SUBRAMANIAN A

**CO-AUTHOR**: DR. J.DEVIMEENAL . MD RD., DNB, FRCR,FICR PROFESSOR AND HOD DEPT OF RADIODIAGNOSIS GOVT KILPAUK MEDICAL COLLEGE

**Purpose**: To Predict The Capillary Leak Syndrome In Dengue Fever Patients By Portal Venous Doppler

**Materials and methods**: A Prospective Cohort Study was conducted in 100 Patients with Acute fever, clinical symptoms and signs of dengue with laboratory evidence of thrombocytopenia, NS1 and IGM Positivity for a period of 6 months in Department of Radiodiagnosis, Govt. Kilpauk Medical College Hospital, Kilpauk, Chennai. Grey scale and colour Doppler ultrasound was performed in patients with 4-6 hrs at the time of admission.

Acute Fever patients with thrombocytopenia, IGM positive and NS1 positive were included and Patient with Chronic liver disease, MP/Mf positive, Known case of Hypoalbuminemia, and Hypotension, were excluded from the study sample. Portal vein diameter, Flow velocity, Cross sectional area were measured at the level of liver hilum. Congestive Index was calculated by Cross sectional area / portal venous velocity. Check was made of associated features like Ascites, Pleural effusion, Gallbladder wall edema.

**Results**: 90% of the patients developed capillary leak syndrome and showed mean portal diameter of 12.88mm, mean portal velocity of 18.27cm/s and mean congestive index of 0.0972. The sensitivity and specificity of congestive index (0.07 as cut off) were 56% and 100%, portal diameter (>11.2cm as cut off) were 75% and 70%, PV velocity (<25 cm/s as cut off) were 93% and 60%.

**Conclusion**: Dengue fever patients with evidence of decreased portal venous velocity, Increased portal vein diameter and increased congestion index were more prone for developing capillary leak syndrome. These measurements predicted CLS earlier than clinical and laboratory evidence thus aiding in early treatment and thus decreasing mortality.

Abstract ID: 557

**ABSTRACT TITLE**: CORRELATION BETWEEN HEPATIC EXTRACELLULAR VOLUME FRACTION ON MULTIPHASE COMPUTED TOMOGRAPHY AND SEVERITY OF DIFFUSE LIVER DISEASE

**PRESENTING AUTHOR**: CHANDANA UDAYAKUMAR

**CO-AUTHOR**: DR VEDARAJU K S, DR ARUL T DASAN, DR KAMESH G

**Aim**: To determine whether quantification of hepatic extracellular volume fractions by multiphasic computed tomography correlates with the severity of diffuse liver disease

**Materials and Methods**: Images of 40 patients without and 40 patients with diffuse liver disease who had undergone unenhanced and three minute delayed phase contrast-enhanced computed tomography were studied between June 2017 and May 2018. The CT attenuation of the liver and aorta were measured to
estimate the fractional extracellular space, defined as the ratio of the difference between the attenuation of the liver on delayed phase and unenhanced images to the difference between the attenuation of the aorta on delayed and unenhanced images multiplied by 1 minus the hematocrit. Findings were correlated with each patient’s Model of End-Stage Liver Disease (MELD) score.

**Results:** The mean fractional extracellular space was higher in patients with cirrhosis (49%+/−6%) than without cirrhosis (21%+/−9%). The fractional extracellular space was found to correlate with the MELD score (p value<0.0001), with the sensitivity and specificity of an expanded extracellular space volume for predicting diffuse liver disease being 93% and 81%.

**Conclusion:** Diffuse liver disease is a common public health problem and requires a number of invasive tests for its quantification. The results showed that non invasive computed tomography quantification can be used to assess the presence of cirrhosis and grade the severity of diffuse liver disease.

**Abstract ID: 578**

**ABSTRACT TITLE** : THE HEPATIC ARTERIAL DOPPLER: A NEW PROGNOSTICATING TOOL IN PATIENTS WITH ALCOHOLIC HEPATITIS – A NOVEL RADIOLOGICAL-BIOCHEMICAL CORRELATION STUDY

**PRESENTING AUTHOR** : SAMARTH S GOWDA

**CO-AUTHOR** : DR. T. ARUL. DASAN, DR. SHREYAS. RAO. G

**Purpose:** Alcoholic hepatitis is associated with a hepatic arterial buffer response, which in turn leads to marked hepatic artery dilatation as evidenced by increased hepatic arterial diameter (HAD) in Doppler ultrasound. Maddrey’s discriminant function (MDF) is used for evaluating the severity and prognosis in severe acute alcoholic hepatitis (SAAH). A score of >32 is associated with poor prognosis. By conducting this novel correlation study between the two fore mentioned parameters, we hope to possibly present a new non-invasive prognostic tool in the form of the Hepatic artery Doppler.

**Materials and methods:** A prospective study was conducted on a group of 50 patients, which included 25 SAAH patients (defined by an MDF>32) and 25 alcoholic cirrhosis patients without alcoholic hepatitis who served as controls. Hepatic artery Doppler parameters including HAD, Resistive index (RI) and Pulsatility Index (PI) were recorded using our Philips IU22 ultrasound machine, and the same were later correlated with MDF scores using appropriate statistical tests.

**Results:** It was proven that the mean HAD showed a statistically significant increase in patients with SAAH, compared with that of cirrhotic patients. There was also a statistically significant decrease in the mean RI and PI values in SAAH compared with alcoholic cirrhosis. Further, statistically significant correlation was found between MDF and HAD in the SAAH group.

**Conclusion:** The hepatic artery Doppler parameters, especially the hepatic arterial diameter showed a significant correlation with MDF scores, and hence may serve as a useful non-invasive prognostic tool in patients with Severe Alcoholic Hepatitis.
Abstract ID: 919

ABSTRACT TITLE: SHEAR WAVE ELASTOGRAPHY IN ASSESSMENT OF LIVER FIBROSIS.

PRESENTING AUTHOR: NEERAJ S.

CO-AUTHOR: (None)

Purpose: To calculate the shear wave velocity in suspected cases of liver fibrosis and to correlate the Elastographic findings with histopathology.

Materials and methods: This was a prospective study conducted from October 2017 to September 2017 for a period of 11 months wherein 30 patients suspected to have diffuse liver pathologies either on ultrasonography or liver function tests underwent shear wave elastography of the liver. On elastography, a total of 6 velocities were obtained from the region of interest [segment V] in the liver. A mean of the 6 values was then be taken into consideration for assessment of liver fibrosis. The mean value thus obtained was tabulated for grading of fibrosis. These patients subsequently underwent liver biopsy and a correlation between elastography and liver biopsy were thus made.

Results: Out of the 30 patients who underwent elastography, 12 patients were characterized under absent or mild fibrosis, 4 patients under significant fibrosis, 5 patients under severe fibrosis and 9 patients under cirrhosis.

On histopathology, out of the 12 patients who were characterized under absent or mild fibrosis on elastography, 10 patients had no fibrosis or mild fibrosis on HPE, out of the 4 patients characterized under significant fibrosis, 3 had significant fibrosis on HPE, out of the 5 patients characterized under severe fibrosis, all 5 had severe fibrosis on HPE and out of the 9 patients characterized under cirrhosis, all 9 had cirrhosis on HPE.

Conclusion: Shear Wave Elastography is proving to be a very important non-invasive tool to assess the severity of liver fibrosis in patient with diffuse liver disease nearly comparable to liver biopsy which is gold standard. Hence, Shear wave elastography can in future be an alternative predictor of fibrosis in patients who cannot undergo biopsy.

Abstract ID: 1078

ABSTRACT TITLE: COMPUTED TOMOGRAPHY VOLUMETRIC ANALYSIS OF LIVER REGENERATION IN LIVER TRANSPLANT RECIPIENTS

PRESENTING AUTHOR: ABHISHEK JAYANT

CO-AUTHOR: DR. TBS BUXI, DR. KISHAN S RAWAT, DR. PRIYANKA

Purpose: To assess liver regeneration with CT volumetry in patients who have undergone liver transplantation and to evaluate factors impacting liver regeneration in these subset of patients.

Material and Methods: The study was done in Department of Radiodiagnosis (CT & MRI) in collaboration with the Department of Surgical Gastroenterology and Liver Transplantation at Sir Ganga Ram Hospital. 34 patients were included in this study.

Inclusion criteria - All adult patients who underwent living donor liver transplantation at our center and gave consent for participation in our study.

Exclusion criteria: - Pediatric patients of liver transplants and acute liver failure patients.
After taking valid consent, demographic, clinical and laboratory parameters of these patients undergoing liver transplant were noted. Pre-operative graft weight was noted. CT was done on 7th and 30th post-transplant day and volume was calculated using CT volumetry software. Percentage and absolute growth of graft on these days were calculated. Correlation of various pre transplant variables with graft regeneration was assessed.

**Results:** Rapid regeneration of graft was noted with mean absolute and percentage regeneration on 30th day being $685.4 \pm 200.3$cc and $119.2 \pm 44\%$. Significant (p value <0.05) and positive correlation was found between weight, BMI, BSA, graft volume, graft-recipient weight ratio (GRWR) and 30th day graft volume.

**Conclusion:** We concluded in our study that graft regeneration in liver transplant recipients is rapid and continuous process in the first thirty days. There is positive and significant correlation between graft regeneration and pre-transplant variables – recipient’s weight, BMI, BSA, graft volume and GRWR.
**Abstract ID: 45**

**ABSTRACT TITLE**: RECALCITRANT DESMOID TUMORS: DOES CRYOABLATION HELP?

**PRESENTING AUTHOR**: RAJA SHAIKH

**CO-AUTHOR**: 

**Purpose**: Desmoid tumors are highly aggressive rare musculoaponeurotic tumors which often recur after treatment. Conventional treatments include surgical resection, radiation, systemic therapy, and neoadjuvant radiation with or without chemotherapy. Reported mean local failure rates of 22%, 35%, and 28% for radiation alone, surgery alone, and radiation plus surgery, respectively. Reported mean stable disease rates of 91% and 52% for cytotoxic and noncytotoxic chemotherapy, respectively. Cryoablation can be used in isolation or as adjuvant to chemotherapy/radiotherapy in large, recalcitrant desmoids to promote faster tumor necrosis and shrinkage from critical structures. It also helps in long term control of tumor progression. We present our experience with percutaneous cryoablation of desmoid tumors with the objective of showing the safety and efficacy of this treatment.

**Materials**: Seven patients with symptomatic and recurrent progressive desmoid tumors in post resection and chemotherapy who underwent percutaneous cryoablation, from September 2012 to September 2017. The desmoids were in anatomically challenging locations. Patients were evaluated in an interdisciplinary tumor conference before being referred for cryoablation. Percutaneous image guided cryoablation was performed using Argon and Helium gases in a single or staged sessions. Pre procedure and follow up clinical and imaging evaluation was done to assess outcome.

**Results**: Following cryoablation, tumor shrinkage occurred in all pts (n=100%). There was improvement in symptoms. There were no major or long term complications.

**Conclusions**: Percutaneous image guided cryoablation is safe and effective and should be considered early in the treatment of recalcitrant desmoid tumors.

**Abstract ID: 737**

**ABSTRACT TITLE**: IMAGE GUIDED PICC PLACEMENT: OUR EXPERIENCES

**PRESENTING AUTHOR**: BRIJESH K SONI

**CO-AUTHOR**: RAJEEV SIVASANKAR, RAJNEESH K PATEL

**Purpose**: Sharing our experience regarding image guided placement of peripherally inserted central catheters (PICC)

- Explain the indications of PICC
- Discuss “tricks” for placement
- Handing problem and complication countered during the procedure of after the procedure
- Expose the different materials and equipment we use in our center

**Material and Method:**
• PICC placement are meant for administration of drugs, blood products, fluids, etc through a peripheral vein puncture. At our center, we mainly inserted PICC for chemotherapy in cancer patients.
• Patient with deranged coagulation profile were excluded
• Patient were prepared as per standards and PICC line were inserted using ultrasound and C arm image intensifier in basilic vein.

Results:
• 25 patients between 45-75 yrs of age were included.
• Diffulties were encountered, if patient has already undergone first cycle of chemotherapy.
• Deep venous thrombosis were encountered and were managed with the help of interventional radiologist.
• Commonest complication encountered were blockage of PICC line.

Conclusion: Peripherally inserted central lines are very useful in the administration of chemotherapy. In addition it can also be used in the treatment of many diseases requiring antibiotic therapy, nutritional support, etc. Image guided placement of PICC is very simple and useful technique which can be learned by any radiologist. Further it is emphasize that all central venous lines have their complications, the most feared is catheter-related bacteraemia and deep venous thrombosis.
ABSTRACT TITLE: COLORING THE FETAL ABDOMEN AT FIRST TRIMESTER ANOMALY SCAN – WHAT IS IT WORTH?

PRESENTING AUTHOR: KAVITA ANEJA
CO-AUTHOR: NONE

Purpose: To demonstrate the arrangement of abdominal vessels by color Doppler ultrasound in a normal fetus and to evaluate the altered course of abdominal vessels in some difficult to detect anomalies which are rendered more detectable by color Doppler at first trimester anomaly scan.

Methods: Sagittal, coronal and transverse views of fetal abdomen were studied at 11-14 weeks by color Doppler ultrasound in normal fetuses and some rare congenital anomalies that substantiated early diagnosis of congenital diaphragmatic hernia and diagnosis and differentiation between similar ventral masses.

Results: Color Doppler in a normal fetal abdomen in first trimester, revealed some recognizable patterns of abdominal vessels, which led to derivation of some signs – K angle, X sign and V sign.

Some rare congenital anomalies depicted altered course of abdominal vessels, leading to peculiar patterns.

- Umbilical cord cyst revealed – normal K angle, intact X sign, intact V sign reinforcing the mass to be extrinsic. An upturned superior mesenteric artery confirmed the diagnosis and contents of suspected congenital diaphragmatic hernia. Single renal artery indicated unilateral renal agenesis.

Conclusion: Coloring the fetal abdomen at first trimester anomaly scan revealed certain valuable signs for early detection of some rare anomalies which facilitates early genetic counseling and appropriate intervention to these cases.
**Abstract ID: 79**

**ABSTRACT TITLE**: ROLE OF DYNAMIC CONTRAST ENHANCED MRI (DCE MRI) IN THE EVALUATION OF SOFT TISSUE TUMOURS

**PRESENTING AUTHOR**: PRITAM GADIA

**CO-AUTHOR**: DR. PURVI DESAI, DR. BHAGVATI UKANI, DR. SIMRANJEET SINGH

**Purpose**: To Evaluate The Role Of Dce MRI In Soft Tissue Tumour, Especially In Prediction Of Malignancy And To Compare Whether The Diagnosis Made On MRI Correlates With The Histopathological Diagnosis.

**Material and Methods**: 52 Patients (Age 2 To 65 Years) Which Were Referred For MRI To Department Of Radiodiagnosis, New Civil Hospital, Surat Were Subjected To Mr Examination On 1.5 Tesla (Magnetom Siemens). After Localised Sequences T1w And Stir Images Were Obtained In Longitudinal Plane Followed By T2w And Post Contrast T1w Images In Axial Planes. Additional Sequences Were Obtained When Required. Various Imaging Characteristics Of Tumours Were Evaluated Statistically And Their Respective Sensitivity And Specificity In Prediction Of Malignancy Were Obtained. Dce MRI Uses The Time Intensity Curve Which Helps In Predicting The Tumour Characteristics, Thus Can Differentiate Benign And Malignant Soft Tissue Tumour.

**Results**: Features Associated With Benign Diagnosis Are Well Defined Margination, Homogeneous T2w Signal, Absence Of Edema, Necrosis, Calcification. Malignant Tumours Shows Presence Of Irregular Margins, Inhomogeneous Signal On T2w, Type V Time Intensity Curve, Presence Of Odema, Necrosis, Calcification With Bony And Neurovascular Involvement. The Sensitivity For A MRI Diagnosis Of Malignant Tumour Was Arround 96% And Specificity Was 86%.

**Conclusion**: Differentiation Of Malignant From Benign Soft Tissue Tumour Is Best Made By A Combination Of Clinical And Imaging Parameters Rather Than By Any Single Mr Characteristic. A Systematic Approach Markedly Improved Diagnostic Results.

**Abstract ID: 262**

**ABSTRACT TITLE**: ROLE OF CHEMICAL SHIFT MRI IN DIFFERENTIATING BENIGN AND MALIGNANT VERTEBRAL MARROW LESIONS

**PRESENTING AUTHOR**: BRAHMDEEP SINGH WADHAWAN

**CO-AUTHOR**: DR RAVINDER KAUR (PROF DEPT OF RADIO DIAGNOSIS), DR SUMAN KOCHHAR (PROF AND HEAD DEPT OF RADIO DIAGNOSIS), DR ROHIT JINDAL (ASSOCIATE PROF DEPT OF ORTHOPAEDICS)

**Objective**: To evaluate the usefulness of Chemical shift (CS) MRI in differentiating benign and malignant vertebral marrow lesions.

**Materials and methods**: Patients from Orthopaedic OPD with localised pain in the vertebrae with or without known malignancy, who were referred for MRI and showed altered marrow signal intensity in one or more vertebrae on conventional MRI sequences or those having collapsed vertebra with altered marrow signal intensity were included in the study. In-phase and opposed-phase images were taken to calculate signal
intensity ratio (SIR) of the abnormal vertebra. SIR of mean signal intensity measured on opposed-phase to mean signal intensity measured on in-phase images was measured and recorded.

Observations: The studied population included 30 patients in which 58 vertebrae were accessed which included 38 dorsal, 18 lumbar, 1 sacral and 1 cervical. Out of 58 vertebrae 46 (79%) came out to be malignant and 12(20%) came out to be benign. Mean CSI/SIR of malignant lesions came out to be 0.96 and mean SIR of benign lesions came out be 0.76. The area under the curve came out as 0.758 and p value of 0.006.

Conclusion: Conventional MRI sequences many a times cannot always differentiate between benign and malignant lesions. So here comes the role of newer sequences like CSI. CSI/SIR can be used as a new tool in differentiating benign and malignant vertebral marrow lesions.

Abstract ID: 364

Abstract Title: DYNAMICS / ADYNAMIC HIGH RESOLUTION SONOGRAPHY OF FOOT & ANKLE

Presenting Author: SUDHIR KUMAR SHUKLA

CO-AUTHOR: (None)

Purpose: To study the different disease pattern and finding in different part of foot and ankle with it’s direct real time correlation with patient problem and live demonstration.

Materials and Methods: All musculoskeletal studies conducted on the foot and ankle during 2 yrs. period at the department of radiology Sudhir C.T. scan & Research centre with Samsung machine R S80A with high frequency 2-9 and 3-16 MHZ linear probe having excellent resolution and follow up patients in different relevant clinical departments and working on close association with clinician.

Result: There hundred and fifty five studies conducted in 2 yrs. period, 50 for ankle, 30 for heel and 270 for rest of foot including injury cases. Most common findings was Tenosynovitis ankle, Plantar fascitis, heel it was Achilles tendonitis and partial tear of tendo - achilles in trauma patient, studied 100 cases of diabetic foot including few cases of chikungunya, Tuberculosis & joint effusions. Ligament injuries most commonly seen. Number of different MSKUS abnormality seen.

Conclusion: Musculoskeletal high resolution ultrasound has the potential for revealing a huge spectrum of abnormality. The most common findings was Tendonitis, a part from ligament & muscle injury there are cases of tuberculosis, chikungunya, inflammatory mass, joint effusion, intra - articular loose bodies and ganglion cyst, plantar fascitis, plantar tear, plantar fibroma, thickening of plantar fasica.

Keywords: High resolution musculoskeletal ultrasound, plantar fascitis sprain, Tendonitis, Diabetic foot, Joint effusion, Inflammatory masses, Morton’s neuroma.

Reference


**Abstract ID: 424**

**ABSTRACT TITLE**: IMAGING SPECTRUM OF SACROILITIS ON MRI: DIFFERENTIATION BETWEEN INFECTIVE AND SERONEGATIVE SPONDYLARTHROPATHY

**PRESENTING AUTHOR**: RAVIKANT KAUSHIK

**CO-AUTHOR**: DR. MUKTA MITAL, DR SAMEER R VERMA, DR SONAL SARAN, DR SUNIL MALHOTRA, DR SHUBHDA SAGAR, DR ABHAY PRATAP SINGH

**Purpose**: The purpose of this study is to assess the demographic and clinical profile of patients presenting with sacroiliitis and to identify the MRI features that aid in the differentiation between infective sacroiliitis and sacroiliitis associated with spondyloarthropathy.

**Materials and Methods**: Thirty patients with symptoms of low back pain were evaluated with MRI between September 2017 and September 2018. The sacroiliac joints were evaluated for joint margins, joint space, sclerosis, and bone marrow changes. MRI findings were correlated with clinical data, including age and duration of disease. The Fischer exact test was used for comparison of categorical data, and multivariate stepwise logistic regression analysis was performed.

**Results**: The ability of MRI to distinguish between infective sacroiliitis and spondyloarthritis and estimate the degree of disease activity and damage present at diagnosis can be beneficial in monitoring the effect of pharmacological treatment. Thick capsulitis, extracapsular fluid collection, and periarticular muscle edema were all more frequently observed in infective sacroiliitis. Iliac-dominant bone marrow edema was significantly more common in spondyloarthritis. Patients with infectious sacroiliitis (mean age, 40.4 years, range 16-80 years,) were statistically significantly older than patients with spondyloarthritis (mean age, 29.4 years, range 17-75 years).

**Conclusion**: MRI features of the bone lesions, soft-tissue lesions, and joint space reduction in sacroiliitis aid in the differential diagnosis between infective sacroiliitis and spondyloarthritis. Among various findings, periarticular muscle edema was the single most important predictor of infective sacroiliitis.

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**Abstract ID: 508**

**ABSTRACT TITLE**: PROSPECTIVE STUDY TO EVALUATE THE ACCURACY OF HIGH RESOLUTION ULTRASONOGRAPHY IN PATIENTS WITH NON TRAUMATIC SHOULDER PAIN BY COMPARING WITH MRI.

**PRESENTING AUTHOR**: ARPITHA K JAYRAM

**CO-AUTHOR**: DR RAVI N, DR ARUL DASAN, DR JYOTI G DULLI.

**Purpose**: The purpose of this study was to evaluate the accuracy of high resolution ultrasonography in patients with non-traumatic shoulder pain by comparing with investigation of choice MRI.

**Material and Method**: The prospective study of 50 patients was done in the department of Radio-diagnosis, Bangalore medical college and research institute. Patients with non specific shoulder pain were subjected to standard ultrasound examination, followed up MRI was done. The imaging was carried out using a Philips IU22 ultrasound machine and Siemens magneto avanto 1.5 tesla MRI. Ultrasound and MRI results were correlated.

**Results**: Among the 50 patients, there were 28 cases of tendinopathy, 13 cases of partial thickness tear, 9 cases of complete thickness tear. USG is 94% sensitive and 98% specific for tendinopathy, 92.4% sensitive and 97% specific for partial thickness tear, 94% sensitive and 98.3% specific for complete thickness tear when compare to MRI.
Conclusion: High resolution ultrasound examination of shoulder has high sensitivity, specificity and accuracy. It is also fast, cheap and easily available modality.

USG can be used as a first line investigation for diagnosis of rotator cuff pathologies, MRI examination can be used when other pathologies are suspected or when UGS is inconclusive.

Abstract ID: 701

ABSTRACT TITLE: ROLE OF DIFFUSION –WEIGHTED MAGNETIC RESONANCE IN DIAGNOSIS OF EARLY SACROILIITIS

PRESENTING AUTHOR: J KRISHNA PRIYA RAJ

CO-AUTHOR: DR.PARTHASARATHY K R (HOD AND PROFESSOR), DR.SHASHANK G H, DR. ROYCE D’SA, DR. MAHESH KARANJI

Aim: To assess whether DWI can detect bone marrow and subchondral bone changes in early active Sacroiliitis and to compare the reliability of DWI with other validated methods such as contrast-enhanced, FLAIR and STIR images. To evaluate whether ADC values differ between regions of BME and subchondral normal-appearing bone marrow (NABM) in active Sacroiliitis.

Material and methodology: Data for the study will be collected from the patients referred to the department of radio-diagnosis at SS Institute of medical sciences and Research Centre, Davangere with the history of chronic low backache (3 months). Patients including men and women were referred from the surgery department. These patients were then studied using DW MRI and also other sequences such as STIR, FLAIR and Axial T1 and T2 sequences with Signa GE.

Results: Diagnostic accuracy of DW MR imaging for acute sacroiliitis was calculated and sensitivity, specificity, positive predictive value and the negative predictive value was analyzed using Chi-square test for the value of significance. The sensitivity and specificity values of DWI MRI was found to be 82.1% and 87.5% respectively in 30 sacroiliac joints.

Conclusion: DWI is a very sensitive technique that is currently used in a large number of musculoskeletal conditions. DWI MRI examination is a non-invasive (contrast material administration is not needed), sensitive, fast diagnostic method in the diagnosis of acute sacroiliitis. Besides, DWI MRI may have a potential as a screening method in suspected cases, if supported with large studies.

Abstract ID: 906

ABSTRACT TITLE: CORTICAL BREACH AND GRADES OF TUMOR MARGINS ON RADIOGRAPHS AND CORRELATION WITH DIFFUSION WEIGHTED MRI IN DIAGNOSING BENIGN BONE TUMORS AND TUMOR LIKE LESIONS

PRESENTING AUTHOR: SANDEEP KAUR

CO-AUTHOR: DR.PURNIMA AGGARWAL, DR.SUDHIR KUMAR GARG, DR.R.P.S PUNIA, PROF SUMAN KOCHHAR, DR. VIVEK JIRANKALI

Purpose: To compare the Lodwick’s and Modified Lodwick–Madewell’s grading system of tumor margins in diagnosing benign-bone-tumors and tumor-like-lesions with correlation of cortical-breach on radiographs and diffusion-weighted-MRI(DWI) and ADC(Apparent diffusion co-efficient)values.
Materials and methods: Patients from Orthopaedic-OPD with a lytic-lesion in bone, suspicious of benign tumor on radiographs referred for MRI, were included. Grade of lesion margin (Lodwick’s and Modified Lodwick-Madewell Grading System) and cortical breach was evaluated on X-ray and correlated with DWI and ADC values, subsequently confirmed with histopathology. Statistical association was tested by Chi-square test.

Results: Of 25 bone tumors, (13-females, 12-males) aged 8 to 50 yrs, tumors were graded on the basis of tumor margins. All (100%) bone tumors were classified as having grade-I margin on Lodwick’s Grading System. On Modified Lodwick–Madewell’s grading, 6 (24%) were classified as grade-I, 13 (52%) as grade-II and 6 (24%) as grade-III. Of 25 bone tumors, 12 (48%) tumors showed cortical-breach. Of these 12 bone tumors which showed cortical-breach, 5 (42%) were Giant cell tumors (GCT).

Of 25 bone tumors, 6 were GCTs, 2- enchondromas, 2- aneurysmal bone cysts, 4- osteomyelitis. On conventional MRI, 21 (84%) bone tumors were hyperintense on T2WI, whereas 14 (56%) were isointense & 5 (20%) were hypointense on T1WI. The mean, minimum and maximum ADC values (x 10-3 mm2/sec) were 1.29, 0.46 and 2.54 respectively and of normal bone marrow were 0.43, 0.13 and 0.76 respectively. On qualitative assessment of DWI, no tumor showed diffusion restriction.

Conclusion: Lodwick’s classification is better than Modified Lodwick-Madewell grading system in diagnosing benign bone tumors and tumor like lesions as 24% of grade III tumors on Modified grading system were benign. Cortical breach is seen most commonly in GCT. DWI is a useful adjunct to conventional MRI in diagnosing benign- tumors and tumor-like-lesions. There is significant difference in mean ADC values of normal bone marrow and neoplastic/benign bone tumors.

Abstract ID: 911

ABSTRACT TITLE : ROLE OF MAGNATIC RESONANCE IMAGING WHOLE SPINE IN TUBERCULOSIS OF SPINE AND ITS HISTOPATHOLOGICAL CORRELATION

PRESENTING AUTHOR : BHAJAN LAL

CO-AUTHOR : (None)

Background: Tuberculosis is a major global health problem particularly in the Indian sub-continent. Osteoarticular tuberculosis is seen in about 2-5% of all the cases. Spinal tuberculosis forms 50% of osteoarticular tuberculosis. Osteoarticular tuberculosis is difficult to diagnose because of deep seated lesions and being a paucibacillary disease results in delay in diagnosis and if undiagnosed stands a threat for dreaded complications like paraplegia and drug resistance. Therefore, quick and precise diagnosis is mandatory to initiate appropriate treatment to prevent serious complications. In this study we intended to correlate clinical, radiological diagnosis with histopathological.

Methods: We selected 50 cases of suspected spinal tuberculosis which were diagnosed clinically and radiologically by history, clinical examination, and MRI. These cases were subjected to histopathological examination.

Results: The study included 50 cases of suspected spinal tuberculosis on MRI. Of which 45 cases were confirmed as spinal tuberculosis by histopathology. Histopathology could make diagnosis in 45 cases. 5 cases were non tuberculous in etiology (metastatic deposits of carcinoma in 3 cases, lymphoma in 1 cases and 1 cases were undiagnosed).
Conclusion: spinal tuberculosis is a paucibacillary disease difficult to diagnose. In this study MRI is good investigation for initial diagnosis of suspected case of spine tuberculosis with high positive predictive value. In this study HPE gave quick and precise diagnosis.

Abstract ID: 1050

**ABSTRACT TITLE**: UTILITY OF ULTRASOUND DETERMINED MEDIAN NERVE DIAMETER FOLLOWING PERINEURAL STEROID INJECTION IN PATIENTS WITH IDIOPATHIC CARPAL TUNNEL SYNDROME.

**PRESENTING AUTHOR**: AMIT KATYAN

**CO-AUTHOR**: DR. (PROF.) SHABNAM BHANDARI GROVER, DR. DHARMENDRA KUMAR SINGH, DR. NISHITH KUMAR, COL. (DR.) BIBHU KALYAN NAYAK, DR. SAGAR TOMAR, DR. SAURABH SUMAN, DR. ANURADHA SHARMA

**Purpose**: The objective of the study was to evaluate the utility of ultrasound determined changes in median nerve cross sectional diameter (CSD) following perineural steroid injection in patients with idiopathic carpal tunnel syndrome (CTS).

**Material And Methods**: In the institutional review board approved prospective interventional study, twenty consenting patients with idiopathic CTS diagnosed on electrodagnostic studies were evaluated. Ultrasound was performed before and after first and four weeks of perineural steroid injection. The ultrasound examination included measurement of median nerve CSD at the scaphoid-pisiform level and at a point 15cm proximal to distal palmar crease. The pain score using the visual analog scale (VAS) was also obtained before injection and at each follow up visit. Pre- and post injection ultrasound determined median nerve CSD were analysed in relation to VAS score. Statistical analysis was performed using SPSS software version 21.0. ANOVA test was used to analyse serial changes in median nerve CSD and its correlation with pain score was assessed by Spearman’s coefficient. A p value < 0.05 was considered statistically significant.

**Results**: Ultrasound determined median nerve CSD showed statistically significant reduction in CSD after first (mean 12.2 ± 1.34 mm²) and four weeks (11.9 ± 1.19 mm²) following steroid injection in comparison to pre-treatment values (mean 14.8 ± 2.59 mm²); p value < 0.05. VAS score improvement showed a positive correlation to the serial changes in median CSD.

**Conclusion**: Ultrasound determined changes in median nerve CSD is a potentially useful indicator in the follow up examination of CTS.

Abstract ID: 1059

**ABSTRACT TITLE**: MRI EVALUATION OF EXTENSOR COMPARTMENT OF KNEE: PROSPECTIVE STUDY

**PRESENTING AUTHOR**: VIHAG RAMAN

**CO-AUTHOR**: DR. SANTOSH PATIL, DR. ASHWIN PATIL

**Purpose**: role of MRI in evaluation of extensor compartment of knee and determine the underlying predisposing factors that contribute to patella femoral joint instability.

**Materials and methods**: prospective study in 30 patients of different age group presenting with anterior knee pain excluding traumatic, post-operative and proven arthropathic cases. MRI knee scans were evaluated for extensor
compartment. Different parameters like insall-salvati index, lateral patello-femoral angle, tibial tubercle to trochlear groove distance, lateralization of patella, sulcal angle, trochlear depth, trochlear facet asymmetry and lateral trochlear inclination were obtained to assess the predisposing factors. Descriptive statistical analysis was done for all 30 cases including calculation of mean, median and confidence interval for measurements taken at patella and trochlea.

Results: Medial patello femoral ligament tear was seen in 6 of the 7 patients who presented with subluxated / dislocated patella. 3 patients had history of transient patellar Dislocation. Trochlear dysplasia was seen in 9 cases that contributed to joint instability. Other pathologies like patella alta, patellar tendinosis, chondromalacia patellae, Osgood schlatter disease, suprapatellar plicae and hoffa’s fat impingement were also seen as a cause for anterior knee pain.

Conclusion: this study defines the role of MRI in diagnosing different pathologies of extensor compartment of knee that lead to anterior joint pain. MRI has also been an useful tool in quantitative evaluation of predisposing factors that lead to patello femoral joint instability.

Limitation: of the study was a small sample size with no control group for true comparison.

Abstract ID:1060

ABSTRACT TITLE : MRI EVALUATION OF TRAUMATIC MENISCAL INJURIES WITH ARTHROSCOPIC CORRELATION
PRESENTING AUTHOR : PATIL RAJ KUMAR
CO-AUTHOR : DR.VENKATESH M, DR. V N NARVEKAR, DR.SUNEETHA P, DR. RAMAKRISHNA RAO BARU

INSTITUTION: Narayana Medical College and hospital, Nellore.

OBJECTIVES:
1. To describe the MRI findings in traumatic meniscal injuries and its grading.
2. To correlate MRI findings with Arthroscopic findings.

Materials and methods: A prospective study on patients referred to department of Radio-diagnosis in Narayana Medical College with clinical suspicion of traumatic meniscal injuries who are taken up for MRI study and evaluated and are correlated with arthroscopic findings.

Results: In the present study of 30 patients, 28 were males and 2 were females and of which 26 males were given meniscal tears on MRI and arthroscopy correlation showed 22 males were having meniscal tears, 2 were having PCL tears and 2 were having ACL tears.

Conclusion: Trauma to the knee joint is a significant cause of morbidity in the young active individuals. Menisci are most commonly involved in traumatic knee injury. MRI is a non-invasive imaging modality and can detect, localise, characterise various internal derangements and delineates the soft tissue of knee joint and helps in arriving at a diagnosis there by helping in grading for further management of the patient.

Diagnostic arthroscopy is an invasive method for evaluation of traumatic knee injuries. An accurate diagnosis with MRI and diagnostic arthroscopy helps in the grading and the extent of injuries.MRI scan results and clinical diagnosis are compared against the arthroscopic confirmation of the diagnosis in this particular study.
Abstract ID: 1086

**ABSTRACT TITLE**: 3D SHINKEI MR NEUROGRAPHY IN BRACHIAL PLEXUS INJURIES WITH 1.5 T SCANNER

**PRESENTING AUTHOR**: RAJAGOPAL KV

**CO-AUTHOR**: PRASHANT PRABHAKARAN NAIR, SAMIR MUSTAFA PARUTHIKUNNAN, YOGESH KANNAN MARIAPPAN, NARAYANA KRISHNA ROLLA, AND INDR AJIT SAHA

**Purpose**: To evaluate the clinical feasibility of a motion sensitized 3D VISTA sequence (3D SHINKEI) in terms of its nerve-muscle contrast. Also to study the sequence’s potential in pre – surgery diagnostic prediction of brachial plexus trauma. The decision making efficiency is compared with 2D STIR TSE and DWIBS sequences.

**Methods**: Institutional Ethical Committee (IEC) approval was obtained for this prospective study. All experiments were performed on a 1.5 T MR Scanner (Achieva, Philips, Best, The Netherlands). The 3D SHINKEI sequence was evaluated on 17 healthy volunteers and 24 patients for diagnostic quality, was compared to the DWIBS Neurography sequence and the 2D STIR TSE. The visualization of root, trunk and cord of the brachial plexus obtained from these two sequences was rated on a four-point scale by a panel of two experienced radiologists and compared using Wilcoxon signed Rank test.

**Results**: Compared to STIR TSE, the visualization of the proximal parts of the plexus, preganglionic and post ganglionic roots was statistically better with SHINKEI (p =0.02) however there was no significant difference in the visualization of distal parts. The division and cords are visualized better with SHINKEI compared to DWIBS (p <0.001)(Fig 1). The average grades for the individual sequences through the consensus is given as follows: - SHINKEI: Preganglionic: 3.83 +/- 0.38; Post Ganglionic proximal: 3.91 +/- 0.28; Distal: 2.62 +/- 0.92; STIR TSE: Preganglionic: 3.5 +/- 0.5; Post Ganglionic proximal:3.58 +/-0.58; Distal: 2.88 +/-0.94 ; DWIBS: Preganglionic: 2.66 +/- 1.0; Post Ganglionic proximal: 3.7 +/- 0.46; Distal: 1.7 +/-0.62; SHINKEI shows the grade 1 nerve injury better than the STIR TSE and DWIBS.

**Conclusion**: Based on the clinical feasibility data performed in this study, we propose that the optimized SHINKEI sequence is a potential MR sequence to improve decision making for imaging of brachial plexus and warrants investigation on a larger patient cohort.

Abstract ID: 1088

**ABSTRACT TITLE**: ADHESIVE CAPSULITIS: MRI CORRELATION WITH CLINICAL STAGES AND PROPOSAL OF MRI STAGING

**PRESENTING AUTHOR**: M PRAVEEN KUMAR

**CO-AUTHOR**: PROF DR C. AMARNATH

**Purpose**: The purpose of this study was to correlate the MR findings of adhesive capsulitis with clinical stages and thereby propose a MR staging system.

**Method and Materials**: This study consisted of 74 patients with clinically diagnosed adhesive capsulitis. The edema of the inferior glenohumeral ligament, pericapsular edema, thickness of anterior band of IGHL and axillary pouch, thickness of coracohumeral ligament, obliteration of fat in the subcoracoid triangle were evaluated by MRI.

**Results**: Thickening of the anterior band of IGHL showed most significant correlation with the clinical stages. The distribution of edema of IGHL and pericapsular edema also showed significant correlation with the clinical stages of adhesive capsulitis. Pericapsular edema and IGHL edema was not observed in stage IV.
Based on the correlation between MR findings and clinical staging, we propose a MR staging of adhesive capsulitis. The thickness of anterior band of IGHL on humeral side in range of 4.5 ± 0.9 mm with no obliteration of fat in the subcoracoid triangle seen in stage I and thickness of anterior band of IGHL on humeral side in range of 7.6 ± 1.9 mm with no obliteration of fat in subcoracoid triangle seen in stage II. Obliteration of fat in subcoracoid triangle with mild edema of IGHL is seen in stage III and Obliteration of fat in subcoracoid triangle with no edema of IGHL is seen in stage IV.

**Conclusion:** MR is an useful tool for evaluation and prediction of clinical stage of adhesive capsulitis.

**Clinical Relevance/Application:** Imaging based grading system of adhesive capsulitis can aid in the identification of the stage of the disease even when the clinical manifestations are subtle. This helps in initiation of appropriate treatment to halt the disease progression, prevent the complications and avoid invasive treatment procedures.

**Abstract ID: 1112**

**ABSTRACT TITLE:** ROLE OF IMAGING IN DIAGNOSIS OF GLENOHUMERAL DEFORMITY FOLLOWING OBSTETRIC BRACHIAL PLEXUS INJURY

**PRESENTING AUTHOR:** KARTHIKRAJAN R

**CO-AUTHOR:** AMARNATH CHELLADURAI, BALAJI AYYAMPERUMAL

**Aim:** To study use of imaging in assessment of glenohumeral deformity in following obstetric brachial plexus injury.

**Primary Objective:** To study the usefulness of CT in the measurement of glenoid version angle, humeral head dislocation and to propose a grading for the severity of glenohumeral deformity.

**Materials & Methods:** The study group includes 21 children below the age of 10 years presenting with posterior dislocation of shoulder, with past history of obstetric brachial plexus palsy.

The children were examined with modified Mallet score and Naraka’s neurological grading. CT of both shoulders using GE Optima 128 slice scanner and MRI using 1.5 Tesla Siemens unit were done. MR myelogram of cervical spine was done.

**Results:** In our study, Glenoscapular angle, percentage of humeral head anterior to the scapular line, Scapular height, Scapular Width were analysed by paired students- t- test and were statistically significant [p < 0.05]. The severity of deformity was independent of age. We classified the children according to Waters and proposed radiological grading. We also classified according to joint’s stability. 3 affected joints were stable, 9 were subluxated and 9 dislocated joints. Higher the grade of deformity, more difficult will be the shoulder movements and worse scores in Modified Mallet scale.

**Conclusion:** CT clearly identifies the glenohumeral deformities like increased glenoid retroversion, posterior subluxation or dislocation of humeral head, smaller humeral head size and smaller size of the scapula as the deviations from normal status.

**Key Words:** Obstetric brachial plexus palsy, glenohumeral deformity, glenoid version, posterior dislocation, grading of severity
Abstract ID:1148

ABSTRACT TITLE: TYPES OF PERIOSTEAL REACTIONS ON RADIOGRAPHS AND CHEMICAL SHIFT MRI IN OSTEOSARCOMA

PRESENTING AUTHOR: USHA
CO-AUTHOR: VIVEK J, SUDHIR KUMAR GARG, R.P.S PUNIA, SUMAN KOCHHAR

Purpose: To assess the usefulness of types of periosteal reactions on plain radiographs and Chemical shift MRI in diagnosing Osteosarcoma.

Materials and methods: Patients from Orthopaedic OPD with a lytic/sclerotic lesion in bone, suspicious of osteosarcoma on X-ray, who were referred for MRI, were included in the study. Type of periosteal reaction was evaluated on X-ray and correlated with Chemical shift MRI, subsequently confirmed with histopathology.

Results: A total 19 tumours were included in the study. Of 19 tumours, 15 tumours (78%) were having sunburst type of aggressive periosteal reaction, 2 (11%) had Hair-on-end type of aggressive periosteal reaction and 2 (11%) had Codman triangle type of aggressive periosteal reaction. On Chemical Shift MRI, mean Signal intensity ratio (SIR) of the tumours was 1.1 as compared to SIR value of 0.8 which is taken as cut-off value to differentiate benign and malignant bone tumours in the previous studies. Only one tumour of 19 tumours had SIR of 0.85, with 18 tumours having SIR > 1. With cut-off of SIR as 0.8, Chemical shift MRI characterised all the 19 tumours as malignant.

Conclusion: All osteosarcomas showed aggressive type of periosteal reaction – predominantly being Sunburst type. Chemical shift MRI was able to characterise all the tumours as malignant.

Abstract ID:1156

ABSTRACT TITLE: ULTRASOUND GUIDED INTERVENTION USING PLATELET RICH PLASMA(PRП) IN ANTERIOR TALOFIBULAR LIGAMENT TEAR.

PRESENTING AUTHOR: SAURABH SUMAN
CO-AUTHOR: DR DHARMENDRA K SINGH, DR NISHIT KUMAR, DR SAGAR TOMAR, DR AMIT KATYAN, DR SHABNAM B GROVER

Purpose: Anterior talofibular ligament(ATFL) is a very commonly injured ligament, which manifest as sprain, partial thickness tear or even a complete thickness tear. Our study aims to evaluate the therapeutic response to injection of platelet rich plasma in patients with chronic partial thickness tear of ATFL.

Material and Methods: Fifty patients of chronic ATFL tear were included in this IRB approved study. All patients underwent diagnostic ultrasound examination, followed by antegrade platelet rich plasma was injected into ATFL tear. All patients were further evaluated after four weeks for treatment response.

Results: Out of 50 patients, 38 patients showed complete regeneration of torn ligament. However, 8 patients required repeat injection of PRP and showed regeneration of torn ligament after four weeks. Four patients did not show good response even after second injection and were further treated with prolotherapy.

Conclusion: Our study shows that ultrasound guided platelet rich plasma is very effective treatment in regeneration of chronic partial thickness tear of anterior talofibular ligament and further reduction in ankle pain of patients. However, additional research are required to further strengthen our view and develop ultrasound guided treatment algorithm in ATFL tear as a bridge between conservative and surgical treatment.
Abstract ID:1170

ABSTRACT TITLE : DIAGNOSTIC ACCURACY OF HIGH RESOLUTION ULTRASONOGRAPHY IN COMPARISON WITH MRI FOR EVALUATION OF ROTATOR CUFF PATHOLOGIES

PRESENTING AUTHOR : DINESHRAM. V

CO-AUTHOR : DR.S.RAM KUMAR, ASSOCIATE PROFESSOR DR.A.SENTHIL KUMAR, PROFESSOR DR DEEPU.R, ASSISTANT PROFESSOR

Purpose: To evaluate the accuracy of Ultrasonography in the diagnosis of rotator cuff pathologies and to determine if Ultrasonography compares favorably in sensitivity and specificity to MRI in the diagnosis of rotator cuff pathologies with a special emphasis on the assessment of the acromion morphology and its association with rotator cuff tear using MRI.

Materials and Methods : This cross-sectional study was conducted in the department of Radiodiagnosis, SRM medical college hospital and research centre from September 2017 to August 2018. 50 patients with suspected rotator cuff pathologies referred to radiology department for MRI examination were subjected to USG examination using a PHILIPS Affinity 30 Ultrasound machine with a 7-12 broadband linear array transducer and then plain MRI was subsequently performed using 1.5 Tesla SIEMENS MAGNETON ESSENZA machine by different examiner. The results of Ultrasonography were correlated with MRI findings and Sensitivity, specificity, and diagnostic accuracy were calculated.

Results: Out of 50 patients, 43(86%) were diagnosed to have rotator cuff pathologies, by using MRI as reference the sensitivity, specificity and accuracy of USG in detecting pathologies of Supraspinatus was 90.4%, 87.5% and 90%, Infraspinatus was 50%,100% and 96% and Subscapularis was 75%, 97% and 90% respectively. By using MRI Type III Acromion is most commonly associated with rotator cuff tears.

Conclusion: Ultrasonography compares favorably in sensitivity, specificity and diagnostic accuracy to MRI in the diagnosis of rotator cuff pathologies and Type III acromion is most commonly associated with rotator cuff tear using MRI.

Abstract ID:1182

ABSTRACT TITLE : “T2 MAPPING OF ARTICULAR CARTILAGE IN OSTEOARTHRITIS OF THE KNEE USING 3 T MRI”

PRESENTING AUTHOR : HARISH


“T2 Mapping Of Articular Cartilage in Osteoarthritis of The Knee Using 3 T MRI”

PURPOSE : To determine the ability of MR T2 mapping to detect cartilage matrix degeneration between normal and early OA patients & to assess normative values in controls.

Materials & methods: Groups were based on x-ray & MR findings and consist of fifteen subjects with known OA & twenty five healthy volunteers without evidence of OA & with normal MR findings served as controls. Native T2 cartilage mapping was performed using a 3-T scanner.

Assessment of Parameters: The radiographic findings were scored according to Kellgren Lawrence (KL) scale, which is a standard grading system for OA. The MR images were analyzed regarding cartilage lesions, reactive bone marrow changes, osteophytes, subchondral cysts and loose bodies. Five compartments were defined.
in each subject: patella (P), medial femoral condyle (MFC), lateral femoral condyle (LFC), medial tibia (MT) and lateral tibia (LT). Average T2 value was calculated for each compartment.

**RESULTS :** The average T2 values were significantly increased in OA patients compared with controls (36.83 ms vs 27.4 ms with P = 0.0005 for T2). Increased T2 values were correlated with increased severity in radiographic and MR grading of OA.

**CONCLUSION :** Our results suggest that T2 relaxation times increase with the degree of cartilage degeneration. The ability to detect early cartilage degeneration prior to morphologic changes may allow us to critically monitor the course of OA and injury progression, and to evaluate the success of treatment to patients with early stages of OA.

**Abstract ID:1205**

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<th>ULTRASONOGRAPHIC EVALUATION OF PERIPHERAL JOINTS IN INFLAMMATORY ARTHRITIS</th>
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<tr>
<td>PRESENTING AUTHOR</td>
<td>SADAF SULTANA</td>
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<td>CO-AUTHOR</td>
<td>PROF. IBNE AHMAD, DR. MEHTAB AHMAD, DR. SHAISTA SIDDIQUI</td>
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**Purpose:** To establish the role of high frequency ultrasound in the evaluation of peripheral small and large joints in patients with rheumatoid arthritis To compare sensitivity of ultrasonography in detecting joint changes especially erosions as compared to conventional radiographs of joints.

**Materials and Methods:** A prospective study includes 40 patients diagnosed as rheumatoid arthritis as per clinical criteria will be included in this study.

- Initially patients will be assessed by thorough Clinical History & Physical examination.
- This will be followed by conventional investigations like X-rays, Serological tests & other blood investigations as per clinical relevance.
- Patients diagnosed will then be assessed by high frequency Ultrasound.

**Results:** The patients are evaluated with conventional radiographs & blood investigations, then followed with ultrasonography of joints with the findings of synovial thickening, increased vascularity on colour doppler, joint effusion, erosion of bone & tenosynovitis. These findings are detected in ultrasonography with very high sensitivity as compared to conventional radiographs.

**Conclusion:** The percentage of peri-arthritis detection by ultrasonography & power Doppler is higher than clinical examination and radiography.

This helped in early detection of joint inflammation & early initiation of treatment & better control of disease progression & disability.

Assessment of inflammatory activity helped to enable therapeutic decisions & to evaluate disease outcome & response to treatment. Ultrasonography has got role in image guided injection of steroid to the most affected areas of joint with accuracy & precision for better clinical outcome.
Abstract ID: 1238

**ABSTRACT TITLE**: VALUE OF CHL (CORACOHUMERAL LIGAMENT) AND SGHL (SUPERIOR GLENOHUMERAL LIGAMENT) THICKNESS IN DIAGNOSTIC EFFICACY OF ADHESIVE CAPSULITIS OF SHOULDER JOINT AND ITS RELATION TO THE CLINICAL PAIN SEVERITY INDEX (SPADI)

**PRESENTING AUTHOR**: RAJAGOPAL KV

**CO-AUTHOR**: DR.PRAVEEN.N, DR. SAMIR M PARUTHIKUNNAN, DR.LAKSHMIKANTH.H.K, DR.VIVEK PANDEY.

**Introduction**: The incidence of adhesive capsulitis is on the rise lately and is a commonly encountered condition in musculoskeletal ultrasound. The diagnosis is largely clinical alone. Ultrasound evaluation parameters of frozen shoulder include increased thickness of the rotator interval structures, peribicipital effusion and increased vascularity.

**Objectives**: To assess the efficacy of CHL (Coracohumeral ligament) and SGHL (Superior glenohumeral ligament) thicknesses in diagnosis of adhesive capsulitis of shoulder joint and to assess their relation with severity of clinical pain Shoulder Pain And Disability Index (SPADI) score.

**Methods**: This prospective observational study was conducted at Kasturba Medical College, Manipal from Dec-2016 to June-2018. 49 clinically diagnosed cases of adhesive capsulitis were examined (98 shoulders) and measurements of CHL and SGHL were obtained (with unaffected arm as control). Clinical pain (SPADI) scores were also documented in all cases.

**Results**: Mean CHL in cases was 1.351 ± 0.32 and in control was 1.0327 ± 0.18. There was significant difference in CHL between study and control groups. Similarly the average thickness of SGHL in affected individuals was 1.93 ±0.47 and in controls was 1.54 ± 0.29 mm.

There was significant difference in SGHL between study and control groups.

Pearson correlation was performed [r =0.042] which proved that there is a significant positive correlation between CHL, SGHL and SPADI.

**Conclusion**: Greater the thickness of CHL and SGHL at presentation, higher is the clinical pain score. Thus measurement of CHL and SGHL can aid as a reliable tool in diagnosis of adhesive capsulitis.

Abstract ID: 1254

**ABSTRACT TITLE**: PATELLAR INDEX – ASSESSING PATELLA ALTA AND APPRAISING ITS SIGNIFICANCE.

**PRESENTING AUTHOR**: AKSHATHA R BHAT

**CO-AUTHOR**: DR.ASHVINI KUMAR , DR.RAHUL KARTHIK L

**AIM**: To assess patella Alta and determine the significance of patellar index in our population.

**OBJECTIVES**:
1. To assess the appositeness of Insall-savlati ratio and verify the normal range of patellar tendon length to patellar length ratio of knee on magnetic resonance imaging.
2. To determine the correlation of patella alta with patellar subluxation and chondromalacia.
Materials and Methods: patellar index (ratio of patellar tendon length to patellar length on sagittal sections) was determined in 132 patients who underwent MRI knee in our hospital using 1.5 T MRI system GE SIGNA and 1.5 T MRI system MAGNETOM SIEMENS AVANTO. Patellar index was evaluated and extreme 2.5% of each end of the distribution were labelled patella Alta and Baja in our population. This was compared with the normal set range of 0.8 to 1.2. Correlation of patella Alta with subluxation and chondromalacia was found.

Results: Mean±2SD of TL/PL ratio was considered as a normal range. The upper 2.5% was considered as a patella alta. The mean of the TL/PL ratio was 1.07±0.22. Present study showed significant difference of TL/PL ratio between Indian population and western population (p value<0.05). 16 patients showed the Lateral Subluxation, of which 12 (75.0%) had patella alta and 4 (25.0%) had no patella alta. The results of chi square test showed that there is significant association between patella alta and Lateral Subluxation (p value>0.05). The results of chi-square test showed that there is no significant association between patella alta and Chondromalacia (p value <0.5).

Conclusion: Patellar index is a reliable ratio. Upper limit of normal range is higher in our population. There is significant association between patella alta and lateral subluxation. It is recommended to measure this index routinely.

Keywords: Patellar index, patella alta, lateral subluxation, insall savati index, chondromalacia.

Abstract ID:1255

ABSTRACT TITLE : ROLE OF 3D COMPUTED TOMOGRAPHY (CT) IN THE EVALUATION OF SCAPULAR FRACTURES
PRESENTING AUTHOR : KARTHIK B R
CO-AUTHOR : DR. PRANEETHI K.

Learning Objectives: The purpose of this article is to review scapular anatomy and function, describe imaging features of traumatic scapular injury on CT, and discuss the role of diagnostic imaging in clinical decision making after shoulder trauma.

Background: Scapular fractures are uncommon, accounting for only 3–5% of shoulder girdle fractures and fewer than 1% of all fractures. High-energy trauma is the most common cause, and scapular fractures are frequently associated with other acute injuries, including rib fracture (53%), lung injury (47%), head injury (39%), spinal fracture (29%), and clavicle fracture (25%). The initial diagnosis of scapular fracture is often delayed or ignored, because clinical care in the acute setting is focused on patient resuscitation after one or more life threatening injuries. Imaging plays the key role in identifying and classifying scapular fractures and thus guides clinical decision making.

Imaging Findings: A total of 50 cases who underwent CT of the shoulder / thorax in view of acute shoulder trauma were reviewed, out of which 25 had scapular fractures. The scapular fractures were classified into intra-articular and extra-articular and 3D volume rendered images were acquired to completely delineate the fracture extent and fracture pattern.

Conclusion: Pattern recognition approach in scapular fractures is important as it will help in the management by predicting associated neural and vascular injuries.
Abstract ID: 16
ABSTRACT TITLE: ‘EMPTY SELLA’ ON ROUTINE MRI STUDIES: AN INCIDENTAL FINDING OR OTHERWISE?
PRESENTING AUTHOR: JYOTINDU DEBNATH
CO-AUTHOR: DR R RAVIKUMAR, DR VIVEK SHARMA, DR KPS SENGGER, DR VINAY MAURYA, DR GIRIRAJ SINGH, DR PANKAJ SHARMA, DR A KHERA, MRS ANKITA SINGH

Purpose: Empty sella (ES) is often regarded as an incidental finding during routine MRI studies of brain. However, there are studies documenting association of ES with hormonal and non-hormonal abnormalities. It was intended to detect prevalence of ES in routine MRI brain study and to find associations with other diseases if any.

Materials and Methods: A retrospective study in patients undergoing MRI brain studies. Patients diagnosed to have ES on routine MRI brain formed the study group. The rest formed the baseline population. Presence of the following variables viz. hormonal disturbances, headache, sensorineural hearing loss, seizures, vertigo, psychiatric disorders, visual disturbances, ataxia and raised intracranial tension, was analyzed among the study group, as well as the baseline population. Association of ES and the variables was analyzed by determining means and proportions and using Chi-square test.

Results: During the study period, a total of 12,414 patients underwent MRI brain studies at the study centre. ES was found in 241 (1.94%) patients. The proportion of patients in the ES and non-ES groups for each of the variables were as follows: hormonal disturbances (3.31% vs 0.56%, P = .000), headache (8.3% vs 7.4%, P = .596), SNHL (3.7% vs 1.3%, P = .0010), seizure (6.2% vs 13%, P = .002), vertigo (4.6% vs 1.6%, P = .000), psychiatric disorders (4.6% vs 1.3%, P = .000), visual disturbances (2% vs 1.1%, P = .166), ataxia (1.7% vs 1.2%, P = .519) and raised ICT (2% vs 0.5%, P = .002).

Conclusion: ES does not necessarily always be an incidental finding on MRI. Conditions like hormonal disturbances, psychiatric disorders, raised ICT and SNHL are often associated with ES as compared to general population.


Abstract ID: 36
ABSTRACT TITLE: THE VALUE OF DIFFUSION WEIGHTED IMAGING AND APPARENT DIFFUSION COEFFICIENT MEASUREMENTS IN THE DIFFERENTIAL DIAGNOSIS OF VERTEBRAL BONE MARROW LESIONS
PRESENTING AUTHOR: ARASHDEEP KAUR
CO-AUTHOR: DR C.L THUKRAL, DR GAGAN KHANNA

Aim of the work: The aim of this study was to assess the utility of apparent diffusion coefficient obtained in diffusion-weighted MR imaging for the differentiation between benign and malignant vertebral lesions, and to determine the sensitivity and the specificity in differentiating benign and malignant vertebral lesions according to the optimal cut off ADC value.
Patients and methods: In 100 patients (age 18-70yrs), 468 vertebral lesions were included and underwent routine MRI sequences of the spine (T1, T2, STIR, T1 fat sat post-contrast wherever required) as well as non-routine sequence (DWI). The mean ADC values of normal and abnormal vertebrae were calculated. The optimal cutoff ADC value was determined for the differentiation of benign and malignant lesions. Biopsy results or results of clinical and radiologic follow-up for at least 6 months wherever possible, were used as the gold standard to classify the vertebral marrow infiltrative lesions as benign or malignant.

Results: The mean ADC value of benign lesions was significantly higher than that of malignant ones (P < 0.05). There was an overlap between the mean ADC values of malignant and tuberculous lesions. According to the optimal cutoff value of 1.21 x 10⁻³ mm²/s, determined for the differentiation of benign and malignant vertebral lesions, sensitivity was 95.12%, specificity 92.73%, positive predictive value 90.70%, and negative predictive value 96.23%.

Conclusion: Vertebral lesions were differentiated as benign or malignant with high sensitivity and specificity with the aid of ADC values calculated from maps obtained by DWI.

Abstract ID: 169

ABSTRACT TITLE: MAGNETIC RESONANCE EVALUATION OF CHILDREN WITH DEVELOPMENTAL DELAY AND ITS CORRESPONDENCE TO FUNCTIONAL CLINICAL ASSESSMENT

PRESENTING AUTHOR: ANNU SHRI

CO-AUTHOR: DR. RAJIV AZAD, DR. SHRUTI KUMAR, DR. ISHAN GUPTA

Purpose: To study and classify brain Magnetic Resonance Imaging (MRI) findings in children who presented with development delay and correspondence of imaging findings in hypoxic ischemic encephalopathy (HIE) with clinical assessment.

Material and Methods: The retrospective, observational study evaluated brain MRI findings in 50 pediatric patients (32 males, 18 females) aged between 3 months to 12 years presenting with developmental delay over a period of 1 year. MR imaging was performed on 1.5 T Siemens Magnetom Avanto (Siemens and Erlangen, Germany) using standard pediatric MR protocol. MRI findings of HIE were divided into 3 subgroups, i.e. type I (periventricular lesions), type II (basal ganglia and/ or thalamic lesions), type III (multicystic encephalopathy) and were compared with clinical grading of development delay using Sarnat and Sarnat classification.

Results: Among 50 patients in our study, lesions sequelae to HIE were noted in 48% patients. Of these, 35% were HIE type I, 20.8% were HIE type II and 45.8 % were HIE type III. Type II and III lesions on MRI corresponded to higher clinical grades of development delay. In addition, syndromes accounted for 16% and others (including traumatic (33%), germinal matrix hemorrhage(33%), mitochondrial encephalopathy(16%), mesial temporal sclerosis(16%) and atrophy (33%)) contributed to 16%. Surprisingly 20% of patients showed normal imaging findings.

Conclusion:

- MR imaging is an effective technique in evaluating children with developmental delay.
- Severity of imaging abnormality in patients with type II and type III HIE corresponded to poorer clinical and neurological function.
Abstract ID: 174

**ABSTRACT TITLE**: ROLE OF MAGNETIC RESONANCE SPECTROSCOPY IN EVALUATION OF BRAIN LESIONS

**PRESENTING AUTHOR**: RUSHIKESH POKALE

**CO-AUTHOR**: DR SADIJ TAMBE DR DAYANAND SHETTY

**Introduction**: Patients presenting with neurological complaints are referred for imaging techniques to know about underlying brain lesion which may include infective, inflammatory, parasitic, neoplastic process. 1H-MR spectroscopy is non-invasive, in vivo technique that provides diagnostic indices beyond anatomic information, which has been extensively used to evaluate brain lesions. Spectral patterns, metabolite ratios from in vivo 1H-MR Spectroscopy may permit differentiation of brain lesions.

**Objectives**: To confirm role of Magnetic Resonance Spectroscopy in diagnosis of various brain lesion, thereby narrow down differential diagnosis of various brain lesions manifesting with neurological complaints.

**Materials and Methods**: It is an observational & descriptive study in 38 patients presenting with neurological complaints and having brain lesions. MR Spectroscopy was done on 3 Tesla Siemens Skyra Magnetom. Various metabolite peaks and ratios form spectroscopy data obtained were systematically assessed. MRS findings were divided into various subgroups. Metabolite ratios in different lesions were compared. Presence of lipid/lactate, amino acid peaks were also evaluated.

**Result**: Out of 38 cases, 29 were neoplastic, 9 were non-neoplastic cases. Most common brain lesion seen was high grade glioma (31.5% ), followed by low grade glioma (23.7% ), tuberculoma (10.5%), abscess (7.9 %), lymphoma (7.9 %), metastases (7.9 %), recurrence of glioma (5.3 %), post radiation necrosis (5.3 %). Cho/Cr, Cho/NAA ratios were more in neoplastic lesions. Amino acid peak was seen in abscess.

**Conclusion**: 1HMRS is adjunctive method to conventional MRI that allows non-invasive measurement of metabolites in tissues. The different spectra of metabolites seen in various conditions helps narrow down differential diagnoses. 1HMRS helps to differentiate high from low grade gliomas, radiation necrosis from recurrence and neoplastic from non-neoplastic lesions, thereby narrowing down differential diagnosis of brain lesions.

**Keywords**: MRI – Magnetic resonance imaging, 1HMRS – Proton Magnetic Resonance Spectroscopy

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Abstract ID: 198

**ABSTRACT TITLE**: COMPARISON OF CT ANGIOGRAPHY AND HIGH RESOLUTION TIME OF FLIGHT MAGNETIC RESONANCE ANGIOGRAPHY FOR INTRACRANIAL VESSELS USING COMPRESSED SENSE TECHNIQUE

**PRESENTING AUTHOR**: NIRMALYA RAY

**CO-AUTHOR**: DR. NIRANJAN KHANDELWAL, DR. PARAMJEET SINGH, DR. VIVEK GUPTA, DR. CHIRAG AHUJA, DR. MANISH MODI, DR. NAVEEN SANKHYAN

**Purpose**: Owing to the lesser slice thickness, CT angiography (CTA) is considered superior to time of flight (TOF) magnetic resonance angiography (MRA). Compressed sensing MRI technique was combined with SENSE parallel imaging i.e.Compressed SENSE (CSENSE), for acquiring high resolution intracranial TOF MRA with a slice thickness comparable to CTA and acquisition time comparable to conventional MRA and compared subsequently regarding image quality.
Materials and Methods: Twenty patients undergoing CTA of intracranial vessels also underwent TOF-MRA, acquired using the conventional and high resolution CSENSE technique using two acceleration factors. The slice thickness used for CTA, conventional (acceleration factor 2.5) and high resolution C-SENSE TOF MRA (acceleration factors of 5.3 and 4.5) were 0.6 mm, 3 mm, 0.9 mm respectively. Two neuroradiologists have evaluated the images, based on visualisation of major intracranial vessels, resolution, lesion conspicuity, artefacts and diagnostic confidence. Apparent contrast background deviation (CBD) of basilar trunk, M1 MCA was calculated for quantitative evaluation of image quality. Interrater agreement was assessed using k test. The subjective visualisation scores & the apparent CBD were compared using the Wilcoxon signed-rank test and paired t test respectively.

Results: High inter-rater agreement was found regarding all subjective parameters. The high resolution MRA images acquired with C-SENSE were comparable to CTA with regards to image quality while conventional TOF MRA being found inferior to either. The apparent CBD of MRA with C-SENSE technique was significantly better than conventional MRA; however, was found to be inferior to CTA.

Conclusions: High resolution intracranial MRA having image quality comparable to CTA can be acquired with CSENSE & is an alternative to CTA.

Abstract ID: 201
ABSTRACT TITLE : ROLE OF MR SPECTROSCOPY IN EVALUATION OF INTRAAXIAL BRAIN TUMORS
PRESENTING AUTHOR : DEEPTHI MUSHINI
CO-AUTHOR : DR. ANIL U MADURWAR, HOD AND PROFESSOR OF RADIODIAGNOSIS

Aims and Objectives: To determine biochemical markers of intraaxial brain tumors using MR spectroscopy.
- To evaluate role of MR spectroscopy in diagnosing and grading of intraxial brain with histopathological co-relation.
- To evaluate role of MR spectroscopy in determining the infiltrative nature of the intraaxial brain tumor.

Methods: A prospective study of 30 cases were carried out at CAIMS, Karimnagar in department of radiodiagnosis. The study includes all patients with known history of intraxial brain tumors, patients with incidentally diagnosed intraaxial brain tumor by CT, Clinically detected cases, Cases of all age groups irrespective of sex.

Results: Of 30 cases examined 30 showed increased choline peak, choline/creatine and choline/NAA ratios. And absent or reduced NAA, creatine peaks and reduced NAA/creatine ratio. In 18 cases there is lipid and lactate peak and 3 cases myoionositol peak.

Analysis of spectra of 30 patients with intraaxial brain tumors was done; 11 with GBM, 2 with anaplastic astrocytoma, 3 with diffuse infiltrative astrocytoma, 2 with oligodendroglioma, 2 with gliomatosis cerebri, 2 withependymoma, 2 with medulloblastoma, 1 with metastasis, 1 with choroid plexus papilloma and 1 with lymphoma. 3 tumors were not histopathologically correlated.

Conclusion: MR spectroscopy is a reliable method for glioma grading, discrimination between WHO grading of astrocytomas and intraaxial brain tumors. Spectroscopic MR measurements in the peritumoral region can be used to differentiate metastases and high-grade gliomas and infiltration.

Discussion: MRS is a means of noninvasive physiological imaging of the brain that measures absolute and relative levels of various brain tissue metabolites.
Abstract ID: 208

**ABSTRACT TITLE**: ROLE OF MRI IN EVALUATION OF HYPOXIC ISCHEMIC ENCEPHALOPATHY AND TO CORRELATE MRI FINDINGS WITH CLINICAL OUTCOME.

**PRESENTING AUTHOR**: CHANDANA V

**CO-AUTHOR**: DR M R SHASHIKUMAR, DR SHRUTI, DR NANJARAJ C P, DR RAJENDRA KUMAR N L, DR SANJAY P.

**Purpose**: To study MRI features of Hypoxic Ischemic Encephalopathy and to assess various patterns as well as clinical outcome based on the MRI findings.

**Materials and Methods**: The study included 30 neonates with clinical diagnosis of HIE, referred to department of Radio-diagnosis, MMC&RI (July 2017-July 2018). Following MRI, patients were followed up for a period of 6 months to assess neurological outcome.

**Results**: Out of 30 neonates included in our study, most of them belonged to the age group of 6 to 10 days with slight male predominance (60%). 60% of them were term and 40% were preterm. 73.3% of them were normal weight and 26.6% were classed as low birth weight. 62.3% were clinically staged as Stage II, 25.7% as Stage I and 12% as Stage III. Most common finding among preterm patients, was periventricular leucomalacia changes (20%) and in term patients, it was changes in the central structures (44.4%), most commonly involving corpus callosum.

At 6 months follow up 53.3% of them showed abnormal outcome. Rest of the 33.3% had normal outcome and 13.3% were lost to follow up. Also abnormal signal intensities in the Posterior limb of the Internal capsule, basal ganglia and corpus callosum were compared with clinical outcome.

**Conclusion**: MRI should be considered as the first line imaging modality and is highly sensitive in confirmation of clinically suspected HIE. MRI can show periventricular white matter damage, and specific patterns of brain damage in affected neonates which in turn helps in determination of prognosis.

Abstract ID: 242

**ABSTRACT TITLE**: MR IMAGING EVALUATION OF JAPANESE ENCEPHALITIS - A STUDY AND REVIEW OF LITERATURE

**PRESENTING AUTHOR**: BARUN KUMAR SHARMA

**CO-AUTHOR**: P. PHUKAN, A. HANDIQUE, C. DANIALA, D. LYNSER, B. WANKHAR, K. SARMA

**Purpose**: Japanese Encephalitis (JE) is an arthropod born flavivirus disease transmitted by CULEX mosquitoes. Incidence of JE in North-eastern India shares about 53.11% of the total JE cases reported in India during 2013. Purpose of the study was to evaluate any variations of disease pattern in our geographic region and to localize, describe and characterize the specific imaging findings and compare it with available literature.

**Materials and Methods**: Total 49 confirmed cases of JE based on CSF IgM ELISA were included in the study. The study was an ongoing study started from July 2014 in our department using 1.5-Tesla Siemens Avanto MR scanner with standard scanning protocol.

**Results**: Most of the patients were children and young adults. Age group ranged from 1.5 years to 73 years with Male: Female ratio of 1.2: 1. Bilateral Thalamus was involved in 100 % cases. Other locations...
of involvement were substantia nigra (88%), Basal ganglia (71%), Hippocampus (69%), Amygdala (27%), Insula (14%), Cortical involvement (20 %), Pons (10%), Medulla (6%), Spinal cord (4%). Additional signal characteristic were T1 hyperintensities in 5 cases (10%), Diffusion restriction in 23 cases (47%), diffusion shine through in 11 cases (22%), GRE blooming in 1 case (2%) and T1 contrast enhancement in 6 cases (12%). Associated Findings were Neurocysticercosis in 17 cases (35%) and Mastoiditis in 8 cases (16%).

**Conclusion:** MRI features are seen to be specific showing predominant involvement of thalami, substantia nigra and hippocampus. Associated findings of neurocysticercosis seen to be an co-infection in JE cases.

**Abstract ID: 330**

**ABSTRACT TITLE**: ROLE OF MRI IN ASSESSMENT OF PEDIATRIC POSTERIOR FOSSA TUMORS: COMPARISON WITH HISTOPATHOLOGY.

**PRESENTING AUTHOR**: SUPRIYA SUNDAR MISHRA
**CO-AUTHOR**: DR. R.RAJESH KANNAN, DR. SRIKANTH MOORTHY

**Purpose:** To evaluate the role of MRI in pediatric posterior fossa tumors: comparison with histopathology.

**Materials and Methods:** A prospective observational study of 33 patients in the pediatric age group (<18 years). Patients with a clinical suspicion of posterior fossa tumors, referred for MRI were included in the study. The patients were scanned in 3T or 1.5T MRI machine. 5 parameters were selected in MRI that helped in arriving at a diagnosis. Once these patients underwent surgical excision of the mass, MRI findings were correlated with histopathology (Gold standard) and relevant statistical analysis was done.

**Results:** Diffusion imaging was most specific (96%) and sensitive (90%) parameter, followed by post contrast sequences (92% and 90% respectively) in the final diagnosis compared to histopathology. Both had similar accuracy (94% each). They were followed by T2 and Gradient sequences, both of which had accuracy of 91%, although T2 was more sensitive than Gradient (89% vs 80%). Location of tumor (midline vs off midline) was helpful in providing a clue to diagnosis in 94% cases. All 5 parameters were helpful in diagnosis in 85% cases while none was useful in 3%. Overall accuracy of MRI in diagnosis of posterior fossa tumors was 94%.

**Conclusion:** MR Imaging is a non invasive and critical modality for diagnosis as well as detailed evaluation of location and extent of the pediatric posterior fossa tumors. Diffusion imaging and post contrast sequences are the most accurate parameters in diagnosis while location of tumor (midline vs off midline) is a very useful tool in providing a clue to diagnosis.

**Abstract ID: 517**

**ABSTRACT TITLE**: DIFFUSION TENSOR IMAGING IN DIAGNOSING CERVICAL SPONDYLOTIC MYELOPATHY

**PRESENTING AUTHOR**: SHWETA TULSIANI
**CO-AUTHOR**: DR MADAN MOHAN BABU, DR PRACHI KALA

**Purpose:** Cervical Spondylotic Myelopathy can be detected as increased signal intensity on T2W imaging. However, discrepancies between clinical features and signal intensities have been reported. The abnormal MR signals are not always consistent with neurologic functions. Diffusion Tensor Imaging can detect subtle changes in the spinal cord integrity. The study aimed to compare Fractional Anisotropy and Apparent Diffusion Coefficient values with conventional MRI and determine the accuracy of DTI parameters in diagnosing Cervical Spondylotic Myelopathy when there are no visible changes on conventional MR imaging.
Materials & Methods: This cross sectional study was performed with 25 patients having clinical signs of Cervical Spondylotic Myelopathy without signal intensity changes in conventional MRI. Ethical permission was given by VIMS and RC. Patients underwent conventional MR sequences and Diffusion Tensor Imaging. Fractional Anisotropy and Apparent Diffusion Coefficient values calculated at non-stenotic and stenotic segments and compared using paired t-test.

Results: Fractional Anisotropy values were significantly low at the stenotic segments in comparison to the non-stenotic segments. Apparent Diffusion Coefficient values being higher at the stenotic segments as compared to non stenotic segments.

Conclusion: MRI is considered as the gold standard for diagnosing Cervical Spondylotic Myelopathy. The conventional T2W images showing signal intensity changes appear at later stages of the disease when the pathological process is irreversible and prognosis is poor. Increased Fractional Anisotropy values as calculated by DTI images show promising results, helping in earlier diagnosis of Cervical Spondylotic Myelopathy is possible and hence better surgical outcome. Long term longitudinal studies can help in determining the role of DTI markers in establishing the diagnosis of Cervical Spondylotic Myelopathy and earlier interventions for such patients.

Abstract ID: 533

ABSTRACT TITLE : “ROLE OF MAGNETISATION TRANSFER IMAGING IN EVALUATION OF NEUROCYSTICERCOSIS AND TUBERCULOMA”

PRESENTING AUTHOR : RAKSHITH R N

CO-AUTHOR : DR. ARUL DASAN .T, DR SHREYAS RAO G, DR PRASHANTH K S

Aims & Objectives: To study imaging features of intra cranial tuberculoma and neurocysticercosis on Magnetisation transfer imaging -To determine the difference in magnetization transfer ratio in tuberculoma and neurocysticercosis

Materials and Methods: The study was performed from June 2017 to May 2018 on 1.5 Tesla SIEMENS MAGNETOM AVANTO scanner. Conventional spin echo,T1 weighted axial images with and without off resonance saturation pulse and T2 weighted images were taken for all patients. 3D CISS sequence was taken in axial plane at the site of lesion. Signal intensity from the rim of granuloma was obtained with a single pixel from conventional T1 weighted images(without an off resonance pulse ) and MT images(with an off resonance pulse). MTR is calculated using the formula ,MTR=(Mo-Ms)x100 where Mo and Ms represent the signal intensity with the saturation pulse off and on respectively.

Results: The study group included 43 patients with intra cranial ring enhancing lesions .Mean MT ratio for tuberculoma was 16.6 +/-3.1(15.6-17.5), Vesicular stage of neurocysticercosis was 10.9 +/-/2.8(9.6-12.1) and degenerative stage of neurocysticercosis was 20.8 +/-/ 3.5(18.7-22.9)

Conclusion: MT ratio can be used to differentiate tuberculoma from neurocysticercosis . T2 invisible tuberculomas are better visualised in MT images. Hence disease load can be better assessed using MT images.
Abstract ID: 537

ABSTRACT TITLE: ‘GRADING GLIOMAS’ – A NOVEL APPARENT DIFFUSION CO-EFFICIENT (ADC) VALUE BASED APPROACH

PRESENTING AUTHOR: SAMARTH S GOWDA
CO-AUTHOR: DR. T. ARUL. DASAN, DR. ARPITHA. K. J

Purpose: This study was carried out to assess the role of ADC values in the differentiation of high and low grade gliomas. Diffusion-weighted imaging (DWI) has greatly enabled the possibility to grade gliomas, where the ADC values inversely correlated with the tumour grade. We aim to further add to the pre-existing literature about this well known, but less reported aspect of gliomas.

Materials and methods: The study group included 35 patients who had histo-pathologically proven gliomas. The MRI images of the patients (performed using a Siemens Magnetom Avanto 1.5T MRI machine at Victoria Hospital, Bangalore Medical College and Research Institute) were reviewed retrospectively. Special attention was paid to the DWI images and the corresponding mean and minimum ADC values of the lesions were recorded.

Results: MR images revealed diffusion restriction in the cases of glioma, differing only in the amount of restriction as assessed by the corresponding mean and minimum ADC values. It was noted that the mean and minimum ADC values were relatively higher for cases of low grade gliomas, when compared to the ADC values obtained from high grade gliomas. Statistical significance was found between the calculated ADC values and the histopathological tumour grade.

Conclusion: Radiologically diagnosing cerebral tumours is a challenging prospect in itself. Going one step ahead and grading them, adds an edge to any neuro-radiological report. We have successfully demonstrated that ADC value measurements can be used when trying to differentiate high and low grade gliomas.

Abstract ID: 541

ABSTRACT TITLE: ROLE OF COMPUTED TOMOGRAPHY SCORING SYSTEMS TO PREDICT CLINICAL OUTCOME IN ADULTS WITH TRAUMATIC BRAIN INJURY

PRESENTING AUTHOR: ANADI GUPTA
CO-AUTHOR: DR. DEEPTI NAiK, DR. A. ASHOK KUMAR

Purpose: The purpose of this study was to determine a correlation between Rotterdam, Helsinki and Stockholm computed tomography(CT) scoring systems with clinical outcome at 3 months in adults with traumatic brain injury.

Materials and Methods: - This was a prospective analytical observational study conducted from October 2017 to June 2018 wherein all adults with recent history of head injury and who underwent computed tomography of the brain within 24 hours of the trauma were included. The study subjects with normal CT of the brain, prior history of intracranial neurosurgical intervention, intracranial space occupying lesions, hydrocephalus, penetrating head injury and stroke were excluded from the study. The CT findings of traumatic brain injury were scored according to Rotterdam, Helsinki and Stockholm scoring systems and clinical outcome at 3 months was assessed with the Glasgow outcome scale(GOS). The sensitivity, specificity, positive predictive value, negative predictive value and area under the curve etc. was calculated for the three scoring systems in comparison with Glasgow outcome scale.
**Results:** - A total of 200 subjects were included in this study out of which 130 subjects had mild head injury, 46 had moderate head injury and 24 had severe head injury. There was significant statistical correlation (p<0.05) between a higher CT score and GOS score at 3 months. Out of the 3 scoring systems Rotterdam CT scoring system was found to significantly correlate the most with GOS score and thus can help in predicting the clinical outcome in traumatic brain injury.

**Conclusion:** - The application of a standard CT based scoring system will bring in uniformity in daily reporting and aid in better management of patients with various grades of head injury.

**Abstract ID: 594**

**ABSTRACT TITLE:** PRE TREATMENT AND POST TREATMENT MR SPECTROSCOPY CHANGES IN ANTERIOR CINGULATE CORTEX AFTER TREATMENT WITH METHYL PHENIDATE IN CHILDREN WITH ATTENTION DEFICIT HYPERACTIVITY DISORDER

**PRESENTING AUTHOR:** AVINASH KUMAR

**CO-AUTHOR:** DR. KISHOR RAJPAL, DR. ALKA SUBRAMANYAM, DR. RITWICK CHATTERJEE

**Purpose:** Attention-deficit/hyperactivity disorder (ADHD) is among the most common neurobehavioral disorders presenting for treatment in children. ADHD can be diagnosed using the current guidelines and the criteria in the Diagnostic and Statistical Manual of Mental Disorders (DSM-IV-TR). However this assessment is questionnaire based and thus subjective. MR Spectroscopy [MRS] can be used to quantify the neurochemistry within the brain, researched to be responsible for the manifestation of this disease. The purpose of this study is to record the changes in the prefrontal cortex of the brain of ADHD patients using MRS, before and after treatment with methylphenidate and thereby help in objectively the Brain neurochemistry changes with treatment of ADHD.

**Materials and Methods:** The study was conducted in the Department of Radiodiagnosis and Psychiatry at TNMC and BYL Nair hospital, Mumbai. A total of 20 pediatric patients clinically diagnosed with ADHD were evaluated. A pretreatment MRS was done. The child was then started on treatment with Methyl Phenidate for 3 months. A followup post treatment MRS was done after this period and results compared.

**Results:** As expected and similar to the hypothesis that we had formed based on previously conducted foreign studies, we noticed a decreasing trend in the Cho/Cr and Glx/Cr levels after treatment. However contrary to expected we noticed an increasing trend in the NAA/Cr levels. However on statistical analysis, it was found that these changes were not significant.

**Conclusion:** This study supports the utility of MRS in examination of the underlying cerebral biochemistry of ADHD and the impact of pharmacotherapy on brain biochemistry as seen from the findings elicited. However, critical barriers limit the results, given the heterogeneous nature of stimulant exposure, heterogeneous nature of the disease process, lack of placebo control, as well as the reliance on low field strength MRS (1.5 Tesla). Future Indian studies are thus warranted.
**Abstract ID:854**

**ABSTRACT TITLE**: MULTIMODALITY QUANTITATIVE MR IMAGING IN TEMPORAL LOBE EPILEPSY.

**PRESENTING AUTHOR**: SAURABH JINDAL

**CO-AUTHOR**: DR RAJESH RAMAN ASSOCIATE PROFESSOR, JSS RADIOLOGY.

**Purpose**: To compare lateralizing ability of quantitative MR modalities and depict seizure focus in temporal lobe epilepsy(TLE).

**Materials and methods**: This was a prospective analytical hospital-based study conducted from October 2017 to September 2018 wherein 14 patients with clinical and EEG proven diagnosis of temporal lobe epilepsy and 15 volunteers were evaluated. MR brain imaging was done using 3.0 Tesla MRI Scanner (PHILIPS INGENIA) with the use of a 32-channel receive-only head coil. Single-voxel MR spectroscopy (MRS), and diffusion tensor imaging (DTI) were performed for bilateral mesial temporal lobes. Data collected was statistically analyzed using SPSS by descriptive statistics.

**Results**: Based on neurophysiological evaluation, patients were divided into two groups: right and left TLE. For each subject temporal lobe signal intensities, age duration of epilepsy, interictal EEG lateralization, response to AEDs, and history of febrile convulsion were evaluated. MRS showed low NAA/(Cho+Cr) of temporal lobe for TLE. DTI measurements of temporal lobes using statistical thresholds for FA and ADC showed reduced ipsilateral FA and increased ADC in TLE patients. Highest lateralization ratios were obtained from DTI with volumetry. Negative relationship was observed between FA and duration of epilepsy.

**Conclusion**: MRS and DTI are sensitive guiding tools for predicting the epileptogenic focus in non-lesional Temporal lobe epilepsy.

**Abstract ID:1006**

**ABSTRACT TITLE**: EVALUATION OF NIGROSOME 1 IN CLINICALLY SUSPECTED CASES OF PARKINSONISM

**PRESENTING AUTHOR**: SRUJANA

**CO-AUTHOR**: DR.M.VENKATESH, DR.V.N.NARVEKAR, DR.VEDHARAJU, DR.RAMA KRISHNA RAO BARU, DR.P.SUNEETHA,

**Purpose**: To assess the imaging features of nigrosomes-1 in the substantia nigra through 3T MR susceptibility weighted imaging and its disease-specific changes for the diagnosis of Parkinson’s disease.

**Materials and Methods**: Case control study with 60 subjects 30 patients with clinical suspicion of parkinsonism (PD) referred from general medicine and neurology and 30 controls with Non parkinsonism disease(N-PD) with other complaints.

Subjects were evaluated on 3.0 Tesla GE MRI scanner with susceptibility weighted imaging focussed on brainstem in the Department of Radio-diagnosis at Narayana Medical College and hospital.

Width of radial line at its widest point of the droplet(a), width of the band of high signal perpendicular to the middle of substantia nigra in corresponding layer(b) and its ratios were taken in controls as (a/b),in clinically suspected cases these signals are absent in most and in few thin banded high signal were faintly visible and taken as ratio (c/b).Our study excluded patients with claustrophobia, metallic foreign body in situ, patients < 30 years.
**Results:** The signals of nigrosomes-1 were strong droplet/oval were found in 28 patients from N-PD group (93.0%), on both sides of the SN and unilaterally (2 cases). In contrast, these signals were absent in 25 clinically suspected cases, 4 cases with typical linear hyperintensity 1 case with typical hyperintensity were clinically proven to Parkinson’s plus syndrome.

**Conclusion:** The absence of typical nigrosomes-1 signals in 3.0T MR SWI may useful in identifying Parkinson’s disease and Parkinson’s syndrome with high sensitivity and specificity.

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**Abstract ID: 1068**

**ABSTRACT TITLE:** UTILITY OF 3D DOUBLE INVERSION RECOVERY SEQUENCES IN DETECTING SMALL GRAY AND WHITE MATTER LESIONS IN PATIENTS WITH MULTIPLE SCLEROSIS.

**PRESENTING AUTHOR:** PON SHANKAR

**CO-AUTHOR:** DR. C. AMARNATH

**Purpose:** DIR(Double inversion recovery) sequence is valuable in the imaging workup of MS as it can detect more MS lesions compared to the T2W and FLAIR sequences. DIR helps to plan Disease Modifying drugs (DMDs) early and to detect the progression of disease after initiating DMDs.

**Materials and Methods:** Seven patients of multiple sclerosis (MS) with 364 supratentorial lesions were included in this study. Imaging was done with a 1.5T MR system (MagnetomAera, Siemens, Germany) using 3D sequences of DIR (Double inversion recovery), fluid-attenuated inversion-recovery (FLAIR), and T2-weighted image (T2WI) sequences. The sensitivity of DIR was compared with the sensitivity of FLAIR and T2WI sequences.

**Results:** Double inversion recovery imaging technique, a combination of two inversion pulses provides a sufficient attenuation of both CSF and the white matter (WM) and significantly detected more overall load of lesions compared to the T2W and FLAIR sequences. Double inversion recovery (DIR) sequence similarly detected more supratentorial white matter (WM) lesions in the juxta cortical regions compared to the FLAIR sequence which was considered the gold standard in this region. DIR showed better delineation between the white matter, grey matter, and the lesions of multiple sclerosis due to its image contrast in all anatomical locations.

**Conclusion:** In patients with suspected or definite MS, DIR sequences provides the highest overall sensitivity in the detection of smaller supratentorial white matter lesions and intracortical lesions of Multiple sclerosis lesions compared with the standard pulse sequences of FLAIR and T2. This higher sensitivity is especially obvious in the cortical & juxta cortical lesions due to higher image contrast between grey matter, white matter & MS lesions & is therefore of major prognostic relevance. Hence, DIR sequence should be included in the routine MR protocols of MS patients especially to answer the question about intra-cortical and juxta-cortical MS lesions.
Abstract ID:1116

ABSTRACT TITLE : PAPILLEDEMA: DIFFUSION WEIGHTED IMAGING OF OPTIC NERVE HEAD
PRESENTING AUTHOR : NIRMALYA RAY
CO-AUTHOR : DR. SAMEER VYAS, DR. NIRANJAN KHANDELWAL, DR. REEMA BANSAL, DR. VIVEK LAL

Background and Purpose: Optic nerve head (ONH) hyperintensity on DWI has been shown to be a specific sign of papilledema. We aimed to establish the correlation between clinical grading of papilledema and diffusion abnormalities of ONH.

Materials and methods: Brain MRI, including readout segmented echoplanar imaging based DWI, was performed in 32 patients with papilledema and same number of age and sex matched controls. Clinical grading of papilledema was done according to Modified Frisén scale. Two neuro-radiologists independently evaluated the MRI for ONH hyperintensity and ADC value of ONH. The comparison between clinical and qualitative grade of ONH hyperintensity and its presence between cases and control groups were done by Chi-square test and Fisher’s Exact test respectively. The comparison between mean ADC value of ONH among different grades and between cases and controls were done by ANOVA-F test and student’s t-test respectively. ROC analysis was done to calculate a cut-off ADC value between case and control group.

Results: Significant correlation between ONH hyperintensity and mean ADC of ONH with clinical grades of papilledema and between cases and control groups were found. ONH hyperintensity was found to be highly sensitive (87.5% for both) and specific (specificity 97.1% and 98.6% for two observers) sign of papilledema. A cut-off mean ONH ADC value was found to have high sensitivity (96.83%) and specificity (95.31%) to distinguish between the cases and controls.

Conclusions: Diffusion parameters of ONH have significant correlation with clinical grading of papilledema and can serve as a surrogate marker for intracranial pressure.

Abstract ID:1130

ABSTRACT TITLE : CORELATING PAIN SEVERITY WITH TYPE OF LESION, THICKNESS AND SEGMENT OF TRIGEMINAL NERVE INVOLVED IN PATIENTS OF TRIGEMINAL NEURALGIA AND EVALUATING EFFICACY OF TREATMENT
PRESENTING AUTHOR : RAJSREE PURNA PAWAR
CO-AUTHOR : DR.ABHISHEK ARORA, DR.JYOTSNA RANI, DR. S RAMMURTY

Materials and methods: 31 Patients, presenting with trigeminal neuralgia, evaluated on 3T MRI from 1st January 2018 to 31st August 2018 were considered for the study. All patients with and without implicating lesions on MRI were considered and their pain severity tabulated. Nerve thickness, segment of nerve involved and implicating lesion/vessel were tabulated. For pain severity, patients were asked to scale the intensity of pain on scale of 1 to 10. Patients were followed up on treatment (medical/surgical) and their pain severity evaluated on their next follow up visit after one month, post treatment. Correlation of various types of lesions, thickness of the nerve and segment of the nerve involved was made with pain severity score. Post treatment correlation of decreased pain severity was also made in all patients.

Results: In 12 patients no lesion/Neurovascular conflict was found. However, their average pain intensity on pain severity score was 6.5. 19 patients presented with neurovascular conflict with average pain intensity of 7 while 3 patients presenting with demyelinating disease had pain severity of 7.5 .26 patients were kept
Conclusion: MRI plays an important role in delineating and characterizing the cause of trigeminal neuralgia. In our study, we have found very good correlation of pain severity with various types of lesions, thickness of the nerve and segment of nerve involved. Surgical therapy wherever feasible and given showed better results in decreasing pain severity than medical therapy.

Abstract ID:1210

Title: Perfusion MRI in cerebral venous and sinus thrombosis

Topic: Neuroradiology

Abstract: Aim of the study: Assessment of perfusion abnormalities in the centre and periphery of the lesion in patients with cerebral venous and sinus thrombosis (CVST) and correlation with clinical outcome.

Materials and methods: Dynamic susceptibility contrast perfusion imaging was performed in patients of CVST diagnosed by MRV. Images were acquired using a 3T MR scanner. Relative cerebral blood flow (rCBF), relative cerebral blood volume (rCBV) and mean transit time (MTT) values were obtained in centre and periphery of parenchymal lesion.

Results: 30 consecutive patients of CVST were studied. Their median age was 27.5 (range 21 to 46) years. 16 (53.3%) were female. Parenchymal lesion was present in 21 (70%) patients. In 9 patients, perfusion map was showing some abnormality although conventional MRI could not reveal any parenchymal abnormality. Mean rCBV and MTT were increasing from periphery of the lesion to the center (rCBV 69.93 ± 29.79 at periphery(PL2), 74.04 ± 25.71 at PL1, 92.49 ±32.07 at centre of the lesion and 69.19 ± 25.52 at contralateral normal appearing brain parenchyma (NABP). MTT 11.83 ± 3.76 at periphery(PL2), 15.27 ± 5.49 at centre of the lesion and 10.63 ± 3.37 at contralateral NABP). rCBV and MTT values from abnormal perfusion areas from 9 patients without parenchymal abnormalities are 92.89 ± 17.76 and 15.92 ± 3.66 respectively.

Conclusion: There is an increasing trend of MTT and rCBV from periphery to centre of the parenchymal lesion. MTT is the most consistent parameter to be abnormal in patients of CVST even in patients without parenchymal lesion. Residual neurological deficit was found in patients with increased rCBV and having large hemorrhagic infarct.
Abstract ID: 565

ABSTRACT TITLE: ROLE OF TRANSCRANIAL STRAIN SONOELASTOGRAPHY IN PREDICTING NEONATAL ENCEPHALOPATHY - A NOVEL APPROACH

PRESENTING AUTHOR: ASTHA SINGH

CO-AUTHOR: DR. USHA JAIPAL, DR. ANU BHANDARI

Purpose: Despite neonatal encephalopathy accounting for 23% of world’s neonatal deaths(1), there is absence of published work on value of elastography of neonatal brain in these cases. Hence, we aim to delineate the role of transcranial strain elastography in diagnosing neonatal encephalopathy as compared to healthy neonates. We also aim to demonstrate elasticity characteristics of normal brain parenchyma and ischemic pattern of brain injury.

Materials and Methods: A hospital based descriptive type of observational study was conducted on 30 neonates (GA of 34-37 weeks), with 15 cases with variable clinical picture of neonatal encephalopathy falling into grade 2 and 3 by Sarnat and Sarnat grading(2). 15 healthy neonates were taken as controls. All underwent transcranial B mode USG and strain elastography with 3-7 MHz probe on anterior fontanelle. Elastographic scores were assigned to various brain areas on a 5 point colour scale. Median elastographic scores of cases were compared with controls and corrected with corrected GA.

Results: The ventricles and subdural space showed an elasticity score of 1 in all but 3 neonates. Caudate lobe showed lower elasticity (median 4.4) as compared to periventricular and subcortical white matter. Periventricular white matter showed higher elasticity in 66.67% cases of grade 2 and 3 hypoxic ischemic encephalopathy. There was no significant sex-related differences in elastographic scores. There was a positive trend between corrected GA and cortical grey matter elastographic score.

Conclusion: Various intracranial regions in healthy neonates show difference in elasticity. Raised elasticity of periventricular white matter in neonatal encephalopathy points towards a promising role of sonoelastography in predicting early ischemic changes in brain parenchyma.

References:

Abstract ID: 939

ABSTRACT TITLE: ASSOCIATION BETWEEN MATERNAL IRON DEFICIENCY ANEMIA AND FETAL HIPPOCAMPAL VOLUME

PRESENTING AUTHOR: SHWETA SINGH

CO-AUTHOR: SRIPARNA BASU, DINESH KUMAR, ASHISH VERMA, SHAMPA ANUPURBA, ISHAN KUMAR

Purpose: Although there are numerous causes of anemia during pregnancy but the most significant contributor being iron deficiency. Anemia in pregnancy can have negative implications both for mother as
well as her fetus such as prematurity, low birth rate, fetal impairment etc and can also have deleterious effects on fetal neurodevelopment. With the dearth of literature regarding the co-relation between maternal iron deficiency anemia and fetal hippocampus volume, we hypothesized that maternal iron deficiency anemia may alter the hippocampal volume and for the same, we conducted a study which compared hippocampal volumes between two groups of neonates- one born to mother with iron deficiency anemia and another who were born to mother without iron deficiency anemia.

**Objective:** To determine the corelation between maternal iron deficiency anemia and fetal hippocampal volume.

**Materials & methods :** This prospective observational study, with the study period extending from January 2015 to July 2016, was conducted in tertiary care university based teaching institution after taking ethical clearance and written informed consent from all parents before inclusion in the study – Seventy term singleton neonates born to mother with iron deficiency anemia were compared with twenty healthy singleton, gestational age matched neonates born to mother without IDA. Cranial MRI of sedated infants were performed in supine position using 1.5 tesla MRI machine and a bird cage type of quadrature head coil was used to acquire predesignated protocol. Contiguous 1mm thick sections were obtained using 3D-MPRAGE(three dimensional-magnetization prepared rapid gradient echo) imaging.

Manual tracing of hippocampus was done on postprocessing work station. For a statistical analysis SPSS version 16.0 was used Paired samples T Test was done for comparing right and left hippocampal volume.

**Results:** Right, left and combined hippocampal volumes, corrected for total intracranial volumes, were compared between cases and controls. Significant reduction in hippocampal volumes of cases was noted as compared to that of controls.

**Conclusion:** Hippocampal volumes(right, left and combined) were found to be significantly low in neonates born to anemic mothers with reduction in hippocampal volume being proportional to severity of maternal anemia.

**Abstract ID: 1011**

**ABSTRACT TITLE:** TRANSPERINEAL ULTRASOUND IN EVALUATION OF IMPERFORATE ANUS.

**PRESENTING AUTHOR:** NISHA RATHI

**CO-AUTHOR:** RITU NAIR MISRA, ROHINI GUPTA

**Purpose:** To evaluate the role of transperineal ultrasound in classifying imperforate anus, identifying and classifying associated fistula.

**Materials and methods:** This cross-sectional study was conducted on 30 pediatric patients in Radiodiagnosis Department SJH, New Delhi.

The child presented with non-passage of stools clinically diagnosed as imperforate anus excluding our exclusion criteria were included, Child with visible fistulous opening, cloaca and unstable patients were excluded.

The Patient underwent ultrasound examination in a supine position with either of transducer frequencies L5-17 or L3-9 MHz. A Probe was placed over anal dimple of perineum without compression, in this plane distance from the end of rectal pouch to perineum was measured. Presence and absence of a fistula and type were also documented.
Its findings were compared with surgical findings with regard to sensitivity and specificity. The significance of the association between qualitative variables was also measured. P value < .05 was considered significant.

Results: Transperineal ultrasound correctly identified type of anorectal malformation in 90% and fistula in 96.7% of our cases. The strength of agreement is 0.902 for fistula detection which indicates that there is very good agreement between surgery and transperineal ultrasound.

Conclusion: Our study concludes that transperineal ultrasound can be confidently used in the case of the imperforate anus with clinical examination findings for appropriate surgical planning.

Abstract ID:1089

ABSTRACT TITLE : MAGNETIC RESONANCE SPECTROSCOPY IN CHILDREN WITH NON ACUTE NEUROLOGICAL ILLNESS
PRESENTING AUTHOR : SEBASTIAN ANTONY
CO-AUTHOR : AMARNATH CHELLADURAI, SUKUMAR RAMASWAMY

Purpose: The causes of non acute neurological illness presenting as developmental delay and regression of attained milestones are largely unknown. The goal of our study is to determine if proton MR spectroscopy can depict abnormalities in patients with non acute neurological illness with special reference to children with developmental delay and regression of attained milestones.

Method and materials: This is a retrospective study where imaging of 615 children with non acute neurological illness were included. Among those, 424 children’s MR spectroscopy, whose preliminary MRI showed predominantly normal findings, were analyzed by two radiologists. MR spectroscopy was performed as per institutional protocol with multivoxel grid placed in bilateral subcortical white matter in the frontal & parieto-occipital regions, bilateral thalami and basal ganglia. The diagnosis were confirmed with biochemical, genetic and enzyme analysis.

Results: 198 children showed no specific findings in MRS to arrive at a specific diagnosis. Spectra of 153 children showed mild decrease in NAA and mild decrease in NAA/Cr ratio with no biochemical /genetic abnormality and were diagnosed as idiopathic developmental delay. 58 children presented with smaller NAA peaks and decreased NAA/Cr ratios, were diagnosed as Neuronal Ceroid Lipofuscinosis, 3 children with elevated lipid peak at 0.9 and 1.3 ppm were diagnosed as Sjogren Larsson Syndrome, 3 children with absent creatine peak were diagnosed as Cerebral creatine deficiency, 3 children with decreased NAA peak and mild elevated Cho/Cr ratio were diagnosed as GM1 gangliosidosis. One child presented with non specific white matter hyperintensity in MRI and elevated peak at 2 ppm similar to that of NAA was diagnosed as Salla disease. One child with broad based lipid peak at 0.9 - 1.3 ppm and was diagnosed as disorder of beta-oxidation of fatty acid. Two children showed single peak at 3.5ppm denoting glycine and was diagnosed as hyperglycinemia. Phenylalanine peaks were noted in two children at 7.36 ppm and was diagnosed as Phenylketonuria.

Conclusion: MRS is the useful surrogate study to arrive at a diagnosis in children with non acute neurological illness presenting as delayed development children and regression of attained milestones.

Abstract ID:1135

ABSTRACT TITLE : MULTIDETECTOR COMPUTED TOMOGRAPHY IN THE EVALUATION OF CHILDHOOD INTESTITIAL LUNG DISEASES
PRESENTING AUTHOR : C AMARNATH
Childhood: interstitial lung diseases (chILD) is a group of rare chronic and complex disorders of variable pathology. Diagnosis is challenging because of different imaging pattern and rarity of its occurrence. CT thorax of 15 patients, 24 days to 3 years, with symptoms of interstitial lung disease, were studied over a period of three years. Ground-glass opacities either isolated or associated with other findings like centrilobular nodules, air trapping, septal thickening, crazy-paving, consolidation was the predominant finding seen in CT. Certain chILD can be diagnosed with CT without the need of lung biopsy.

Abbreviations: chILD = Childhood interstitial lung disease

Materials and Methods: The study included CT thorax of 15 interstitial lung disease patients of age group of 24 days to 3 years.

Common symptoms were unexplained respiratory distress in a newborn, fast breathing, failure to thrive, typically dry cough and wheeze in the absence of respiratory tract infection. The duration of the study was three years.

Conclusion: Ground-glass opacities either isolated or associated with other findings like centrilobular nodules, air trapping, septal thickening, crazy-paving, consolidation is the predominant finding seen in CT scan of childhood interstitial lung disease patients. Multidetector CT may aid diagnosis, identify a site for biopsy, and help
Abstract ID: 35

ABSTRACT TITLE: DOPPLER ASSESSMENT OF THE FETAL PULMONARY ARTERY AS A PREDICTOR OF FETAL MACROSOMIA IN DIABETIC MOTHERS

PRESENTING AUTHOR: SHAKTIPRADA NAYAK
CO-AUTHOR: M.K. MITTAL

Purpose: To assess the accuracy of Acceleration time of the fetal MPA as a predictor of neonatal macrosomia in Diabetic mothers.

Materials and Methods: Prospective Observational Study. Our study included 150 singleton pregnant patients with Diabetes mellitus. Obstetric ultrasound was performed in supine position and an axial plane through the fetal thorax to visualise the 4 chamber view of the heart was achieved. Pulsed and Color Doppler was used to measure the fetal pulmonary artery flow waveform (FPAF) within the proximal portion of the main pulmonary artery. A number of different parameters were measured from the FPAF waveform (RI, PI, S/D, At, Et, At/Et ratio). The At/Et ratio was correlated with the development of fetal macrosomia.

Results: There was an increased risk of fetal macrosomia in fetuses of diabetic mothers which was directly correlated with the Acceleration time/Ejection time ratio of the fetal MPA.

Conclusion: We found that taking a cutoff of 96 ms for the Acceleration time provides a statistically significant association with development of fetal macrosomia. Doppler assessment of the fetal pulmonary artery is a highly promising and exciting tool for assessment of fetal macrosomia. However, further research is required in different populations and larger sample size for better correlation of our findings.

Abstract ID: 347

ABSTRACT TITLE: PROSPECTIVE STUDY OF ROLE OF AORTIC ISTHMIC DOPPLER IN PREDICTING OUTCOME IN ASYMMETRIC INTRAUTERINE GROWTH RESTRICTED(IUGR) FETUSES

PRESENTING AUTHOR: P RAMESH
CO-AUTHOR: DR.P.CHIRTRARASAN

Prospective Study of Role of Aortic Isthmic Doppler in Predicting Outcome in Asymmetric Intrauterine Growth Restricted(IUGR) Fetuses

Author: Dr.Ramesh.P Final year Resident govt. kilpauk medical college,kilpauk,Chennai-10

Abstract: Purpose of the study To correlate aortic isthmic doppler findings in asymmetric IUGR fetuses and its clinical outcome

Materials and method: Study Centre Department of Radiodiagnosis, Govt. Kilpauk Medical College Hospital, Kilpauk, Chennai – 600 010.

Study Design: Prospective Study
Study subject: IUGR fetuses with expected fetal weight <10th percentile

Data collection: MCA,UA & Aortic isthmic Doppler & gestational age at birth ,birth weight,apgar score and others from case sheet.

Sample Size: 90

Duration of Study : 1 Year

Methodology and results: Abnormal umbilical artery and middle cerebral artery doppler flow pattern - “early change,”(associated with fetal hypoxia).Abnormal ductus venosus Doppler flows -“late change” (associated with fetal acidosis). Detection of progression from hypoxia to acidosis is crucial to decide the optimal time of delivery to prevent fetal acidosis and fetal demise. By using aortic isthmic Doppler we are going to detect the transition from hypoxia to acidosis and guide in management.

Incidence rates of outcome variables will be expressed in percentages. Risk outcome variables will be expressed in terms of relative risk along with confidence interval. Association between type of flow and type of delivery, intrauterine death, neonatal death& development of complications (RDS,IVH,Sepsis,NNEC) will be tested using pearson’s chi square test.

Conclusion: In Growth restricted fetuses, retrograde flow in aortic isthmus is associated with increased morbidity and mortality. This could be used to improve current algorithms for the prediction of mortality and long-term neurodevelopmental deficits.

Abstract ID: 395

ABSTRACT TITLE: EVALUATION OF UTEROCERVICAL ANGLE AS A PREDICTOR OF SPONTANEOUS PRE-TERM BIRTHS

PRESENTING AUTHOR: RESHAM SRIVASTAVA

CO-AUTHOR: PROF R.C SHUKLA,DR PRAMOD KUMAR SINGH,DR. ISHAN KUMAR

Purpose: The emerging concept of uterocervical angle,a novel ultrasound marker ,has the potential to become a predictor of spontaneous preterm birth(1).A wide uterocervical angle detected during second trimester TVS has been found to be associated with an increased risk of preterm labour(2).This study aims to study correlation between uterocervical angle in second trimester using TVS and risk of preterm birth.

Materials and methods: Case selection:Primigravida at 16-24 weeks gestation

Exclusion criteria: Diabetes,Hypertension,Thyroid disorder,Mullarian abnormality,Malnutrition and Obesity, TB, Smoking

Materials: Uterocervical angle measured using TVS in primigravida at 16-24 weeks and followed up till labour.

Study Type: Prospective design(ongoing study)

Results:*Spontaneous Preterm birth was noted in 11 out of 15 patients with wide uterocervical angle(>95 degrees)

Those with uterocervical angle of >95 degree had high risk of preterm birth at <37 weeks of gestation

Those with angle >105 degrees had high risk of preterm birth at <34 weeks of gestation
Conclusion: A significant association exists between wide uterocervical angle measured by TVS and risk of spontaneous preterm birth

*Uterocervical Angle measured in pregnant women in second trimester using TVS can serve as a novel marker for prediction of spontaneous preterm births

Limitations: Small sample size

References:

Abstract ID: 518

ABSTRACT TITLE: "CORRELATION OF ANTENATAL UMBILICAL ARTERY COILING INDEX AT SECOND TRIMESTER SCANS WITH PERINATAL FETAL OUTCOME"

PRESENTING AUTHOR: SHREYAS RAO G
CO-AUTHOR: DR. VEDARAJU KS, DR. ARUL T DASAN, DR. RAKSHITH RN

Aims & objectives: To evaluate the perinatal fetal outcome in correspondence with second trimester scan umbilical artery coiling index in uncomplicated singleton pregnancies.

Materials and methods: Sixty uncomplicated singleton pregnancies presented at second trimester (more so at 18-22 weeks) were followed until term and correlated with the outcome of the pregnancy.

The umbilical artery coiling index were calculated as reciprocal of distance between a pair of coil and average of three readings were considered. One coil over a length of five centimeters were considered normal. The coiling indices were graded as hypo or hyper coiling corresponding to index value of <10th or >90th percentile.

Results: There was significant correlation (p value of 0.003) between hypercoiling is associated with intrauterine growth retardation, hypercoiling is associated with meconium staining liquor, high caesarean section rates, low APGAR score < 7 at 1 min and 5 min respectively and NICU admissions of babies.

Conclusion: Both hypercoiling and hypocoiling of the umbilical cord categorized on the basis of antenatal umbilical coil index were noted to have significant correlation with adverse perinatal foetal outcome.
Role of Cervical Elastography in Assessment of Induction of Labor In Pregnancy:

**Purpose:** The aim of this study was to evaluate the role of cervical elastography in assessment of induction of labor and to correlate cervical elastography measurements with clinical outcome of pregnancy, namely duration of labor and progression.

**Materials and methods:** 50 case samples are taken. Ultrasonic cervical elastographic study was performed using PHILIPS IU22 ultrasound Machine with a TVS probe, Colour Doppler and Elastography. The study was hospital based after obtaining an informed consent. The study was done over a period between 2016 - 2018 and data was collected during this period from 50 patients. All consenting patients presenting in the department of obstetrics of AJIMS (A J Institute of medical sciences, Kuntikana, Mangalore- 575004 ) and AJHRC with term pregnancy at 36-40 weeks of gestation were enrolled in this study.

**Results:** Out of 50 cases, 37 cases with successful induction of labor showed soft cervix (near the internal os) and 13 cases with failed induction of labor showed hard cervix (near the internal os) in elastography.

**Conclusion:** This study showed that, estimation of uterine cervical stiffness near internal os could be very important for assessing cervical ripening at term, to select patients for successful labor induction.

Second Trimester Placental Elastography and Uterine Artery Doppler in Prediction of Pre-Eclampsia

**Purpose:** To evaluate the role of shear wave placental elastography (SWE) in pre-clampsia (PE) and to give a cut off value of elasticity that would help in prediction of pre-eclampsia in early second trimester (14-20 weeks of POG).

**Materials and methods:** A total of 230 patients who presented in obstetric OPD between 14-20 weeks of gestation and were willing to have delivery in Safdarjung hospital were enrolled in the study. After taking detailed obstetric history, gray scale obstetric ultrasound with doppler scan SWE was performed.

Mean value of elasticity was taken in every patient; and data were analysed to give the best cut-off value that would determine the diagnosis of PE. Sensitivity, specificity, positive predictive value (PPV), negative predictive value (NPV), and diagnostic accuracy for prediction of PE were calculated based on SWE measurements.

Statistical analysis was done using Statistical Package for Social Sciences (SPSS) version 21.0. A p value of <0.05 was considered statistically significant.
Results: There was a statically significant difference in the value of elasticity in normal patients and in those who developed PE.

Our study showed cut-off value of 2.9667 kPa for prediction of pre-eclampsia, with a sensitivity of 92%, specificity of 91.71%, PPV of 57.5% and NPV of 98.9% in a statistically significant manner with p-value of <0.05.

Conclusion: Placental stiffness is higher in patients who develop pre-eclampsia, which can be quantitatively measured by the shear wave elastography values for prediction of pre-eclampsia in early second trimester.

Abstract ID:734

ABSTRACT TITLE : ULTRASONOGRAPHIC MEASUREMENT OF FETAL FOOT LENGTH AND ITS ACCURACY IN ESTIMATION OF GESTATIONAL AGE
PRESENTING AUTHOR : J SRAVANTHI
CO-AUTHOR : DR.M.SAI SWETHA, PROF.DR.G.S.KEJRIWAL.

Aim: To evaluate the usefulness of fetal foot length diameter against conventional parameters of biparietal diameter, abdominal circumference and femur length in normal pregnant mothers between 15-40 weeks.

Method: A longitudinal prospective study of patients between 15 and 40 weeks of gestation, conducted in Department of Radio-diagnosis, Maharajah’s Institute of Medical Sciences, VZM. Inclusion criteria consisted of pregnant women with well-established dates (consistent with early ultrasound), singleton, non-anomalous fetuses, and intact amniotic membranes.

Results: Longitudinal foot length measurements obtained in 50 antenatal women were studied. From regression analysis a good correlation has been observed between fetal foot length and gestational age with Pearson’s correlation coefficient 0.97 and P<0.0001.

Conclusion: Fetal foot length can be used as a reliable parameter in estimation of fetal gestational age than other biometric indices especially in hydrocephalus, anencephaly, short limb dysplasia and later trimesters where the other parameters like BPD, AC and HC are not reliable.

Discussion: Ultrasonographic measurement of mean fetal foot length is an easy and reliable indicator of gestational age in 2nd and 3rd trimesters. In cases of doubt, such as wrong dates it is better to include mean fetal foot length as a part of fetal biometry.

Abstract ID:1013

ABSTRACT TITLE : TO EVALUATE FETAL LIVER LENGTH IN WOMEN WITH GESTATION DIABETES MELLITUS VS NON GESTATION DIABETES MELLITUS
PRESENTING AUTHOR : ANIL SHARMA
CO-AUTHOR : DR SHABIR BHAT

Purpose: To evaluate fetal liver length in women with gestational diabetes mellitus between 20-30 weeks

Methods: A total of 120 consecutive healthy pregnant women underwent sonographic examination at 20-30 weeks gestational age. The measurements included fetal liver length taken using standard technique. GDM was confirmed by way of a 75-g oral glucose tolerance test using World Health Organization criteria within 1 week of the examination.
Results: Eighteen (15.4%) women were diagnosed with GDM, while 102 (84.6%) women were without GDM. The mean fetal liver length was 36 mm (95% CI 32–37) in women with GDM and 31 mm (95% CI 30–33) in women without GDM (p < 0.01). Liver enlargement was related to maternal fasting glucose levels and not 2-hour postprandial levels.

Conclusions: The findings of this study suggest that fetal liver length appears to be longer in GDM than in normal pregnancies. Nevertheless, further, larger randomized studies are required to confirm these findings.

Abstract ID: 1104

ABSTRACT TITLE: UTILITY OF APPARENT DIFFUSION COEFFICIENT (ADC) IN EVALUATION OF ENDOMETRIAL MASSES - THE DARK HORSE OF PELVIC MRI

PRESENTING AUTHOR: SMITA MANCHANDA
CO-AUTHOR: SMITA MANCHANDA, ZAINAB VORA, RAJU SHARMA, SMRITI HARI, CHANDAN JDAS, GARIMA KACHHAWA, SUNESH KUMAR, SANDEEP MATHUR

PURPOSE: To investigate the role of Apparent Diffusion Coefficient (ADC) values in distinguishing benign and malignant endometrial masses and to study its correlation with tumor grade and subtype of endometrial carcinoma.

Materials and methods: 55 women with endometrial and subendometrial pathologies, including 27 cases of endometrial carcinoma, and 28 cases of benign masses were enrolled in this ethically approved prospective study. The patients underwent MRI including DWI using b-values of 0, 500, 800 and 1000. The mean ADC values of endometrial mass and ratio of mean ADC of mass to myometrium were calculated and correlated with tumor grade and histological type. ROC-curve analysis was done to establish a cut-off for mean ADC and ratio of ADC of mass to myometrium.

Results: The mean (± SD) ADC value (x 10-3 mm2/s) of endometrial carcinoma (0.698 ± 0.079) was significantly lower than that of benign lesions (1.278 ± 0.215, p < 0.0001).

A cut-off value of mean ADC of 0.99 x 10-3 mm2/s and ratio of mean ADC of mass/myometrium of 0.6, for distinguishing benign and malignant endometrial masses showed excellent predictive accuracy.

There was significant difference between mean ADC values of endometrial carcinoma in patients with tumor grade 1 (0.756 ± 0.176, n = 11), grade 2 (0.686 ± 0.051, n = 5), and grade 3 (0.639 ± 0.086, n = 5) (p < 0.001). No significant difference was found in mean ADC values of patients with endometrioid (Type I) and non-endometrioid carcinoma (Type II).

Conclusion: ADC values can reliably distinguish benign from malignant endometrial masses. The inverse correlation of ADC values with the histological grade provides a non-invasive biomarker for prognosticating patients with endometrial carcinoma. This may be invaluable in patients in whom endometrial sampling cannot be performed or is insufficient.
Abstract ID:1139

ABSTRACT TITLE: VALIDATION OF TWO DIMENSIONAL TRANSPERINEAL ULTRASOUND AND DYNAMIC MAGNETIC RESONANCE IMAGING IN PELVIC FLOOR DYSFUNCTION

PRESENTING AUTHOR: SIVASAKTHI
CO-AUTHOR: DR.K.SUDHA, DR.C.AMARNATH

Aim: Comparing the efficiency of transperineal USG with Dynamic MRI in imaging female pelvic floor in preoperative planning of complicated cases.

Methods: A prospective study with 50 parous women with various pelvic floor dysfunction for two years performed on a 1.5 Tesla MRI scanner 3mm-thick sagittal images with a HASTE sequence, then 3-mm thick axial T2-weighted images of the perineum. All patients were taught to do a valsala technique.

Results: Among 50 patients Transperineal USG identifies equally the bladder base below PCL Line both at rest and valsala in comparison with MRI. Transperineal USG detects equally the normal individuals as compared to MRI among 30 patients who had bladder base below PCL line during valsala maneuver, 14 of them had mean value 2.37 using MRI thus indicating the need for surgical intervention. For the same 14 patients transperineal USG showed mean value of 1.82cm thus under estimating the surgical need for these patients. Hence the limitation of transperineal USG regarding this parameter in triaging the patient for surgery has to be recognised.

At rest MRI and TPU have correlation of 0.995 suggestive of positive correlation. During valsalva MRI and TPU have correlation of 0.946 suggestive of positive correlation.

Conclusion: Transperineal ultrasound is equally as effective as dynamic MRI in measuring the descent of the bladder, uterus below the PCL line while doing the procedure at rest and during and in assessing the anal sphincter integrity. So Transperineal ultrasound can be used as screening tool for evaluation of women.
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ABSTRACT TITLE: ENTERIC DUPLICATION CYST - A CASE REPORT AND LITERATURE REVIEW

PRESENTING AUTHOR: AISHWARYA B.M

CO-AUTHOR: DR. SOWMYA A, DR. SANDEEP BALLAL, DR. SANJAY S.C

Learning Objective: To present a rare case of enteric duplication cyst and to review published literature.

Background: A 3 year boy presented with complains of fever, vomiting and decreased appetite since 1 day and abdominal pain since 1 week in right hemi abdomen. The child was subjected to x ray erect abdomen, usg, and cect abdomen.

Image Findings: x-ray: few soft tissue paucity noted in right lumbar and iliac fossa.

Usg: Evidence of thick walled cystic lesion noted in close proximity to pancreatic head measuring 7.4 x 5.8 x 7.7c (vol: of 180-190cc) with multiple thick internal septations measuring 2.3-2.5mm, with no vascularity on doppler. Evidence of eccentric solid hyperechoic foci measuring 1.3 x 1.2cms with vascularity on doppler.

Cect Abdomen: Evidence of well defined cystic density noted in hepatico-pancreatic recess measuring 8 x 6.7 x 6.9cm (cc x tr x ap), with an eccentric mural nodule measuring 1.2 x 1.2cm.

On post contrast study, cystic lesion shows peripheral enhancement and intense enhancement noted within the eccentric mural nodule. Lesion was seen displacing transverse colon superioposteriorly, ascending colon laterally and ileal loops medially.

Intraoperative findings: The large cyst was adherent to the ascending colon. The colon could not be separated from the lesion, hence right hemicolecotomy done.

Histopathology report: Enteric duplication cyst with heterotropic pancreatic tissue

Conclusion: Enteric duplication cysts are an uncommon congenital abnormality. They can occur anywhere along the digestive tract on the mesenteric side. The small intestine is most commonly involved. Most cysts manifests during the first year of life. Malignant lesions are rare, particularly in children. The common usg findings are an echogenic inner mucosal layer and a hypoechoic outer muscular layer and on ct is a nonenhancing cystic mass which may contain high protein content/ haemorrhage.
Abstract ID: 141

**ABSTRACT TITLE**: FAT IN CT: FINDING FAT AT THE WRONG PLACES, A CLUE TO THE RIGHT DIAGNOSIS

**PRESENTING AUTHOR**: SONIYA PATANKAR

**CO-AUTHOR**: DR. PADMA V. BADHE (ASSO. PROF), DEPT OF RADIOLOGY, DR. ABHISHEK BAIRY (RESIDENT)

**Learning Objectives:**
1. Role of Multidetector CT (MDCT) in identifying fat containing lesions in abdomen.
2. Radiological features of intra-abdominal fat containing lesions and spectrum of differential diagnosis.

**Background**: Patients presenting with non-specific abdominal complains warranting an MDCT can have a myriad of differential diagnosis posing a challenge for the radiologist and the physician. The presence of fat density within an intra-abdominal lesion usually points to a specific diagnosis. Also, the knowledge of benign occurrence of fat-containing lesions will avoid the need for additional invasive and non-invasive tests.

**Imaging Findings**: Fat usually has a lower attenuation than water on MDCT and hence is readily identified with MDCT imaging as attenuation of fat is typically less than −20 HU. Microscopic fat is not as easily identified on MDCT as adjacent water/protein molecules increase the mean attenuation.

Fat-containing masses of the abdomen and pelvis represent a broad spectrum of congenital, metabolic, inflammatory, and neoplastic processes.

Hepatic fatty lesions vary from diffusely infiltrating lesions like steatohepatitis, focal fatty infiltration to focal mass lesions like AML of liver. Genitourinary lesions commonly found include Renal AML sometimes as a spectrum of Tuberous sclerosis and VHL, ovarian teratomas.

Retroperitoneal lesions include benign entities like adrenal adenoma, adrenal myelolipoma, diffuse fatty infiltration of pancreas and malignant liposarcoma.

Inflammatory fat containing entities include mesenteric panniculitis, epiploic appendagitis, Crohn’s disease. Other fat containing entities include bowel lipomas, abdominal hernias and submucosal fat depositions.

**Conclusion**: The understanding of the clinical features, anatomical location of lesion, and the spectrum of imaging features of fat containing lesions with the help of MDCT will aid in reaching an accurate diagnosis. This pictorial exhibit aims to present the spectrum of such fat containing lesions.

Abstract ID: 151

**ABSTRACT TITLE**: EXTRANODAL LYMPHOMA IN ABDOMEN- CT IMAGING SPECTRUM

**PRESENTING AUTHOR**: EKTA DHAMIJA

**CO-AUTHOR**: KANIKA DIWAN AND SANJAY THULKAR DEPARTMENT OF RADIODIAGNOSIS, DR B.R.A. IRCH, AIIMS, NEW DELHI

**Learning Objective**: To illustrate CT imaging spectrum of Abdomino-pelvic lymphomas

**Background**: Computed tomography (CT) is the imaging modality used for staging and follow up of patients with lymphoma, Hodgkin’s or Non-Hodgkin’s. It frequently involves lymph nodes at various stations of
Extranodal lymphoma affects abdominal organs in 40% of cases with spleen and liver being the most common sites followed by bowel, pancreas, adrenals and peritoneum. The imaging pattern may vary from being classic bowel wall thickening with luminal dilatation to nonspecific single visceral deposit. Hence, it becomes important for a radiologist to be familiar with various imaging patterns of lymphoma so as to suggest appropriate differential diagnosis.

**Imaging findings:** The imaging patterns of abdominal lymphoma vary immensely:

- **Spleen:** Splenomegaly, focal lesions (single or multiple)
- **Liver:** Diffuse infiltration seen as hepatomegaly, multiple or single focal liver lesion
- **Bowel:** Circumferential wall thickening with no luminal compromise
- **Pancreas:** Ill defined or well defined pancreatic mass
- **Renal:** Parenchymal lesions, perinephric deposit, secondary infiltration by adjacent lymph nodes
- **Adrenal:** Diffuse enlargement, focal deposit
- **Peritoneum:** Multiple deposits or diffuse nodular thickening
- **Pelvis:** Uterine or cervical mass with non-specific features with first differential of carcinoma

**Conclusion:** It is crucial for radiologist to be familiar with the CT imaging spectrum of abdominal lymphoma in order to suggest further plan of management as the treatment differs amongst various malignancies.

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**Abstract ID: 185**

**ABSTRACT TITLE:** ROLE OF ULTRASONOGRAPHY IN BLUNT ABDOMINAL TRAUMA

**PRESENTING AUTHOR:** TANUSHRREE R KAMATH

**CO-AUTHOR:** DR RAM SHENOY, DR ANSTON V BRAGGS

**Purpose:** To evaluate sonologically patients with blunt abdominal trauma in presence of high clinical suspicion.

**Materials and Methods:** Place of study: Department of Radiodiagnosis, FMMC, Mangalore

**Source of data:** Ultrasonography of 50 cases of blunt trauma were studied and correlated with clinical/radiological/surgical findings. Machine used is Philips Affinity 50. Percentage, sensitivity, specificity, positive and negative predictive value was calculated.

**Results:** In our study sensitivity(90.4%) and specificity(96.5%) of ultrasound in detecting free fluid in abdomen was found to be most common and significant finding in blunt abdominal trauma

**Conclusion:** Ultrasonography is noninvasive, cheap, rapid highly reliable screening modality in cases of blunt abdominal trauma.
Abstract ID: 188

ABSTRACT TITLE : A RARE PRESENTATION OF GB MASS IN THE FORM OF MIXED ADENONEUROENDOCRINE CARCINOMA (MANEC): A CASE REPORT

PRESENTING AUTHOR : PRANAV KUMAR SANTHALIA
CO-AUTHOR : RISHIKANT SINHA, PREM KUMAR, PUNAM PRASAD BHADANI

Learning objective: To illustrate the imaging findings of mixed adenoneuroendocrine carcinoma (MANEC) of gallbladder, highlighting the rarity of disorder and role of immunohistochemical studies in diagnosis MANEC.

Background: A 48 year old female with c/o pain abdomen, nausea on and off and loss of appetite for 1 month presented to Medicine department, AIIMS, Patna. On clinical examination 11 x 10 cm diffuse non-tender lump was noted in right hypochondrium, extending to epigastrium and umbilical region, moving with respiration. Patient was admitted in radiotherapy department, AIIMS, Patna and CECT advised.

Imaging findings: CECT abdomen showed distended GB with intraluminal polypoidal mass, with multiple liver and retroperitoneal metastasis. Liver biopsy was done and histopathological examination showed tumor arranged in sheets, perivascular rossetting and focal organoid pattern with IHC study showing diffuse strong positive in tumors cells for cytokeratin, synaptophysin, chromogranin A, CD56and CDX-2, 65% for Ki-67 and negative for CK7 and CK20, suggesting neuroendocrine carcinoma. FNAC from GB mass showed features of adenocarcinoma with focal neuroendocrine features. The imaging modalities like USG, CT and MRI, cannot distinguish GB-NEC from other gallbladder carcinomas. The radiological findings are similar to presentations of any other GB tumor.

Conclusion: Primary mixed adenoneuroendocrine carcinomas are rare subtype of gallbladder malignancies. It is difficult to diagnose preoperatively NECs or MANEC, as most cases are diagnose postoperatively on histopathology and immunohistochemistry. This case highlights the rarity of the disorder and role of immunohistochemical studies and MANEC should be considered as a differential to GB carcinoma.

Abstract ID: 222

ABSTRACT TITLE : GASTRIC VOLVULUS - A TWISTING EMERGENCY

PRESENTING AUTHOR : HIMANSHU PRUTHI
CO-AUTHOR : DR AMANVEER SINGH DR. PRADEEP A.V DR.PREETI DR.YAMINI WADHWA DR. JYOTSNA SEN DR ROHTAS K YADAV

Learning objective:
1. To define the types of gastric volvulus and imaging features of computed tomography.
2. The abnormalities in gastric positioning and salient features which help to identify each of them.
3. Discuss the complications due to gastric volvulus and their emergent implications.

Background: Gastric volvulus is a rare condition where the stomach rotates along its long or short axis by 180 degrees, causing a closed loop obstruction. The primary cause includes weakness of the suspensory ligament of the stomach. The secondary causes include congenital Para-esophageal hernia in children or acquired diaphragmatic defects in the adult. Increase in the abdominal pressure and adhesions are major the predisposing factors.
Gastric volvulus presents in an acute form with obstructive symptoms as sudden epigastric pain, intractable retching and inability to pass a nasogastric tube into the stomach (Borchardt triad). The chronic form presents with intermittent symptoms as abdominal pain following food intake. Based on the pathophysiological mechanism gastric volvulus is divided into three types viz. Organo-axial, mesentrico-axial and mixed type.

**Imaging findings:** Computed tomography is the gold standard to define the type of gastric volvulus and its complications. It can confirm the rotation of the herniated stomach and assess the obstructive features.

- The organo-axial volvulus signifies with long axis stomach rotation leading to greater curvature being displaced superiorly and lesser curvature located more caudally.

- In less common mesentrico-axial types, there occurs displacement of antrum above the gastro-esophageal junction due to short axis rotation of stomach. Few patients may present with complex gastric volvulus having both organo-axial and mesentrico-axial components.

- The major imaging differentials of gastric volvulus being the hiatal hernias, organo-axial positioning, redescent of the fundus, diaphragmatic rupture and pseudo-obstruction.

**Conclusion:** Acute gastric volvulus has emergent surgical implications thus making every radiologist be familiar with

**Abstract ID:244**

**ABSTRACT TITLE:** RAPUNZEL SYNDROME- CT FEATURES

**PRESENTING AUTHOR:** BARUN KUMAR SHARMA

**CO-AUTHOR:** (None)

**Learning Objectives:** Knowledge of Bezoars and its different types with Rapunzel syndrome and its CT features.

**Background:** Bezoars are mass of indigestible contents in the gastro-intestinal tract.

**Several types:**

1. Trichobezoars – made of hair ball.
2. Phytobezoars- made of indigestible food materials.
3. Pharmacobezoars- made of undigested tablets.
4. Lactobezoars- made of undigested milk curds.

Rapunzel syndrome is prolongation of gastric trichobezoars into the duodenum and/or jejunum. Nonspecific symptoms seen in early stage followed by chronic abdominal pain, gastric ulcer, gastric perforation, gastric bleeding, intussusception and obstruction. Rapunzel syndrome seen in young female with psychiatric illness like trichotillomania, trichophagia.

**Imaging findings:** Thirteen-year old Female presented with repeated vomiting and epigastric pain for last 6 months referred to Radiology department for CECT abdomen.

CECT abdomen with Oral and IV contrast reveals a large intraluminal mass of heterogenous densities showing mottled appearance, completely filling the stomach with a tail extending to the duodenum and is free from gastric wall outlined by fundal gas and oral contrast. Features were consistent with Gastric trichobezoars with Rapunzel syndrome.
Conclusion and/or Teaching points: Gastric trichobezoars results from accumulation of hairs in stomach forming a mass commonly seen in young female patients with habits of trichotillomania and trichophagia. CT scan has high accuracy rate as compare to other imaging modalities. Management options are Endoscopic removal, Laparoscopic removal or Laparotomy followed by gastrotomy. CT is the best imaging modality. Laparotomy followed by gastrostomy is the management of choice.

Abstract ID:280

ABSTRACT TITLE : RETROPERITONEAL LESIONS : IMAGING FINDINGS AND ITS CORRELATE WITH HPE
PRESENTING AUTHOR : SURIYAPRAKASH N
CO-AUTHOR : DR. DEVIMEENAL J, DR. CHIRTRARASAN P, DR. GOPINATHAN K

Learning objectives:
• To review the normal anatomy of retroperitoneal space.
• To illustrate and describe the different retroperitoneal masses and their imaging features on USG, CT and MRI.
• Identify the imaging findings and its correlate with the HPE findings.

Background:
• Retroperitoneal neoplasms are a diverse group of benign and malignant tumors that arise within the retroperitoneum but outside the major organs.
• Cross-sectional imaging helps in characterization and assessment of the extent of the disease and involvement of adjacent and distant structures.
• Diagnosis of these tumors is often challenging for radiologists.
• Determining tumor location (characterizing the retroperitoneal space and identifying the organ of origin)
• Recognizing specific features of various retroperitoneal tumors (evaluating patterns of spread, tumor components, and vascularity).

Imaging findings: All patients with suspicious retroperitoneal masses in USG underwent CT and MRI. Analyzing tumor components, growth patterns, and vascularity in CT and MRI can assist in narrowing the differential diagnosis. CT is excellent for assessing calcification. MRI has a better soft-tissue contrast, which facilitates staging and determining vascular invasion. Despite developments in MDCT and new MRI sequences, it is sometimes impossible to make a definitive diagnosis just based on cross-sectional imaging, as some radiological features are non-specific and overlap with each other. This article aims to review many of the primary retroperitoneal neoplasm that may be encountered by the radiologist.

Conclusion:
• CT and MRI can contribute to tumor diagnosis, though histological confirmation is often required because of the considerable overlap of imaging features.
• Cross-sectional imaging is key to the pre-operative staging and planning of retroperitoneal masses.
• Imaging also helps to select and guide the site to biopsy from these usually large and heterogeneous neoplasms.
Abstract ID: 325

ABSTRACT TITLE: INTERNAL DUODENAL DIVERTICULUM / DUODENO-DUODENAL INTUSSUSCEPTION WITH ANNULAR PANCREAS AND RIGHT OVARIAN TORSION

PRESENTING AUTHOR: JESHIL R. SHAH

CO-AUTHOR: IRIA LIFE MEMBER : 297LM / 197L. REGISTRATION ID NUMBER FOR 72ND IRIA CONFERENCE 2019 – 170 NO COAUHORS

Learning objectives: To know role of MDCT scan in a case of internal duodenal diverticulum & duodeno-duodenal intussusception with annular pancreas and right ovarian torsion.

Background: 23 year old young lady presented with right lower abdominal pain and vomiting.

Imaing findings: CT scan showed enlarged right ovary with peripheral follicles and whirl sign of pedicle, suggesting associated torsion. In addition, internally protruding diverticulum is seen in the second part of duodenum with partial duodeno-duodenal intussusception. “Crocodile mouth” like appearance of pancreatic head tissue is seen adjacent to the second part of the duodenum, confirming associated annular pancreas. No signs of cholangitis or pancreatitis were seen. Right oophorectomy was performed.

Conclusions:
1. Duodeno-duodenal intussusception is a rare finding with very few (less than 50) case reports in English literature, since duodenum is a retroperitoneal organ.
2. External duodenal diverticuli are common but internal duodenal diverticuli are uncommon and rare.
3. Annular pancreas is a uncommon developmental anomaly of pancreas. Pancreatic tissue surrounds second part of the duodenum in this condition. Crocodile mouth like appearance of pancreatic tissue surrounding duodenum is characteristic.
4. Association of annular pancreas and duodenal diverticuli or duodeno-duodenal intussusception is rare (15 cases in English literature). Most cases reported are external duodenal diverticuli (with annular pancreas) and not internal duodenal diverticulum, as seen in our case.
5. Association with ovarian torsion appears incidental.

Disclosures: Nothing to disclose for author.

Abstract ID: 336

ABSTRACT TITLE: PRE SACRAL MASSES – A MULTIMODALITY IMAGING REVIEW

PRESENTING AUTHOR: SALONI DAGAR

CO-AUTHOR: DR NATASHA GUPTA, DR LALENDRA UPRETI, DR SHREA GULATI, DR SHIVAM RASTOGI, DR ROBIN GOEL

LEARNING OBJECTIVES: To understand the anatomic boundaries of the presacral space. To illustrate the spectrum of presacral masses and categorizing them on the basis of their origin To formulate a systematic clinico-radiological approach for the diagnosis of presacral masses.

BACKGROUND: The Pre-sacral space contains a variety of tissues. A spectrum of lesions originating from these tissues, ranging from congenital/developmental to neoplastic- benign or malignant, are described in
literature. There is vast list of differential diagnosis and key imaging findings are important in clinching the diagnosis or narrowing down the differential diagnosis.

MATERIALS AND METHODS: Patients presenting with signs and symptoms suggestive of lesions of presacral space were evaluated using suitable and available modalities.

IMAGING FINDINGS: A variety of pathological processes were seen ranging from congenital, inflammatory to neoplastic- benign or malignant. The imaging findings were recorded and presented in the form of a pictorial review. Some of the lesions that shall be discussed in this review are:

Osteochondral Giant cell tumour Ewing’s sarcoma Neurogenic Meningocele Chordoma Mesenchymal Gastrointestinal stromal tumour Lymphoma Developmental/congenital Dermoid cyst Teratoma

CONCLUSION: Imaging combined with clinical examination plays an important role in making a diagnosis and differentiating benign from malignant. Knowledge of imaging features and spectrum of these lesions can positively affect patient care and management.

Abstract ID:384

ABSTRACT TITLE: SITUS REVISITED: A RADIOLOGICAL EVALUATION OF SITUS ABNORMALITIES
PRESENTING AUTHOR: RANJITHA KULKARNI
CO-AUTHOR: DR.VIJAY KUMAR K R

LEARNING OBJECTIVES:
- Recognize the variable appearances of situs abnormalities using different imaging modalities.
- Understand the overlapping spectrum of expected anatomic features of asplenic and polysplenic patients.
- Be able to comprehend terminologies, classification and imaging approach of situs abnormalities.

Background: Although the human body has a symmetrical appearance when viewed externally, most internal organs are asymmetrical with respect to the left and right sides. The term situs indicates the position of the heart and viscera relative to the midline. Situs solitus refers to the normal position of the heart and abdominal viscera with the cardiac apex, spleen, stomach and aorta located on the left and the liver and inferior venacava on the right. The abnormality in this normal asymmetry leads to conditions known as situs inversus and situs ambiguous. Knowledge and understanding of these pathological asymmetries is utmost important to achieve a correct diagnosis and appropriate management plan.

Imaging Findings:
- Situs solitus with dextrocardia- normal position of all organs with right sided cardiac apex.
- Situs inversus with dextrocardia- mirror image of situs solitus.
- Situs inversus with levocardia- mirror image location of abdominal viscera except for cardiac apex.
- Situs ambiguous with left isomerism-bilateral bilobed lung, cardiac anomalies, central bridging liver, polysplenia with malrotation of bowel.
- Situs ambiguous with right isomerism-bilateral trilobed lung, asplenia, transverse liver and severe cardiac anomalies.
Conclusion: Developmental abnormalities unexpectedly found on imaging studies represent a radiological challenge. Careful analysis and understanding is mandatory as anatomical miss arrangements can cause confusion in differential diagnosis and severe clinical implication during invasive procedures.

Abstract ID: 442

ABSTRACT TITLE: ABDOMINAL IMAGING FINDINGS IN VON HIPPEL - LINDAU DISEASE- A CASE REPORT

PRESENTING AUTHOR: SHRUTI KUMAR

CO-AUTHOR: UMA DEBI, NIRANJAN KHANDELWAL

Learning Objectives: Von Hippel-Lindau disease is a rare autosomal dominant familial tumor syndrome characterized by the development of numerous benign and malignant tumors in different organs due to mutations in the VHL tumor suppressor gene on chromosome 3. The various lesions include renal cysts which tend to be bilateral and multiple, renal angiomyolipomas, and renal cell carcinomas, adrenal phaeochromocytomas, extra adrenal paragangliomas, pancreatic cysts, pancreatic neuroendocrine tumors, pancreatic serous cystadenomas, and pancreatic adenocarcinomas, hepatic cysts and epididymal cysts. CNS imaging findings include CNS haemangioblastomas, choroid plexus papillomas and endolymphatic sac tumors.

Background: Here we present a 19 year old boy who presented with pain abdomen for the past 4 months. Ultrasonography revealed pancreatic and renal cysts following which CECT abdomen was advised in view of suspicion of Von Hippel-Lindau disease. CECT abdomen was done on a 128 slice Siemens scanner which showed thin-walled cystic lesions of fluid density replacing the pancreatic parenchyma, with no septations/enhancing soft tissue within. Multiple cysts of varying sizes were also seen in bilateral renal parenchyma with few of the cysts in bilateral kidneys showing thick septations~4mm and ill defined enhancing soft tissues. In addition, cystic lesions of varying sizes were also seen involving bilateral seminal vesicles.

Imaging Findings: Based on CT findings, diagnosis of Von Hippel-Lindau disease with possibility of bilateral Renal Cell Carcinoma (in view of thick septations and enhancing soft tissue) was given. FNAC from the renal lesions was done and diagnosis of bilateral renal cell carcinoma was given.

Conclusion: Renal cell carcinoma occurs in nearly one third of patients with Von Hippel-Lindau disease and is a frequent cause of morbidity and mortality. The age of presentation is also younger than those who contract sporadic forms of renal cell carcinoma. Bilateral and multicentric lesions are more common than sporadic forms.
Abstract ID: 504

**ABSTRACT TITLE**: WANDERING SPLEEN: UNUSUAL PRESENTATION WITH TORSION AND COMPLETE INFRACTION

**PRESENTING AUTHOR**: SWATI CHABARWAL

**CO-AUTHOR**: DR. KUSHAL GEHLOT, DR. NARENDRA KARDAM

**Learning Object**: To diagnose and suspect wandering spleen and its complications as a cause of pain abdomen.

**Background**: Wandering spleen is a rare entity with a reported incidence of <0.5%, in which the spleen is attached by a long, vascular pedicle and is without its usual peritoneal attachments. The spleen can be found in any part of the abdomen or pelvis because of the length of its pedicle. The abnormally fixed spleen can twist on its vascular pedicle, creating ischemia that may progress to infarction if not promptly treated. We report a 30 years old young married female presented with a complaint of swelling in the lower abdomen since 2 months.

**Ultrasound**: Transabdominal USG revealed a large abdomino-pelvic cystic lesion with internal echos.

**CECT Abdomen-pelvis**: The spleen was not seen at its native anatomical position (anterior to the left psoas and lower pole of left kidney). A well-defined peripheral enhancing cystic lesion with non-enhancing material in it seen in peritoneal cavity in umbilical and hypogastric region with a twisted vascular pedicle with pancreatic tail attached to its mid part.

**Conclusion**: Although rare entity but with the help of MDCT can be diagnosed preoperatively.

Abstract ID: 519

**ABSTRACT TITLE**: VASCULAR COMPLICATIONS OF PANCREATITIS- KNOW YOUR NEIGHBOURS

**PRESENTING AUTHOR**: SHREYAS RAO G

**CO-AUTHOR**: DR. VEDARAJU K.S., DR. ARUL T DASAN, DR. SAMARTH S GOWDA

**AIMS & OBJECTIVES**:

- To present a pictorial review of vascular complications of pancreatitis.
- To emphasize the importance of radiological investigations in the management of those cases.

**BACKGROUND WITH IMAGING FINDINGS**: 128 slice CT guided evaluation of patients presenting with recurrent pancreatitis or clinical suspicion of acute necrotizing pancreatitis were subjected to examination. Subjects with vascular complications were undertaken for the study.
ARTERIAL COMPLICATIONS

- Erosion with pseudoaneurysm formation
- Rupture of pseudoaneurysm into hollow organ
- Splenoportal fistula formation.
- Hemosuccus pancreaticus
- Bleeding within the pseudocyst
- Complex vascular malformations

VENOUS COMPLICATIONS

- Splenic vein thrombosis.
- Portal vein thrombosis
- Sinistral portal hypertension

Conclusion: Patients with chronic pancreatitis associated with necrosis and pancreatic collections were more likely to be affected by vascular complications. Venous complications were numerous whereas arterial complications were dramatic.

Abstract ID: 528

ABSTRACT TITLE: DOPPLER ULTRASOUND OF HEPATIC VESSELS IN THE DIAGNOSIS OF CIRRHOSIS OF THE LIVER.

PRESENTING AUTHOR: MD MERAJ

CO-AUTHOR: (None)

AIM: To evaluate the role of Ultrasound-Doppler in the hemodynamic study of hepatic vessels in the liver cirrhosis.

Method:
- Analytic cross-sectional study that measures the velocimetric parameters of hepatic vessels in cirrhotic patients and in non-cirrhotic patients.
- Velocimetric parameters of the hepatic artery, the portal vein, and the hepatic veins will be measured in 40 cirrhotic patients and 10 non-cirrhotic patients.
- Examination will began with a study of the hepatic morphology per subcostal, intercostal transverse and sagittal sections.
- Filter will be set between 50 and 100 Hz. The pulse repetition frequency (PRF) is manually set to operate according to the quality of the resulting plot and the velocities will be observed.
- The firing angle will be set between 30 and 60.
- Doppler gate is possible as possible in the center of the vessel to be surveyed.
- All the recordings were made in the subject being in apnea in the middle of breathing. The exploration will be done for each of the hepatic vessels.
- Portal vein size, direction, spectrum, average velocity, maximum systolic velocity, diastolic velocity (D).
- Hepatic artery average velocity, maximum systolic velocity, diastolic velocity, resistance index, Pulse index.
- Hepatic veins Caliber, Spectrum, Flow.
Conclusions:

- Statistically significant change in hemodynamic parameters of liver vessels in the cirrhotic patient compared with the non-cirrhotic subject.
- The size of the portal vein; the hepatic artery average and systolic velocities, the resistance and the pulse index had increased in the cirrhotic.
- The systolic and diastolic average velocities of the portal vein and the caliber of the hepatic veins, on the other hand, had decreased in cirrhotic patients.
- The measurement of hemodynamic parameters of hepatic vessels is a sensitive and specific argument for the diagnosis of cirrhosis. It can and must rightly be part of the diagnosis arsenal of cirrhosis.

Abstract ID:603

**ABSTRACT TITLE**: VENACAVAL ANOMALIES-A CASE SERIES

**PRESENTING AUTHOR**: SWATI CHABARWAL

**CO-AUTHOR**: DR. KUSHAL GEHLOT, DR. NARENDRA KARDAM

**Learning Object**: To Diagnose venacaval anomalies and imaging appearances, to suggest the presence of frequently associated other abnormalities and In planning of vascular intervention or surgery.

**Background**: The embryogenesis of the venacavae is a complex process by formation of several anastomoses between the paired embryonic veins which results in numerous variations. Persistent left superior vena cava (PLSVC) is the most common anomaly involving SVC. Left IVC, Duplicated IVC, Azygos continuation of IVC, absent infrarenal IVC are common variations involving IVC. We report 4 cases of venacaval anomalies, diagnosed in our department in patients referred for various ailments.

**Imaging findings**:

**CECT Abdomen**: Case:1 A 52 yr old woman came with fever and abdominal pain. CT scan revealed Liver abscess with additional finding of double IVC.

Case: 2 A 40 year old male presented with complaints of dyspnea. CT scan revealed situs ambiguous, interrupted IVC and duplicated SVC.

Case: 3 A 8 year old boy came with complaints of dyspnea. CT revealed cardiomegaly with persistent left SVC(Double SVC) and Echocardiography finding of ASD, which is commonly associated with left SVC.

Case: 4 A 65 year old male patient was referred for CT coronary angiography which revealed an isolated Left SVC with absent right SVC.

**Conclusion** - A working knowledge of venacaval anomalies is essential for avoiding diagnostic pitfalls and preoperatively valuable correct diagnosis for the operating surgeon.
Abstract ID:614

ABSTRACT TITLE: INTRAABDOMINAL FOCAL FAT INFARCTION DUE TO TORSION OF FALCIFORM LIGAMENT APPENDAGE

PRESENTING AUTHOR: AMISH AGGARWAL

CO-AUTHOR: DR. ROHIT AGGARWAL

Aims and Objectives: Intraabdominal focal fat infarction (IFFI) due to torsion of falciform ligament appendage is an extremely rare condition that causes severe abdominal pain and inflammation. Computed tomography (CT) scan is highly sensitive to establish the diagnosis. This can be managed conservatively with anti-inflammatory analgesia and the early recognition of torsion may prevent operative intervention. We report a case of torsion of the fatty appendage of the falciform ligament leading to IFFI and describe its imaging characteristics on CT scan.

Materials and methods: A 56-year-old female presented with complaint of epigastric pain on and off with anorexia. It was not associated with vomiting or diarrhoea. The patient had history of sealed gastric perforation. USG and CT was done.

Results: The abdominal ultrasound showed heterogenous perigastric inflammatory mass. The mass was not moving with respiration. On doppler there was no colour uptake seen.

The CT revealed an ovoid hypodense fat density area with hyperattenuating peripheral rim in the epigastrium in right paramedian region, just below the anterior abdominal wall which was lying anterior to the left lobe of liver and anteromedial to the falciform ligament. Mild inflammatory fat stranding was seen around it. These radiological signs were suggestive of IFFI due to torsion of falciform ligament appendage.

Conclusion: Although IFFI due to torsion of falciform ligament is rare, but it should be considered as a part of a differential diagnosis when patient presents with atypical right upper quadrant pain or epigastric pain. It can be diagnosed accurately with multiplanar reconstructed CT and can save the patient from a surgery.

Abstract ID:622

ABSTRACT TITLE: A RARE CASE OF ANOMALOUS AMPULLA OF VATER IN THIRD SEGMENT OF DUODENUM ASSOCIATED WITH CHOLANGITIS AND GALL BLADDER CARCINOMA

PRESENTING AUTHOR: TAPENDRA NATH TIWARI

CO-AUTHOR: DR. N.K.KARDAM

Learning objectives: To analyse gynecological and reproductive morbidities associated with unicornuate uterus with noncommunicating rudimentary horn.

Background: The major papilla of Vater is normally located on posteromedial wall of second part of duodenum, formed by opening of both CBD and MPD surrounded by longitudinal and circular muscles that comprises sphincter of Odii. Sometimes, the ampulla of Vater can be located in aberrant sites along the duodenum, mainly within the, pyloric channel, duodenal bulb or the fourth portion, and it has also been found with a much lower frequency in third segment. We present a case of ectopic opening of ampulla of Vater into third segment of duodenum associated with cholangitis and gall bladder carcinoma, which is a very rare association reported till date.
 Imaging finding: USG revealed an echocomplex mass in gallbladder fossa region and adjacent liver parenchyma, CBD was dilated with few echodense shadows at terminal part and appeared to open in third segment of duodenum. Abdominal CT showed abnormally enhancing mass in fundus of GB, infiltrating the adjacent segment of liver, dilated CBD with thickened enhancing wall which appeared to open in third segment of duodenum along with MPD. MRCP 3D image, showing CBD and MPD opening in third segment of duodenum. Finally, endoscopy was done, showed that there was no opening in second segment of duodenum, instead Ampulla of Vater was opening abnormally into the third segment.

Teaching points: This anomaly has high risk of perforation or bleeding during endoscopic sphincterotomy because the intramural portion of the duct is not fully developed. Thus, customized treatment is needed for each patient, and long-term efficacies of endoscopic and surgical treatments should be compared.

Abstract ID:640

ABSTRACT TITLE : UNCOMMON IMAGING MANIFESTATIONS OF ABDOMINAL TUBERCULOSIS
PRESENTING AUTHOR : PANKAJ GUPTA
CO-AUTHOR : SURESH KUMAR, VISHAL SHARMA, HARSHAL MANDAVDHARE, NARENDER DHAKA, SAROJ K SINHA, USHA DUTTA, RAKESH KOCHHAR

Learning Objective: To describe the uncommon imaging presentations of abdominal tuberculosis (TB) excluding genitourinary TB.

Background: Despite the advances in the healthcare, TB still remains an important public health problem. This is relevant to both the developing countries as well as the immunocompromised population in the developed world. The respiratory system is the most common site of involvement, although any organ system may be affected. Abdominal involvement occurs in 11-12% patients. The clinical features of abdominal TB are non-specific. Imaging plays an important role in the diagnosis of abdominal TB. Although a few imaging features strongly favor the possibility of TB, abdominal TB is a greater masquerader.

Imaging findings: The uncommon imaging presentations of hepatosplenic, biliary, pancreatic, gastrointestinal (GI) and peritoneal TB were reviewed. The uncommon imaging features of hepatosplenic TB include serohepatic form and masses mimicking other neoplasms. TB of the gallbladder and tubercular cholangitis is uncommon. Diffuse enlargement of the pancreas, dilatation of the pancreatic duct and ductal calcification are uncommon findings of pancreatic TB. Mass-like lesions, sinuses, fistulae, comb sign and skip lesions are uncommon features of GI TB. A cocoon is an uncommon form of peritoneal TB.

Conclusion: Abdominal TB is a great masquerader. Knowledge of the uncommon presentations may allow an early diagnosis.
Abstract ID:642

ABSTRACT TITLE : CONTRAST-ENHANCED ULTRASOUND IN THE IMAGING OF HEPATOBILIARY SYSTEM AND GASTROINTESTINAL TRACT

PRESENTING AUTHOR : PANKAJ GUPTA

CO-AUTHOR : MAYANK UJJALIYA, VISHAL SHARMA, NARENDER DHAKA, HARSHAL MANDAVDHARE

Learning objective: To describe the hepatobiliary and gastrointestinal applications of contrast-enhanced ultrasound.

Background: Contrast-enhanced ultrasound (CEUS) gives vascular information that is useful in characterizing lesions in the hepatobiliary system and gastrointestinal tract. Additionally, it gives information about the mural and mesenteric blood flow that allows the determination of disease activity in patients with inflammatory bowel disease. In solid tumors, it allows objective response assessment based on the enhancement characteristics. CEUS has been shown in many meta-analyses to have a diagnostic accuracy equivalent to CT and MRI scans for evaluation of abdominal organs.

Imaging findings: Liver imaging with CEUS allows accurate diagnosis of hemangioma as well as other arterial hypervascular lesions including focal nodular hyperplasia. The findings parallel those seen on multiphase CT or MRI. CEUS had multiple roles in hepatocellular carcinoma including screening, diagnosis, guiding accurate biopsy from viable area and assessment of the adequacy of tumor ablation. In the biliary system, it allows differentiation of inflammatory from malignant gallbladder wall thickening as well as accurate differentiation of stone, sludge or clots from soft tissue. CEUS also allows characterization of the splenic lesions. It plays a significant role in diagnosis as well as management of inflammatory bowel disease. Based on the degree and patterns of enhancement, it allows differentiation of active inflammatory disease from inactive disease, Extraintestinal manifestations, particularly phlegmon and abscesses can be accurate diagnosed based on CEUS characteristics. Bowel masses, intestinal ischemia, as well as appendicitis and diverticulitis can be diagnosed confidently based on CEUS findings. Pancreatic CEUS is quite helpful in the differentiation of pancreatic adenocarcinoma, neuroendocrine tumor and mass-forming chronic pancreatitis.

Conclusion: CEUS is an important tool for the evaluation of various hepatobiliary and gastrointestinal disorders.

Abstract ID:673

ABSTRACT TITLE : RARE CASE OF PSEUDOMYXOMA PERITONEI

PRESENTING AUTHOR : ANURAJ B N

CO-AUTHOR : (1) DR. NANJARAJ C P 2) DR. RAJENDRA KUMAR N L 3) DR. SANJAY P 4) DR. KAVYASHREE

LEARNING OBJECTIVES: To study the imaging features of pseudomyxoma peritonei on ultrasonography and computed tomography

Background:

- A 74 yr old female came with complaints of abdominal distension since 3 weeks and pain abdomen since 2 weeks.
- Ultrasound PHILIPS AFFINITI 70 and CT (Hi-Speed Dual Slice GE Healthcare) were used for diagnosis
Imaging findings:

- Ultrasonography of abdomen revealed gross ascites with multiple tiny cystic structures and sheet like echogenic particles. Scalloping of liver margin was also seen. Intramural calcification of atrophic uterus was seen and the ovaries were not visualised.
- CECT abdomen revealed gross low attenuation (15 to 30HU) ascites with scalloping of liver margins and centering of bowel loops. Mild bilateral pleural effusion was also seen. Ovaries were not visualised.

Conclusion: Pseudomyxoma peritonei is a rare condition with an incidence of 1-2 per million and slight female preponderance. Imaging features include discrete low-density cystic masses with gross ascites in peritoneal cavity. Scalloping of the visceral surfaces of the intraperitoneal organs is an important diagnostic finding that helps differentiate pseudomyxoma from simple ascites. In many cases, it may be impossible to identify the originating appendicular / ovarian mucinous low-grade neoplasm or cystadenocarcinoma because, after rupture, the residual appendix / ovary may be small or fibrosed. Patients have prolonged survival if an aggressive surgical approach is taken in the form of debulking which includes right hemicolectomy, partial resection of the greater omentum, hysterectomy with bilateral salpingo- oophorectomy.

Abstract ID:686

ABSTRACT TITLE: ILLUSTRATING THE SPECTRUM OF CT IMAGING IN ABDOMINAL TUBERCULOSIS.
PRESENTING AUTHOR: MAHESH KARANJI
CO-AUTHOR: DR.PARATHASARATHY K R, DR.KISHAN A BHAGWATH, DR. ROYCE D’SA, DR. KRISHNAPRIYA RAJ, DR.AISHA ALTHAF, DR. VINAY DEV

AIM: To study the imaging spectrum in abdominal tuberculosis.

OBJECTIVES: The objectives of our study was to illustrate the spectrum of cross sectional CT imaging findings in abdominal tuberculosis.

MATERIALS AND METHODS: The study was performed from October 2016 to November 2017 on 30 patients who presented with abdominal pain to SSIMS &RC, DAVANGERE

They were evaluated clinically and underwent Plain and contrast study of the abdomen and pelvis using a 16 slice Multidetector CT and IV Ultravist (non ionic) contrast was used.

RESULTS: In our study 30 patients who underwent CECT abdomen, Gastro-intestinal tuberculosis (42%), peritoneal tuberculosis (20%), tuberculosis of mesentry and its contents (10%), retroperitoneal lymph nodes involvement (16%) tuberculosis of solid abdominal viscera (12%). In our study peritoneal tuberculosis was found to be the most important etiological factor followed by peritoneal tuberculosis.

Conclusion: Abdominal tuberculosis is difficult to diagnose due to its varied presentation, and both the symptoms and imaging features can mimic several other important conditions.

Although there are no pathognomonic imaging findings, several characteristic imaging features can be seen.

A high index of suspicion and a recognition of the common imaging findings can lead to an early diagnosis and reduction in the long-term morbidity and mortality.

We have presented the patho-physiology of abdominal TB and common imaging appearances. In addition we have detailed characteristic features which can aid in the differentiation of TB from other important conditions.
ABSTRACT TITLE: BOWEL WALL RECURRENCE IN A RETROPERITONEAL LIPOSARCOMA.
PRESENTERING AUTHOR: SHEHBAZ ANSARI
CO-AUTHOR: DR. AYUSH JAIN

Learning Objective:

- To be familiar with the subtypes of liposarcoma
- To know the prognosis, recurrence and the usual form of presentation in recurrence.

Background/Imaging Findings: Liposarcoma is the most common retroperitoneal sarcoma and second only to undifferentiated pleomorphic sarcoma, in the whole body. It usually presents in the sixth-seventh decade of life, affecting both sexes equally. The WHO has divided it into four types: well differentiated, de-differentiated, myxoid and pleomorphic. However, some consider well differentiated and de-differentiated as the two ends of the same spectrum. The probability of recurrence is dependent upon tumour subtype, grade, type of resection (R0/R1/R2) and margin status. The usual site of recurrence is retroperitoneum unless there was a breach in the fascial planes during primary surgery. Recurrence due to distant metastasis is rare. Here, we would like to present a case of de-differentiated retroperitoneal sarcoma, who was operated 2 years back, who has now presented with subacute intestinal obstruction. On imaging, the cause for obstruction found to be a jejuno-jejunal intussusception with the lead point being bowel wall liposarcoma, the latter was confirmed intra-operatively as well as on histopathology (de-differentiated liposarcoma). What remains to be known is whether the second tumour was a recurrence of the first or a second primary. While there is no known syndrome which predisposes to multiple liposarcomas, bowel wall metastasis or local invasion by a retroperitoneal sarcoma is also not yet seen. However, multiple cases of primary bowel wall liposarcoma has been reported in the literature.

Conclusion:

- Delayed recurrence in a case of retroperitoneal sarcoma is a well-known phenomenon. Hence, these patients should be on lifelong surveillance.
- Complete resection with negative tumour margin (R0 resection) is the only thing which can be done, as tumour subtype and grade is not alterable, and is of utmost importance to prevent local recurrence.

ABSTRACT TITLE: A COMPUTED TOMOGRAPHY CROSS SECTIONAL IMAGING TO ILLUSTRATE THE SPECTRUM OF ABDOMINAL LYMPHOMA.
PRESENTERING AUTHOR: J KRISHNA PRIYA RAJ
CO-AUTHOR: DR.PARTHASARATHY K R (HOD AND PROFESSOR), DR . ROYCE D’S, DR. MAHESH KARANJI, DR. VEERESH PURAD

Aim and Objective: To illustrate the spectrum of abdominal lymphoma using computed tomography cross sectional imaging.

Materials and Methods: A prospective study of 48 patients, who were suspected to have abdominal lymphoma was carried out in the Department of Radiodiagnosis, S.S Institute Of Medical Sciences and research centre a period of one year (from June 2017 to June 2018). Patients including men and women
were referred from the surgery department. These patients were then studied using contrast-enhanced computed tomography as an imaging modality with Toshiba 16 slice Activion.

**Results:** Out of suspected 48 cases who underwent contrast-enhanced CT scan, we had 22 cases of retroperitoneal lymphoma, 5 cases of stomach lymphoma, 2 cases of small bowel loop lymphoma, 2 cases of large bowel lymphoma, 5 cases of splenic lymphoma, 10 cases of peritoneal lymphoma and 2 adnexal lymphomas.

**Conclusion:** Abdominal lymphoma is an uncommon disease with a wide variety of imaging appearances. It mimics other neoplastic or inflammatory conditions. Although there is no characteristic appearance, features such as a bulky mass or diffuse infiltration with preservation of fat planes, an absence of luminal obstruction, multiple site involvement, and associated bulky lymphadenopathy are suggestive of lymphoma.

**Discussion:** Contrast-enhanced computed tomography is extremely useful in detecting and staging the disease. Although a definitive diagnosis is possible only with biopsy, it is important to consider lymphoma in the presence of certain imaging appearances in the appropriate clinical setting for the correct diagnosis, accurate staging, and optimal management.

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**Abstract: DEMONSTRATION OF RADIOLOGICAL SIGNS OF RETROPERITONEAL MASS ON CROSS SECTIONAL IMAGING-PICTORIAL REVIEW**

**Presenting Author:** KAVIRAJAN K

**Co-author:** MK MITTAL

**Learning objectives:** To demonstrate the radiological signs of retroperitoneal mass on cross section imaging and to differentiate primary retroperitoneal mass and mass arising from the retroperitoneal organs. Primary retroperitoneal mass displaces the retroperitoneal organs (pancreas, duodenum, ascending colon and descending colon, ureter, kidney and adrenal glands) anteriorly. Mass arising from the retroperitoneal organs often shows specific signs such as beak sign or phantom organ sign or embedded organ sign or prominent feeding artery sign.

**Background:** We Retrospectively reviewed 18 cases of retroperitoneal mass on MDCT and studied radiological signs in all cases. Renal masses – 6, Adrenal masses- 3, lymph nodal mass- 4, sacrococcygeal teratoma – 1, Epidermoid cyst-1, primary retroperitoneal mass- 2 and a plexiform neurofibroma

**Imaging Findings:** Anterior displacement of the normal retroperitoneal structures such as pancreas, duodenum, Inferior vena cava, right renal vein, Aorta, common iliac artery, ascending colon, descending colon and rectum by the retroperitoneal masses was seen in many cases in our study. Ball type of renal mass is observed in 4 patients and all of them showed beak sign. Phantom organ sign is seen in 3 patients of adrenal mass. Embedded organ sign is seen in IVC leiomyosarcoma. Floating aorta sign in lymph nodal metastasis from Spindle cell rhabdomyosarcoma of testis and Non-Hodgkin lymphoma and widening of the neural foramina in plexiform neurofibroma. Sacrococcygeal teratoma and epidermoid cyst showed widening of the presacral space.

**Conclusion:** Mass located in the retroperitoneal space will cause anterior displacement of the normal anatomic structures of retroperitoneum. When specific signs such as beak sign or phantom organ sign or embedded organ sign or prominent feeding artery sign are not present, the lesion is more likely a primary retroperitoneal mass.
Abstract ID:742

ABSTRACT TITLE : DISSEMINATED INTRAPERITONEAL HYDATID CYSTS
PRESENTING AUTHOR  : PURAN
CO-AUTHOR : DR.KUSHAL GEHLOT

Objective: The purpose of this poster essay is to illustrate the radiological findings of disseminated intraperitoneal cysts with emphasis on pitfalls, diagnostic difficulties and differential diagnosis. We have reviewed USG and CT feature of disseminated intraperitoneal hydatid cysts.

Method: Patient presented with abdomen pain & distension, underwent USG NCCT & CECT abdomen in the department of radio diagnosis ,RNT Medical College ,Udaipur.

Results: USG revealed hepatomegaly with multiple anechoic cystic lesions of varying sizes disseminated in liver, spleen, mesentry and peritoneal cavity with mild amount of free fluid in abdominal cavity. On NCCT & CECT multiple rounded hypo dense lesions of varying sizes were seen in liver, spleen, mesentry and peritoneal cavity.

Conclusion: Hydatid disease mainly affects the liver followed by lung and rarely occur in rest of the body. Imaging modalities USG and CT scan are helpful in diagnosing the disease. The reliability of each methods depends on the cyst’s location in the body.

Abstract ID:755

ABSTRACT TITLE : IMAGING OF RIGHT ILIAC FOSSA PAIN
PRESENTING AUTHOR  : ARYA SASIKUMAR
CO-AUTHOR : DR.E.A.PARTHASARATHY

Learning Objectives: Causes for right iliac fossa (RIF) pain, radiological findings and to narrow the differential diagnosis.

Background: The RIF is the most common location for abdominal pain. It is approximately one-third of all abdominal pain, or up to half of acute abdominal pain. Although acute appendicitis is the most common condition, there is a large differential diagnosis, and in up to one-third of cases the cause is not apparent. Clinical assessment aids little to the diagnosis of RIF pain.

Imaging Findings:

- Appendicitis- Thickened appendix, fat stranding without luminal air.
- Epiploic appendagitis - Fat stranding with ovoid central area of preserved fat and thrombosed vessel.
- Typhilitis- Thickened caecal wall.
- Inflammatory bowel disease - Thickened wall with enhancement, skip areas of involvement, mesenteric inflammation and adenopathy.
- Right sided diverticulitis- Thickened diverticulae wall with enhancement and fat stranding.
- Omental torsion / infarction - Fat stranding, thickening and swirling of omental vessels.
- Mesenteric adenitis - Enlarged mesenteric lymph nodes.
- Renal colic– Calculus obstruction causing secondary back pressure changes.
Tubo-ovarian pathology and ectopic pregnancy in females - Direct demonstration of ectopic fetus and empty endometrial cavity, tubo-ovarian abscess, ruptured ovarian cyst, haemorrhage, ovarian or fallopian tube torsion.

Conclusion: With developments in ultrasound and Computed tomography, vital information can be obtained for the investigation of RIF pain. In many cases, surgery may be avoided, while in others a life-saving surgical procedure may be performed without delay.

Abstract ID: 795

ABSTRACT TITLE: DILATED INFERIOR MESENTERIC VEIN MIMICKING DOUBLE INFERIOR VENA CAVA

PRESENTING AUTHOR: PAYAL LAKHWANI

CO-AUTHOR: DR. I. VENKATRAMAN

Purpose: Incidental finding on routine ultrasound abdomen performed on a 50 yr old male patient with normal liver and spleen examination.

Materials and methods: USG abdomen was performed initially followed by MRI Abdomen. CT was not done as the patient was not willing because of previous history of contrast reaction.

Results: USG abdomen showed a dilated vessel running parallel to abdominal aorta and had venous flow on colour Doppler, with three vessel view on the transverse section. Proximal and distal ends of the vessel could not be clearly assessed and we presumed the vessel to be a double inferior vena cava. On MRI study the vascular structure to the left of aorta turned out to be the dilated and tortuous inferior mesenteric vein with maximum diameter of 1.4cm. It was seen extending from the perirectal region cranially and joining the splenoportal confluence in the upper abdomen. Both the common iliac veins were seen continuing as the IVC normally.

Conclusion: The massively dilated inferior mesenteric vein was an incidental finding and gave the impression of a double Inferior Vena Cava. We would like to emphasize the importance of tracing the iliac veins to IVC as it would have helped us avoid the mis-diagnosis of double IVC on ultrasound. Knowledge of the anatomy and course of these uncommon Portosystemic collaterals is essential for interventional radiologists and surgeons to avoid inadvertent vascular injury during the procedures.

References:


Abstract ID:834

ABSTRACT TITLE : IMAGING OF SMALL BOWEL TUMORS
PRESENTING AUTHOR : HARSHA KOPURU
CO-AUTHOR : DR . SMITI SRIPATHI

Learning Objectives: Typical imaging features of small bowel tumours on MDCT.

Background: Primary malignant neoplasm of the small bowel are rare. Malignant tumours often present late symptoms resulting in a poor prognosis. Early detection of small bowel neoplasms is desirable but challenging for both clinicians and radiologists. Multidetector CT (MDCT) produces high-resolution cross-sectional imaging of the abdomen and the small bowel. It allows multiplanar visualisation of small bowel tumours, demonstrates signs of small bowel obstruction as well as the mural and extramural extent of small bowel malignancies. This aids planning for surgical resection. In addition, liver metastases or peritoneal seeding can be detected with CT.

Imaging findings: Histopathologically proven cases of small bowel tumours. Small bowel neoplasms have characteristic features at computed tomography (CT) that may aid in making a diagnosis.

- Small bowel adenocarcinoma – Circumferential wall thickening with loss of mural stratification noted involving short segment of bowel loop.
- Lymphoma – Aneurysmal dilatation of involved segment of bowel loop with significant mesenteric and retroperitoneal lymphadenopathy.
- Carcinoid tumor – Circumferential enhancement and wall thickening of involved segment of bowel loop with hyper vascular metastasis.
- Gastrointestinal stromal tumors (GISTs) – Large extra luminal heterogenously enhancing mass lesion seen arising from segment of bowel loop.

Conclusion and/or Teaching points: Systematic pattern approach can be used to narrow the differential diagnosis when an abnormal small-bowel loop is detected on MDCT.

Abstract ID:849

ABSTRACT TITLE : IMAGING OF SMALL BOWEL TUMOURS - PICTORIAL REVIEW
PRESENTING AUTHOR : ABHINAVA D N SINGH
CO-AUTHOR : DR LALENDRA UPRETI, DR NATASHA GUPTA, DR KAMAL PANT, DR ROBIN GOEL, DR DEEPAWALI MALLA

Learning Objectives: The aim of this review is to illustrate the cross-sectional imaging features of various histologic subtypes of small bowel tumours.

Background: Small bowel malignancies are rare and associated with high mortality as they are diagnosed late in the course because of the nonspecific symptoms they produce. They are usually not detected by conventional endoscopy, however modern multidetector computed tomography permits accurate diagnosis, pre-treatment staging and follow up in these patients.

Imaging Findings: Patients who were referred to department of radiology with clinical suspicion of small bowel disease were imaged using ultrasonography, barium studies and CECT abdomen. The cases where small bowel tumours were detected were included in the study. Some of the tumours which shall be
discussed in this review include:

1. Adenocarcinoma
2. Gastrointestinal stromal tumour
3. Carcinoid
4. Lymphoma
5. Metastasis
6. Hemangioma
7. Lipoma
8. Complicated Lipoma
9. Adenoma
10. Complicated Adenoma

**Conclusion:** Imaging is essential for accurate identification and characterization of small bowel tumors. It is of immense value for guiding further evaluation and treatment. A variety of benign and malignant tumors involving the small bowel were seen. The imaging findings were recorded and are presented in form of a pictorial review.

**Abstract ID:858**

**ABSTRACT TITLE:** MULTIDETECTOR COMPUTED TOMOGRAPHY EVALUATION OF EMPHYSEMATOUS CONDITIONS OF ABDOMEN

**PRESENTING AUTHOR:** DISHA MITTAL

**CO-AUTHOR:** DR PUNEET GUPTA

**Learning Objectives:**

- To discuss the role of multidetector computed tomography (MDCT) in its early detection and treatment of emphysematous conditions of abdomen.
- To describe the predisposing conditions, clinical manifestations and characteristic radiological images of emphysematous conditions involving the gallbladder, liver, stomach, pancreas, renal system, spinal canal etc.

**Background:** Abnormal air in the abdomen can be iatrogenic, due to infections, trauma or tissue necrosis. However emphysematous (gas-forming) infections of the abdomen is the most potentially life-threatening condition that require aggressive medical or surgical management. MDCT is highly sensitive and specific for detection of this abnormal air and also detects its cause, anatomical location and extent, therefore helpful in differentiating benign source from life threatening conditions.

**Imaging Findings and Details:** Emphysematous infections of the abdomen has a strong association with patients having poorly controlled diabetes mellitus. E coli is the causative bacterial source in approximately 70% of the cases. Common emphysematous conditions of the upper abdomen includes:

- Hepatic abscess
- Emphysematous cholecystitis
- Emphysematous pancreatitis
Conclusion: Gas-forming infective conditions within the abdomen are potentially life-threatening. There rapid progression to sepsis will occur if early therapeutic intervention not done. MDCT is the imaging modality of choice and is both highly sensitive and specific. Therefore, with regard to emphysematous infections, appropriate radiologic evaluation combined with accurate interpretation of findings will be life saving in most cases.

Abstract ID:890

ABSTRACT TITLE: MALAKOPLAKIA OF THE GALLBLADDER
PRESENTING AUTHOR: DEBRAJ SEN
CO-AUTHOR: (None)

Learning Objectives: Gallbladder malakoplakia of is a rare entity that mimics carcinoma gallbladder and xanthogranulomatous cholecystitis.

Background/Introduction: Gallbladder malakoplakia is a rare chronic granulomatous inflammatory condition characterised by the gross appearance of soft yellow-brown plaques or nodules. Decreased intracellular cyclic guanosine monophosphate (cGMP) interferes with microtubular function and macrophage phagolysosomal function resulting in incomplete elimination of pathogens. Calcium and iron deposit on residual bacterial glycolipid leading to formation of the pathognomonic Michaelis-Gutmann bodies. Histiocytes with granular cytoplasm (Hansemann cells) are seen in an inflammatory cellular background. The condition is seen in individuals with deficient immune function (alcohol abuse, malnutrition, post-organ transplant, diabetes mellitus, etc). Malakoplakia mimics carcinoma gallbladder and xanthogranulomatous cholecystitis, and therefore it is important to be aware of this entity.

Imaging findings: Malakoplakia presents as enhancing diffuse or focal wall thickening with local infiltration, indistinguishable from gallbladder cancer or xanthogranulomatous cholecystitis. Intramural hypoattenuating nodules and continuous linear mucosal enhancement favour a diagnosis of xanthogranulomatous cholecystitis. On dual-energy CT, carcinoma shows greater iodine uptake, compared to benign conditions. Smooth continuous enhancement of the gallbladder mucosa on dual-energy CT iodine overlay images is suggestive of a benign condition. Xanthogranulomatous cholecystitis shows markedly increased signal intensity on T2-weighted MR images. Biliary obstruction, periportal and peripancreatic lymphadenopathy, and metastases favour a diagnosis of cancer.

Conclusion &/or teaching points:

- Gallbladder malakoplakia mimics cancer gallbladder and xanthogranulomatous cholecystitis.
- It occurs due to defective macrophage phagolysosomal function in individuals with compromised immune function or genetically predisposed.
- Postoperative management requires specific antibiotic and ascorbic acid therapy.
Keywords: Gallbladder, Malakoplakia, Cancer, Xanthogranulomatous cholecystitis

Declaration by the Author:

• The submitted manuscript has not been presented earlier nor is under consideration for the same elsewhere.
• I have no objection to the manuscript being published online and/or in print as part of the congress proceedings.

Abstract ID:909

ABSTRACT TITLE : FEMORAL HERNIA AS A LABIA MAJORA MASS IN A FEMALE : A RARE PRESENTATION

PRESENTING AUTHOR : ABHISHEK GUPTA
CO-AUTHOR : (None)

Of all groin hernias, femoral hernias account for around 2–8%. They occur four to five times more commonly in females than males and have a peak incidence in those between 30 and 60 years old. In adult population. Femoral hernias occur just below the inguinal ligament, when abdominal contents pass through a naturally occurring weakness in the abdominal wall called the femoral canal. We present an unusual case of a 46 years old female pt. presented with right side labia majora swelling in our institution. The point of care ultrasound that was done in the emergency department had helped in diagnosis of the condition as a femoral hernia with omental fat as content. Subsequent CT scan & MRI also confirms the diagnosis of right side femoral hernia.

Abstract ID:944

ABSTRACT TITLE : RADIOLOGICAL MANIFESTATIONS IN SEVERE SCRUB TYPHUS DISEASE

PRESENTING AUTHOR : ABHISHEK DHIMAN
CO-AUTHOR : (None)

Purpose: Scrub typhus, also known as tsutsugamushi disease, is an acute febrile illness caused by infection with Orientia tsutsugamushi. The disease has a wide spectrum and can involve the lungs, heart, liver, spleen, and central nervous system. Various systemic radiological manifestations in severe scrub typhus disease were studied.

Material & Method: 50 patients with positive serology were studied. Radiological examination were done which included X-ray chest PA view and USG abdomen/ pelvis in all the patients to look for pulmonary and abdomino-pelvic manifestations respectively. Then CECT abdomen and pelvis, CECT chest, CECT brain and MRI brain was done depending upon the further indications.

Results: HRCT chest was done in 10 patients. 5 patients underwent MRI brain. On USG hepatomegaly in 23 patients, Splenomegaly in 21 patients, gall bladder wall thickening in 22 patients, pleural effusion in 22 patients & ascites in 12 patient. On HRCT we found ground glass opacities in 07 patients, consolidation in 05 patients, centrilobular nodules in 04 patients, septal thickening in 03 patients. On MRI brain leptomeningeal enhancement with cerebral venous thrombosis seen in one patient.

Conclusion: Hepatosplenomegaly(23), GB thickening(22) & ascites(12) were the main findings in abdomen. Pleural effusion(22), G.G.O(7), consolidation(5) & septal thickening(4) were main findings in chest. Thus,
radiology aides in eliciting the spectrum of pathological findings involving multiple system in serological positive cases. USG & HRCT are mainstay of radiological procedure in scrub typhus disease.

Abstract ID:965

ABSTRACT TITLE : IMAGING REVIEW OF PERITONEAL ANATOMY WITH EMPHASIS ON ROUTE OF SPREAD OF PATHOLOGIES

PRESENTING AUTHOR : MINU MOHANDAS

CO-AUTHOR : DR. SREERAJ NADARAJAN, DR. NITA HUBERT, DR. LALY JOSE

Learning Objectives: To review and help understand the complex imaging anatomy of peritoneum, including peritoneal spaces and reflections with corresponding CT images. Furthermore, to describe the route of spread of disease across the potential spaces and ligaments.

Background: Peritoneal cavity is a potential space between the parietal and visceral peritoneum. Peritoneal spaces and reflections that form the ligaments, mesentery and omentum are frequently involved secondary to inflammatory, infectious, traumatic and neoplastic diseases. The potential peritoneal spaces, reflections and the natural flow of peritoneal fluid determine the route of spread of disease processes within the abdominal cavity. Hence, an accurate knowledge of imaging anatomy of peritoneal spaces and ligaments allows localisation of pathology and help in narrowing the differential diagnoses.

Imaging findings: In this presentation, schematic diagrams and CT images are used for demonstration of anatomy of peritoneal spaces and reflections and for illustration of various pathological processes involving peritoneum, with emphasis on route of spread.

Conclusion and Teaching points: Important teaching points of this poster are summarised as follows:

- Transverse mesocolon divides the peritoneum into supramesocolic and inframesocolic spaces.
- Collections in right inframesocolic space donot extend to pelvis as it is limited inferiorly by attachment of small bowel mesentery to cecum. Left inframesocolic space communicates freely with the pelvis.
- Hepatoduodenal ligament acts as route of spread of pancreatic pathology to porta hepatitis.
- Hepatic pseudocyst can be differentiated from lesser sac fluid collections by direction of displacement of left gastric artery, which is seen within the gastrohepatic ligament.
- In carcinoma pancreas, involvement of mesentery or transverse mesocolon renders the tumor unresectable as vascular control becomes difficult.

To conclude, knowledge of peritoneal anatomy aids in narrowing the differential diagnosis, localizing fluid collections, guiding of drainage and staging of neoplasms.
Abstract ID:1028

**ABSTRACT TITLE**: A RARE CASE OF SECONDARY HAEMOCHROMATOSIS WITH RETICULOENDOTHELIAL PATTERN

**PRESENTING AUTHOR**: KASTURI LAKSHMI NAGA SINDHUJA

**CO-AUTHOR**: DR.M.VENKATESH, DR.V.N.NARVEKAR, DR.P.SUNEETHA, DR.RAMA KRISHNA RAO BARU

**Objective**: A T1-weighted gradient-echo in-phase and opposed-phase sequence is used as a hepatic magnetic resonance (MR) imaging protocol, is helpful in detection of pathologic entities associated with T2* effects owing to the double-echo approach.

**Background**: Gradient-echo in-phase and opposed-phase sequence is primarily used to detect the iron content of the liver by using the chemical shift cancellation artefact.

A complete understanding of both the chemical shift cancellation artifact and the T2* effects of the in-phase and opposed-phase sequence is important for correct interpretation of hepatic MR images. Thus, pathologic conditions such as hemochromatosis or hemosiderosis can be easily identified.

**Imaging Findings**: On 3T MRI, study of Abdomen showed enlarged liver with diffuse T2 hypointensity and drop in signal intensity of entire liver parenchyma in in-phase imaging. Mildly enlarged spleen with diffuse T2 hypointensity similar to that of hepatic signal was noted.

**Conclusion**: Nowadays both the in-phase and opposed-phase images are acquired within the same breath hold, allowing perfect registration between corresponding images.

Besides the detection of iron content, gradient-echo in and opposed-phase sequence is also very helpful in the visualization of T2* effects and susceptibility artefacts owing to the double-echo approach. Susceptibility artefacts as well as T2*effects are more pronounced on 3T MR images.

Abstract ID:1153

**ABSTRACT TITLE**: REVISITING NO STOMACH BUBBLE SEEN

**PRESENTING AUTHOR**: SANIKA PATIL

**CO-AUTHOR**: DR PADMA V BADHE

**Learning Objective**: To discuss the importance of absent gastric bubble on frontal chest X-ray (CXR) and imaging of various conditions associated with it.

**Background**: Gastric bubble is a semilunar radiolucency most of the times seen with a fluid level within, and seen just below the left dome of diaphragm. It is an important landmark seen on CXR and is seen in almost every individual. Being in the abdomen it is not given the due credibility it deserves. The presence or absence of the gastric bubble on CXR helps in diagnosis of many pathologies of the thorax and abdomen.

In this review we will discuss about the various pathologies and imaging findings related to the absent gastric bubble in its normal anatomic position.

**Imaging Findings**: Normally the gastric bubble is seen as a sharp or indistinct gas fluid interface below the left dome of the diaphragm.
Absent gastric bubble at its normal anatomical position can be seen in conditions like Achalasia cardia, pseudoachalasia, severe corrosive stricture, bariatric surgery, tension gastrothorax, situs inversus, total gastrectomy, antesternal colonic interposition, traumatic diaphragmatic hernia and rarely in a normal individual.

Conclusion: Although present in the corner of CXR, presence or absence of this small radiolucency can direct an observant radiologist to the pathological condition associated with it.

CXR is the basic radiological investigation done in almost all the patients and its careful observation can at times help in suspecting a potentially life threatening condition.

Abstract ID:1154

**ABSTRACT TITLE**: EHPVO: WHAT SHOULD A RADIOLOGIST REPORT?

**PRESENTING AUTHOR**: SANIKA PATIL

**CO-AUTHOR**: DR PADMA V BADHE

**Learning Objectives**:

- To learn what a radiologist should include in the report, especially emphasising on what the hepatologist needs to know in the pre-operative and post-operative settings.
- To understand the pathophysiology and resultant imaging findings in EHPVO so as to be able to mention the exact required imaging findings in the report.

**Background**: Extra hepatic portal venous obstruction (EHPVO) is a pre-hepatic type of portal hypertension mainly a disease of childhood in developing countries.

Multi-detector computer tomography (MDCT) with its post-processing, plays a crucial role in demonstrating various vascular changes.

The various complications and presentations of EHPVO can be addressed by surgical portosystemic-shunting mainly by splenorenal, mesenterico-caval anastomosis or Rex-shunt (mesenterico-left portal bypass).

MDCT plays a vital role in proper assessment for shunt surgery as well as post-operative monitoring for the shunt patency.Thus it becomes very important on part of a radiologist to include the necessary findings and to know exactly what a hepatologist will need to know in the pre-operative and post-operative settings.

**Imaging Findings**: The main imaging finding in EHPVO is formation of the portal cavernoma, which is seen to substitute for extrahepatic portal venous obstruction. The imaging findings comprise of venous changes in the form of cavernoma formation and splenic hilar collaterals, arterial changes like splenic artery aneurysm due to high kinetic circulation, visceral changes involving mainly the spleen and liver, and biliary changes termed as portal cavernoma cholangiopathy.

**Conclusion**: Long standing nature of EHPVO and its myriad effects cause repeated variceal bleeds, growth retardation and neuro cognitive dysfunction in childhood. With proper understanding of the pathophysiology and its resultant imaging findings, a radiologist should be able to report the findings adequately so as to address the proper surgical management of this condition as the type of intervention needed differs with the multitude of changes and complications seen in EHPVO.
Abstract ID:1189

ABSTRACT TITLE: CASE REPORT OF UNICORNUATE UTERUS WITH MYOMA IN RUDIMENTARY HORN ASSOCIATED WITH UNILATERAL RENAL AGENESIS, INTESTINAL MALROTATION & A RARE RETROPERITONEAL VASCULAR ANATOMY

PRESENTING AUTHOR: MOHSINA ISLAM BORA
CO-AUTHOR: PARINITA SADHANIDAR

Objectives: To present a case of müllerian defects associated with other anomalies, including unilateral renal agenesis, intestinal malrotation & rare retroperitoneal vascular anatomy

Background: A 38 year old woman presented with vague lower abdominal pain & history of infertility for ultrasound examination followed by CT examination which led to the detection of this rare association.

Imaging Findings:
- Right renal agenesis
- Left sided unicorunate uterus with rudimentary non communicating uterine horn in RIF showing a subserosal myoma
- Intestinal malrotation with left sided appendix
- Left sided course of right common iliac artery with circumaortic left renal vein

Conclusion: Renal agenesis is often associated with Mullerian anomalies. The altered vascular anatomy with circumaortic left renal vein & left sided course of right common iliac artery is an extremely rare condition. In addition, the presented case also shows intestinal malrotation with left sided appendix. To the best of our knowledge, this is the first case to include all of these anomalies

Abstract ID:1243

ABSTRACT TITLE: A MODEL FOR PREDICTING THE LESSER SAC DISEASE IN PATIENTS WITH ADVANCED OVARIAN CARCINOMA USING COMPUTED TOMOGRAPHY

PRESENTING AUTHOR: SAUGATA SEN
CO-AUTHOR: R. SHRESTHA, S. MUKHOPADHYAY, R. DASGUPTA, A. CHANDRA, A. MUKHOPADHYAY

Purpose: Lesser sac (LS) involvement is reported in 60-70% of patients undergoing cytoreductive surgery (PDS or IDS) for advanced (FIGO III/IV) epithelial ovarian cancer (AEOC) (Mukhopadhyay et al, 2014). Our purpose was to study whether computed tomography (CT) scan can predict the lesser sac disease pre-operatively.

Material and methods: This retrospective observational study was performed for patients who underwent surgery between Jan 2015 to Dec 2017. CT scan of the upper abdomen performed within 3 weeks prior to surgery was evaluated by a dedicated radiologist and recorded in the radiology information system. Intraoperative findings of lesser sac (LS) involvement were recorded in a predesigned operative note proforma with laparoscopic evaluation for small volume disease in the hospital electronic information system and photographic documentation was also recorded.
Radiology data was obtained from the radiology information system. Clinical and surgical data was obtained from the post operative hospital electronic medical records and operative photographs. There was no re-evaluation of the data.

Patients who did not have scans within the stipulated time of 3 weeks prior to surgery and had suboptimal scans were excluded from the study.

**Results:** Pre operative CT findings and intraoperative details were correlated in 213 patients. 83 (39%) patients had documentation of LS disease in the intraoperative notes. On analysis of the results, CT scan showed 86% sensitivity, 84% specificity, 82% PPV and 87% NPV in predicting LS lesions.

**Conclusion:** CT scan is significantly accurate in predicting the LS disease in patients with AEOC.

**Abstract ID:1248**

**ABSTRACT TITLE:** PARADUODENAL HERNIA- A RARE CAUSE OF ACUTE ABDOMEN

**PRESENTING AUTHOR:** SRI SHTI AGARWAL

**CO-AUTHOR:** DR. MEENU BAGARHATTA

**Learning Point:** Paraduodenal hernia is a rare cause of acute abdomen. The unique radiological finding allows for a definitive diagnosis, thus decreasing mortality. Hence it is important to keep it as a possibility in acute abdomen.

**Background:** Paraduodenal hernias occur when the small bowel herniates into the paraduodenal fossa and can manifest as intestinal obstruction. Herniation into the left paraduodenal fossa (fossa of Landzert) occurs more frequently than herniation into the right fossa (fossa of Kolb).

**Imaging:** Plain abdominal radiography - dilated loops of small bowel. Ultrasonography - abdominal mass or internal tubular cysts that change shape over time and after ingestion of fluid. Computed tomography (Left) cluster of dilated small bowel loops to the left of fourth part of duodenum extending into the descending mesocolon. The mesenteric vessels supplying the affected loop can appear engorged. The Inferior mesenteric vein and the ascending left colic artery can be seen above the herniated loop along the anterior aspect. The transverse colon lies anterior to the hernial sac.

(Right) cluster of small bowel loops in the ascending mesocolon. The superior mesenteric artery and the right colic vein are located in the anteromedial border of the encapsulated small bowel loops. Bowing of the jejunal branches of Superior mesenteric artery and vein to right and posterior is a corroborative CT finding. The normal relationship between Superior mesenteric artery and vein is maintained.

**Conclusion:** Paraduodenal hernias are extremely rare and difficult to diagnose. Acute awareness is required, since without prompt surgical treatment the mortality can be high.
Learning Objectives: Superior Mesenteric Venous thrombosis is a life threatening condition requires early diagnosis and treatment. Incidence is 6-9% of all cases of acute ischemic thrombosis. More common in males of 40-60yrs. The prevalence of mesenteric venous thrombosis has decreased over the past 2 decades with the routine use of CECT in patients presenting with abdominal pain and those with portal hypertension. SMV thrombosis is a cause of bowel ischemia.

Case history: A 53years old female presented with 5days history of intermittent colicky abdominal pain in right lower quadrant,nausea,vomiting,abdominal distension

Imaging Findings: CECT Abdomen: Long segment completely occluding thrombus in superior mesenteric vein and right ileocolic venous tributaries.

IC junction,terminal ileum,caecum,appendix,proximal ascending colon shows circumferential irregular wall thickening with intense pericecal,ileocecal mesenteric fat stranding.No obvious bowel wall intramural high attenuation signal seen.

Omental and ileocecal mesenteric stranding are extremely confluent. No mesenteric collaterals seen. Multiple enlarged ileocecal mesenteric lymph nodes.

Discussion: MDCT is imaging modality of choice due to its high sensitivity(90-100%). Various studies shows early diagnosis before development of ischemia and early use of anticoagulation is associated with decreased mortality. Frequent use of anticoagulation has reduced the need for surgical intervention and improved outcome in these patients. Presence of collateral circulation and cavernoma around a chronically thrombosed vein differentiates chronic from acute disease. Many cases are slowly progressive and extensive venous collateralization within the splanchnic circulation usually prevents progression to infarction. Doppler ultrasound allows direct evaluation of the mesenteric and portal veins,provides semi quantitative flow information and allows Doppler waveform analysis of the visceral vessels.

Conventional CECT allows sensitive detection of venous thrombosis within the central large vessels of portomesenteric circulation and any associated secondary findings.

Clinically obvious cases with evidence of peritonitis requires surgical intervention.

Treatment includes
- Anticoagulation therapy
- Fibrinolysis
- Thrombectomy
- Bowel resection
- Complications
- Intestinal ischemia
- Bowel gangrene

ABSTRACT TITLE: ROLE OF CROSS-SECTIONAL COMPUTED TOMOGRAPHY IMAGING IN CROHNS DISEASE

PRESENTING AUTHOR: SANIKA PATIL
CO-AUTHOR: DR PADMA V BADHE

Learning Objectives:

• To list the peculiar and distinctive Computed Tomography (CT) imaging findings in patients with Crohn’s Disease and its complications.
• How to ascertain the radiological diagnosis of Crohn’s disease over the spectrum of its differential diagnoses.

Background: Crohn’s disease is a chronic granulomatous inflammatory disease of the gastrointestinal tract with a characteristic feature towards remission and relapse. Small intestine is involved most commonly, predominantly at the terminal ileum. The colon is also involved in half of the cases with or without involvement of the small intestine.

Endoscopy is considered to be the principal method to diagnose Crohn’s disease. However being limited in its capacity to demonstrate extraluminal involvement. Multidetector CT (MDCT) is presently the cross-sectional imaging modality widely used in most of the institutions.

Treatment tailoring to prevent the mucosal harm caused by Crohn’s disease and to achieve optimal risk-benefit ratio over the disease course is an important part of this disease management. For many years, clinical symptoms have been the main trigger for treatment strategy modifications. However the preliminary evidence suggests that a better scenario of the disease process is achieved with cross-sectional imaging.

Imaging Findings: Various types of contrast agents are used intraluminally to provide contrast between the bowel lumen and the extraluminal structures. The patients who are suspected or known to have Crohn’s disease, should be screened for bowel wall thickening and enhancement, strictures and fistulae, mesenteric phlegmon formation, and various radiological signs like fat-halo sign and comb-sign, as well as should be screened for the complications like bowel-adhesions and obstruction, fistulae and perianal diseases like abscesses and fistulae.

Also the differentia-diagnoses should be ruled out like ulcerative colitis, malignancy, ileo-cecal tuberculosis, acute diverticulitis, and other forms of colitis like ischemic colitis, pseudomembranous colitis, and infectious colitis.

Conclusion: MDCT imaging are limited in depicting subtle mucosal lesions but provide excellent imaging and help to rule-out differential-diagnoses and complications. Hence should always be included in Crohn’s disease assessment along with clinical-symptoms and endoscopy.
Breast Imaging

Abstract ID: 97

ABSTRACT TITLE : PEARLS AND PITFALLS IN BREAST MRI
PRESENTING AUTHOR : KHUSHALI SHAH
CO-AUTHOR : DR ANJANA TRIVEDI

Learning Objectives: Breast MRI is currently the most sensitive detection technique for breast cancer diagnosis. The most common diagnostic errors in interpreting MRI of the breast are discussed in this review.

Background: Numerous false-positive diagnoses occur when every enhancement of the breast is considered as a breast cancer finding. In a patient with a breast enhancement, we should confirm that it is a true enhancement and not an artefact; recognise normal enhancing breast structures and analyse the enhancement according to the American College of Radiology breast imaging reporting and data system (BI-RADS) lexicon and be able to characterise benign lesions.

Imaging Findings: Enhancing lesions in breast can be: focus, mass or non mass enhancement. Masses can have: homogenous, heterogenous, rim enhancement; dark internal septations, enhancing internal septations, central enhancement etc.

Conclusion: Although the use of contrast-enhanced MRI of the breast has increased both the sensitivity and the specificity of breast cancer detection, common causes of false-positive and rarer causes of false-negative diagnoses still occur. Knowing these causes and some rules for interpreting breast MRI could help reduce the number of misinterpretations.

Abstract ID: 104

ABSTRACT TITLE : SONOELASTOGRAPHY IN BREAST CANCER DIAGNOSIS: PRESENT & FUTURE
PRESENTING AUTHOR : PRITAM GADIA
CO-AUTHOR : DR HINAL BHAGAT DR YASH RATHOD

Purpose: Breast elastography is a new non invasive, sonographic imaging technique which provides information on breast lesions in addition to conventional ultrasonography (us) and mammography.

The routine use of ultrasound in the diagnosis of breast lump is well validated but there are gray zones in equivocal cases which increase the number of negative biopsies. To increase the sensitivity and specificity of ultrasound by adding another non-invasive modality, namely strain elastography, can reduce the number of unwanted and negative biopsies.

Material and methods: 40 female patients with palpable breast lump were referred to department of radiodiagnosis, new civil hospital, surat after clinical examination in surgery opd, underwent ultrasonography and strain elastography where birads grading and strain ratios were calculated. The features of elastography including size ratios, homogeneity, and lesion stiffness—may be useful to characterize masses that appear on conventional breast us. If all features on elastography are found to be benign, it is probably wise to downgrade from breast imaging-reporting and data system (bi-rads) 4a to bi-rads 3 or from bi-rads 3 to bi-rads 2, based on which they either underwent percutaneous biopsy or surgical excision and follow up was taken.
**Results:** Strain ratio has higher sensitivity and specificity which makes it a valid diagnostic tool in the evaluation of breast masses. In most of the patients where biopsy was advised with a high suspicion of malignant mass on elastography, the biopsy has come out to be malignant and among them the most common is infiltrating ductal carcinoma.

**Conclusions:** It can also help in reducing the number of benign lesion biopsies and also reduce the number of negative biopsies. Being a non-invasive modality, it is much more patient compatible and economically cheaper when compared with mri and modalities. Elastography is an emerging research field with lots of possibilities.

**Abstract ID:123**

**ABSTRACT TITLE**: POST RADIATION SKIN CHANGES IN BREAST CANCER- AN ULTRASONIC EVALUATION

**PRESENTING AUTHOR**: UTTARA SWATI ANAND

**CO-AUTHOR**: SUBHASH SINGLA, PAMELA JEYARAJ

**Objectives:** To evaluate radiation-induced dermal side effects in patients with breast cancer who received radiotherapy by using high resolution ultrasound (HRUS).

**Materials and Methods:** Thirty – four patients with a histopathological diagnosis of breast carcinoma, receiving adjuvant radiation therapy as part of management (whether after MRM or as part of BCT) were included in this study. All patients received 16-25 fractions at 42.5-50 Gy. Weekly assessment of acute skin toxicity was documented as per RTOG guidelines. Skin thicknesses of mapped breast quadrants were examined using a 12 MHz linear array transducer at baseline before initiation of radiation therapy, with a follow up ultrasound at 6 weeks and 3 months after completion of radiotherapy. The contralateral nonradiated breast comprised the control group.

**Results:** The mean skin thickness at baseline on the medial/ lateral aspect was 0.173 cm (± 0.013 cm)/ 0.168 cm (± 0.013 cm), this was seen to increase at 6 weeks and 3 months. The p value at 6 weeks (p=0.008) was more than that at 3 months (p<0.001). Also, as the grade of toxicity increased, skin thickness increased (P value at baseline = 0.045, at 6 weeks p<0.0001 and at 3 months p<0.0001).

**Conclusion:** HRUS provides a noninvasive, objective method to assess tissue characteristics. Healthy and recently irradiated tissues can be compared in a sensitive and quantitative way providing the basis for monitoring possible treatment effects and follow up of patients with chronic clinically progressive conditions after exposure to ionizing radiation.

**Abstract ID:366**

**Title**: Fibroadenomas and Beyond: Elastography and Doppler Evaluation of Fibroadenoma-Like Breast Masses On Ultrasound.

**Topic**: Breast Imaging

**Aim:** To evaluate the role of strain elastography and spectral Doppler for characterization of lesions with morphological characteristics of fibroadenoma on B-mode ultrasound.

**Methods:** Twenty female patients with fibroadenoma-like masses on B-mode ultrasound were evaluated with strain elastography and spectral Doppler. The parameters assessed were strain ratio and size ratio.
on elastography and Resistive Index (RI) and Pulsatility Index (PI) on spectral Doppler. Tissue diagnosis by USG-guided FNAC/ biopsy was then done for all masses. Cut off values for strain and size ratios, RI and PI for prediction of fibroadenoma were obtained by plotting Receiver Operator Characteristic (ROC) curve. Statistical analysis was done to estimate diagnostic performance of the afore mentioned parameters, correlating with standard histopathology/cytology.

**RESULTS:** On ROC curve analysis, cut off values for strain ratio, size ratio, RI and PI below 3.87, 1, 0.85 and 1.94 respectively were obtained as predictive of fibroadenoma, with the highest area under curve (AUC) being 0.8752 for strain ratio. 12 out of 20 lesions proved to be fibroadenoma on tissue diagnosis. Sensitivity for detection of fibroadenoma was highest for size ratio (91.7%) while specificity was highest for strain ratio (100%).

**CONCLUSION:** Not all benign looking solid masses on ultrasound are fibroadenomas. Malignancies like medullary and mucinous carcinoma, papillomas and phyllodes tumor may give a fallacious appearance of benign fibroadenoma on ultrasound. Familiarity with atypical varieties of fibroadenoma along with application of simple parameters like strain and size ratios, RI and PI raise our level of confidence in labelling them as fibroadenoma.

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**Abstract ID: 367**

**ABSTRACT TITLE:** A COMPARITIVE STUDY OF MAMMOGRAPHY AND SONOMAMMOGRAPHY WITH HISTOPATHOLOGY IN EVALUATION OF PALPABLE BREAST MASSES

**PRESENTING AUTHOR:** VINOTHKUMAR V

**CO-AUTHOR:** DR. PRIYANKA

**Objectives:** To evaluate the mammographic features and sonomammographic features of the clinically palpable breast masses. To characterize the breast masses into benign and malignant based on mammographic and sonomammographic findings

**Materials & Methods:** The prospective study was conducted from August 2017 to July 2018 on 60 female patients of age group 30 years or above who referred with complaint of palpable breast masses in the Department of Radio-diagnosis, Sree Balaji Medical College and Hospital, Chennai.

**Results:** Of the 60 palpable masses, 52 cases were detected mammographically and 8 were occult, while ultrasound was normal in 2 patients. 39 of the 58 sonomammographically detected lesions were solid and rest were cystic or predominantly cystic lesions. The 52 mammographically detected masses and 39 sonographic solid masses were then analysed for individual features favouring benignity or malignancy. Histopathological analysis revealed 37 benign and 23 malignant cases. Sensitivity, specificity, PPV and NPV in diagnosing a malignant lesion by Sonomammography were 94.7%, 93.9%, 90% and 91.2% respectively and by Mammography were 95.4%, 94.4%, 91.3% and 97.1% respectively.

**Conclusion:** Irregular shape, high density, spiculated margins, microcalcification, posterior acoustic shadowing, taller than wider lesion heterogeneously hypoechoic nature, internal vascularity and associated features like axillary lymphadenopathy, skin, nipple thickening and retraction favor malignancy. Oval shape, surrounding halo, anechoic or homogenously hypoechoic lesion with posterior acoustic enhancement favor benign lesion. Combining mammography with sonomammography yielded better characterization of mass lesions with sensitivity and NPV of 100.0% and increased specificity and PPV of 94.6% and 92% respectively.
Abstract ID: 394

ABSTRACT TITLE: BREAST HAMARTOMA – MAMMOGRAPHIC EVALUATION
PRESENTING AUTHOR: MORE AMOL P
CO-AUTHOR: (None)

Breast Hamartoma is also known as breast fibroadenolipoma. It gives typical ‘Breast within breast’ appearance on mammogram. It is benign, well circumscribed mass lesion of breast. It occurs after 35 yrs of age. Mass is usually soft, palpable or sometimes non-palpable. It may be associated with Cowden syndrome. On mammography it gives radioopaque mass with lucency around. On sonomammography, it is mixed echogenicity lesion.

We present a case report of two female patients who presented with history of palpable breast lumps. On mammography possibility of breast Hamartoma was given. It was correlated on ultrasonography. Diagnosis was confirmed with pathologic evaluation. Images and evaluation of these patients will be displayed on the poster.

Abstract ID: 430

ABSTRACT TITLE: OMINOUS SPREAD OF BREAST CANCER: HOW CAN WE FACE THIS MASSIVE THREAT?
PRESENTING AUTHOR: PUNEET GUPTA
CO-AUTHOR: (None)

Aim: To study different mechanisms of spread of breast malignancy using diagnosed cases of breast lump.

Objectives:
To discuss multiple pathways of spread of breast malignancy.
To demonstrate massive involvement of thorax and abdomen using diagnosed cases of breast lump.
To evaluate the burden inflicted on an individual and on society as a whole.
To emphasize the need for early detection of breast lump by self-examination.

Materials And Methods: A study of five different patients was carried out using 40 slice computed tomography machine (Philips). Detailed clinical history was obtained followed by CT scan of the thorax.

Discussion: According to WHO, breast cancer is the most common cancer in women both in the developed and less developed world. It is estimated that worldwide over 508 000 women died in 2011 due to breast cancer (Global Health Estimates, WHO 2013).

Although breast cancer is thought to be a disease of the developed world, almost 50% of breast cancer cases and 58% of deaths occur in less developed countries (GLOBOCAN 2008).

Conclusion:
WHO prediction for breast cancer in India for the year 2015 via GLOBOCAN 2012 was an estimated 1,55,000 new cases and about 76000 deaths.

Thus, formidable spread of breast neoplasm calls for an aggressive approach via early detection and identification of the disease process. General awareness, emphasis on self-examination, established
protocols and earliest detection of the disease process are the only factors that offer an answer to this menace.

**Abstract ID:431**

**ABSTRACT TITLE**: SONOGRAPHIC AND MRI EVALUATION OF COMPLEX CYSTIC LESIONS OF THE BREAST: IMAGING FINDINGS IN MALIGNANCY

**PRESENTING AUTHOR**: PUNEET GUPTA

**CO-AUTHOR**: DR, PRANAV GUPTA

**Introduction**: Complex cystic lesions (CCL) contain cystic and solid components. Can be further sub-classified into:

- Type I - thick (≥0.5mm) outer wall, internal septa or both.
- Type II - intracystic variety with one or more discrete solid mural nodules
- Type III - mixed cystic and solid components, at least 50% cystic portion
- Type IV – at least 50% solid component with eccentric/central cystic foci.

**Aims And Objectives**: To differentiate benign and malignant CCL of breast by USG and advanced MRI techniques.

**Materials And Methods**: Study was conducted over a period of 2 years. 160 pts with palpable or mammographically detected lesions evaluated by USG. 44 pts with 50 sonographically detected CCL were included. Morphological assessment and sub-classification done by USG, DCE MRI, DWI and MRS then performed. Correlated with histopathology which was gold standard.

**Results**: Of the 50 CCL, 18 lesions were malignant whereas 32 lesions were benign. Age range of 15–70 years. Mean age was 41 years.

**Conclusions**:

- Ultrasound remains the mainstay for all cystic lesions of breast including CCL.
- Further sub-classification on grayscale can help differentiate benign vs malignant.
- Combination of these modalities can achieve greater level of diagnostic confidence.

**References**:


Abstract ID:461

ABSTRACT TITLE : A PROSPECTIVE OBSERVATIONAL STUDY TO EVALUATE THE IMAGING FINDINGS OF BREAST MRI IN PATIENTS WITH PATHOLOGICAL NIPPLE DISCHARGE AND ESTABLISH CORRELATION WITH HISTOPATHOLOGICAL DIAGNOSES

PRESENTING AUTHOR : NAVEEN KUMAR GOVINDARAJU
CO-AUTHOR : DR. JYOTI ARORA, DR. KANIKA KAUSHAL, DR. KANCHAN KAUR, DR. RUCHIKA GOEL

Purpose: To evaluate the imaging findings of contrast-enhanced MRI of breast in patients with pathological nipple discharge and establish correlation with histopathological findings and also to compare the percutaneous biopsy and final HPE results after surgery to assess for upgradation rates whenever the two results are available.

Materials and Methods: We prospectively evaluated 90 breasts of 84 female patients who presented with pathological nipple discharge using a 3.0-Tesla MRI scanner with a double surface 16 channel breast coil. Cross tables were generated based on MRI and histopathological findings. The accuracy of test was measured in terms of sensitivity, specificity, PPV and NPV. Chi-square test was used for associations. SPSS software, version 24.0 was used for analysis.

Results: The sensitivity, specificity, PPV and NPV of MRI for diagnosing malignant or high-risk lesions were 94.8%, 46.1%, 91.3% and 60% respectively with an accuracy of 87.78%. For malignant lesions only, the sensitivity, specificity, PPV and NPV were 91.7%, 80.8%, 42.3% and 98.4% respectively. For high-risk lesions only, i.e. papilloma and atypical ductal hyperplasia, the sensitivity, specificity, PPV and NPV were 86.4%, 66.7%, 87.7% and 64%. We could not find a statistically significant association between different type of MRI findings and different types of histopathological diagnoses in patients with pathological nipple discharge.

Conclusion: Although the majority of patients with pathological nipple discharge had papilloma on histopathological examination, cancer needs exclusion in patients having pathological bloody or serous nipple discharge. MR imaging can help identify both benign and malignant causes of nipple discharge. It provides clinically useful information in patients with pathological nipple discharge. A larger sample size should be studied to obtain better conclusive results as well as for longer duration so as to include patients who are on follow-ups, thus reducing the bias in the study.

Abstract ID:478

ABSTRACT TITLE : THE ROLE OF CONTRAST ENHANCED SPECTRAL MAMMOGRAPHY IN INDETERMINATE LESIONS OF THE BREAST.

PRESENTING AUTHOR : JANSI S
CO-AUTHOR : DR. J.DEVIMEENAL, DR. P.CHITRARASAN DR. K.GOPINATHAN

Learning Objectives: Technical aspects of contrast mammography & a review on dual energy technique, Patterns of background parenchymal enhancement, various enhancement patterns of breast pathologies.
Background: Contrast mammography increases the diagnostic accuracy in detecting subcentimetric malignant lesions, differentiates double breast pathology, detects residual/recurrent carcinoma, clarifies equivocal lesions of sonography and mammography.

Imaging Findings:
- Subtle & homogenous enhancement with well defined borders noted in benign lesions.
- Malignant lesions show intense and heterogenous enhancement with ill defined borders and spiculations.
- Broadly it can be classified as a mass like enhancement and non mass enhancement.
- Non mass enhancement is referred as regional and segmental pattern.
- When the lesion is indeterminate in ultrasound & mammography, based on the pattern of enhancement contrast mammography precisely categorises the lesion.

Conclusion: The addition of dual energy Contrast enhanced spectral mammography to conventional sonomammography can significantly improves the diagnostic quality and cancer detection rate. It helps in defining the extent of the disease in newly diagnosed breast cancer patients. It is also proved to be useful for identifying occult lesions in the mammographic dense breast. In addition, contrast enhanced spectral mammography represent an acceptable substitute for MR imaging in the setting of contra indications to MR imaging.

Abstract ID: 503

ABSTRACT TITLE: ROLE OF ULTRASOUND ELASTOGRAPHY IN DIFFERENTIATING BENIGN AND MALIGNANT SOLID BREAST MASSES IN CORRELATION WITH HISTOPATHOLOGY.

PRESENTING AUTHOR: ARPITHA K J

CO-AUTHOR: DR RAVI N, DR ARUL DASAN, DR SAMARTH S GOWDA

Purpose: The purpose of this study was to determine the diagnostic accuracy of breast ultrasound elastography in differentiating benign from malignant breast masses using histopathology diagnosis as the gold standard.

Material and Method: The prospective study of 56 patients was done in the department of Radio-diagnosis, Bangalore medical college and research institute. Patients with all age groups with solid breast lumps were reviewed. The patients were subjected to standard breast ultrasound, supplemented by strain elastography. The imaging was carried out using a Philips IU22 with Elastography software packages. All patients were subjected to FNAC. Strain elastography results and histopathology results were correlated.

Results: Among the 56 patients, 41 patients show elasticity score as benign and 15 patients as malignant. Following histology analysis, out of 41 patients 38 were proven to be benign and out of 15 patients 18 were proven to be malignant. The sensitivity for strain score was 91.3% and specificity was 95.2%.

Conclusion: Strain elastography is a non invasive, fast, simple tool that can compliment conventional gray scale ultrasound of the breast. It has a high accuracy level and could be used as a good tool for the classification of breast masses prior to the decision to biopsy a lesion.
Abstract ID:632

**ABSTRACT TITLE**: BEWARE! BREAST CANCERS CAN BE CIRCUMSCRIBED

**PRESENTING AUTHOR**: AKHIL BABY

**CO-AUTHOR**: DR.VISHNU PRASAD, DR.EKTA DHAMIJA, DR.SHASHI B PAUL, DR.SMRITI HARI

**Learning Objectives**: To illustrate the spectrum of clinical and imaging findings of breast cancers presenting with non-aggressive imaging features with pathological correlation

**Background**: Most breast cancers have spiculated margins, irregular shape with or without presence of pleomorphic calcification on imaging and most well circumscribed masses are benign lesions. However, in 10% of all cases, breast malignancies may present as well-circumscribed masses, cystic or hyperechoic lesions. Therefore, it is important to be aware of those benign appearing features of malignancies to derive appropriate differential diagnosis and guide further management. Malignancies which most frequently appear with benign features include mucinous carcinoma, medullary carcinoma, papillary carcinoma, malignant phyllodes tumor, invasive ductal carcinoma-NOS and adenoid cystic carcinoma

**Imaging Features**: On mammogram, these malignancies may present as round or oval masses with well-circumscribed margins and no calcifications. On ultrasound, they are complex masses mixed solid and cystic masses or cysts with nodular appearing solid area. Cystic masses with more than 50% solid area are suspicious, but even smaller solid areas may be malignant. MRI features of these malignancies may also resemble benign lesions with homogenous high-signal intensity on T2-weighted imaging and T1 signal intensity varies from low to high depending on protein percentage. Enhancement patterns are usually type I curves or type II or may be those of a malignant lesion with rim or heterogeneous enhancement.

**Conclusion**: Breast malignancies may present with non-aggressive benign looking features on imaging which a radiologist must be aware of, to make appropriate diagnosis.

Abstract ID:655

**ABSTRACT TITLE**: ROLE OF DIFFUSION WEIGHTED MAGNETIC RESONANCE IMAGING IN DIFFERENTIATING BENIGN AND MALIGNANT BREAST LESIONS

**PRESENTING AUTHOR**: HARSHA KOPURU

**CO-AUTHOR**: DR. SMITI SRIPATHI

**Purpose**: To evaluate patients with solid lesions of breast using DW-MRI sequence and ADC values.

**Materials and Methods**: Fifty-five female subjects with sixty five breast lesions underwent DWI of the breasts using b (0,600) value. The computed mean apparent diffusion coefficients (ADCs) of the breast lesions were correlated with histopathology.

Statistical analysis was done by independent variable t test and ROC curves.

**Results**: Mean ADC values of benign lesions was 1.47 ± 0.21 and those with malignant lesions was 0.85 ± 0.28. There was significant difference in mean ADC between benign and malignant lesions. ADC values were high in Benign lesions and low in malignant lesions with (P value < 0.001). The sensitivity and specificity for DWI in the differentiating malignant from benign breast lesions were calculated and showed 90.48% and 95.65%, respectively.
**Conclusion:** DWI with ADC values are easy to obtain and require less scan time. DWI with ADC values can differentiate between benign and malignant breast lesions with high sensitivity and specificity, however cannot be used to differentiate between various histological types.

**Abstract ID: 749**

<table>
<thead>
<tr>
<th>ABSTRACT TITLE</th>
<th>RARE CASE OF HAART INDUCED BILATERAL SYMMETRICAL GYNECOMASTIA ASSOCIATED WITH MULTIPLE FIBRO-ADENOMAS</th>
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<tr>
<td>PRESENTING AUTHOR</td>
<td>PURAN</td>
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<td>CO-AUTHOR</td>
<td>DR KUSHAL GEHLOT</td>
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**Learning Objective:** To Diagnose this Rare complication of HAART therapy.

**Background:** Gynecomastia is enlargement of the male breast secondary to stromal proliferation and ductal hyperplasia [1].

In the era of antiretroviral therapy, gynecomastia is emerging as a problem in the treatment of male HIV-infected patients. Methods and Materials: A 42-year old male on antiretroviral therapy for 7 yrs, presented with bilateral enlargement of breast since 11 months, which was gradually progressive in nature. On Examination Bilateral symmetrical enlargement of breast with freely mobile non tender lumps.

**Negative History:** No h/o trauma, discharge, nipple retraction or sign of inflammation

**Imaging findings:** ON USG: solid, hypo-echoic, homogenous well circumscribed masses in bilateral breast with background of fibro-glandular tissue, largest at 10’O’ clock & 2’O’ clock position in right and left side, respectively, with unremarkable skin and subcutaneous regions

**ON Mammography:** Mediolateral & Cranio-caudal view of bilateral breast reveals multiple ill defined heterogeneously dense lesions without evidence of any micro calcifications. (BIRADS-3)

FNAC of lumps in both breast reveal moderate cellularity, comprising of ductal cells in sheets and clumps suggestive of fibro-adenomas

**Conclusion:** Gynecomastia is not uncommon in HIV infected men undergoing HAART and it is usually transient, however fibro-epithelial lesions (fibro-adenomas) are uncommon in the male breast.

This is the first report to our knowledge of multiple fibroadenomas associated with ARV drug induced bilateral gynecomastia.
Abstract ID: 757

**ABSTRACT TITLE**: BREAST PAIN: ROLE OF A RADIOLOGIST?

**PRESENTING AUTHOR**: VISHNU PRASAD

**CO-AUTHOR**: DR. AKHI BABY, DR. SMRITI HARI, DR. SHASHI B PAUL, DR. EKTADHAMIJA, DR. DIXIT CHAUHAN

**Learning Objectives**: To illustrate the imaging findings in women presenting with Breast pain

**Background**: Breast pain is a common symptom occurring in up to 80% of women and leads to referral for breast imaging to rule out breast malignancy. Association with breast cancer is rare and very often benign diseases are the cause for breast pain.

ACR Appropriateness Criteria recommend imaging evaluation for focal, non-cyclic breast pain for diagnosing the underlying cause to allow appropriate management. Ultrasound is the recommended modality for women aged less than 30 years. Diagnostic mammography, tomosynthesis, and ultrasound are performed for older women. We present a retrospective case series of patients presenting with breast pain to our hospital.

**Imaging Findings**: Detailed history and physical examination were performed for categorizing pain into cyclic, non-cyclic or extra mammary pain. Patients of focal non-cyclic pain were diagnosed with benign conditions like a) fibrocystic change, b) galactoceles, c) inflammatory conditions presenting as breast abscess, granulomatous mastitis and parasitic infection, d) Mondor’s disease, d) Sebaceous cyst e) post-traumatic hematoma/fat necrosis and f) radiation induced cellulitis. We also encountered malignant causes of pain like inflammatory breast carcinoma and Paget’s disease involving the nipple areolar complex.

**Conclusion**: Radiologist has an important role in the management of patients presenting with focal non-cyclic breast pain. Ultrasound as well as Mammography are useful in elucidating the cause of breast pain in these patients.

Abstract ID: 799

**ABSTRACT TITLE**: DEMONSTRATION OF QUALITATIVE AND QUANTITATIVE PARAMETERS OF BENIGN BREAST MASSES ON CONTRAST ENHANCED ULTRASOUND

**PRESENTING AUTHOR**: SQ

**CO-AUTHOR**: (None)

Abstract ID: 819

**ABSTRACT TITLE**: PATTERN OF CEUS PARAMETERS IN MALIGNANT BREAST MASSES

**PRESENTING AUTHOR**: S

**CO-AUTHOR**: (None)
Abstract ID: 827

**ABSTRACT TITLE**: SHEAR WAVE ELASTOGRAPHIC EVALUATION OF AXILLARY LYMPH NODES --- OWN EXPERIENCE

**PRESENTING AUTHOR**: VAISHALI GUPTA

**CO-AUTHOR**: H. LALCHHANHIMI, BHAWNA DEV, PM VENKATA SAI

**Background**: Elastography helps by assessing the difference in tissue stiffness hence distinguishing benign from malignant lesions. Shear-wave Elastography measures quantitative elasticity values using the acoustic radiation force induced by ultrasound beam itself. This force induces mechanical waves and image is displayed by mapping a color that represents the degree of elasticity. The stiffness of the cortical region of both normal and suspicious nodes are measured and elasticity values expressed in terms of kPa. Currently, cortical thickening and absence of hilum are used as the main criteria for the risk of metastasis.

**Purpose**: This study was designed to determine the diagnostic value and reliability of shear wave elastography alone and in combination with grey scale ultrasound in differentiating the benign and malignant axillary lymph nodes.

**Materials and Methods**: Women referred for breast examination were included, sonomammogram was done for their shape, size and cortical thickness and elastography was performed for both normal (control) (n=25) and abnormal axillary lymph nodes (n=35). FNA was performed in all abnormal lymph nodes.

**Results**: The Elastography values obtained in kPa: radiologically normal axillary lymph node: 6-10 kPa abnormal: >11.0 kPa

These were further divided into two groups based on FNA results (gold standards).

- Smooth cortical thickening with maintained fatty hilum: 11-30 kPa
- Non-uniform cortical thickening with distorted or lost hilum: >35 kPa

**Conclusion**: Shear wave elastography is a good adjunct to routine ultrasound in depicting the nature of lymph nodes.

Abstract ID: 831

**ABSTRACT TITLE**: ULTRASOUND OR TOMO IN DENSE BREAST - WHICH ROAD TO TAKE --- OWN EXPERIENCE

**PRESENTING AUTHOR**: VAISHALI GUPTA

**CO-AUTHOR**: BHAWNA DEV, PM VENKATA SAI

**Background**: Radiologically-dense breasts are associated with decreased mammography sensitivity and increased risk of an interval lesion in screened women.

Digital breast tomosynthesis is a relatively novel technique. It creates thin-slice reconstructions of the breast from low-dose digital mammographic images acquired at multiple angles. This evolution has improved lesion visibility by reducing overlapping tissue; hence the potential to detect breast lesion and to reduce false-positive findings has increased.
Ultrasound picks up the difference in the acoustic impedance of tissues and hence helps in identifying lesions.

We performed a prospective screening trial of tomosynthesis and ultrasound for adjunct screening in women with dense breasts.

**Purpose:** To estimate the comparative incremental breast lesion detection in women with dense breasts and negative tomosynthesis, on high resolution ultrasound.

**Materials and Methods:** It is a prospective study recruiting asymptomatic women with mammography-negative and dense breasts. Women with ACR category C and D breast and age >40 years, had tomosynthesis and ultrasound (n=1866) done with independent interpretation of adjunct imaging. Out of the total 1866 cases, 31 cases had better lesion detection on ultrasound.

**Results:** In ACR C and D categories, detection of breast lesions is difficult as these are obscured by dense parenchyma. However, on ultrasound, all these lesions were detected.

Of all the lesions missed on tomosynthesis, cysts were not detected at all.

Some of the solid lesions were detected better (margins were clearly seen) on ultrasound than on tomosynthesis.

**Conclusion:** Ultrasound does better than tomosynthesis in lesion detection dense breasts.

**Abstract ID:837**

**ABSTRACT TITLE:** ASSOCIATION OF VASCULAR CALCIFICATION OF BREAST WITH CAROTID INTIMA MEDIAL THICKNESS IN PERI-MENOPAUSAL WOMEN

**PRESENTING AUTHOR:** PRAJEETH RAO

**CO-AUTHOR:** DR. SMITI SRIPATHI, DR. PRIYA P S

**Purpose:** Screening mammography merit to be evaluated for the presence of breast arterial calcification (BAC), which might predict atherosclerosis in women. Carotid intima-media thickness (C-IMT) is an easy, quick, noninvasive ultrasonographic marker of early atherosclerotic disease in cerebral vessels, so our study was aimed to evaluate its association with breast arterial calcification.

**Materials and Methods:** The study group consisted of 100 women (50 were BAC+ and 50 BAC-) women. In all participants, relevant previous clinical history (Diabetes Mellitus, Hypertension and drug intake (lipid lowering agents) and surgical history was taken. BAC was diagnosed using mammography as two linear calcification depositions in a conical periphery or as calcific rings and C-IMT was measured using B-mode ultrasonography within 2 cm from the proximal and distal portion of the main carotid artery and mean value was taken.

**Results:** All the participants included in this study were within age group of 40-70 years. Mean age with Breast arterial calcifications(BAC +ve) was 59.18 ± 8.59 years and without Breast arterial calcifications(BAC -ve) was 50.70 ± 7.93 years. Mean CIMT In BAC +ve group was 0.86 ± 0.21 versus 0.71 ± 0.12 in BAC –ve group. There was significant difference in mean CIMT between two groups (P value <0.001) when correlated with age, diabetes, hypertension presence of BAC, and history of drug intake, surgical history.

**Conclusion:** The findings of the present study suggest that BAC in mammography, is independently associated with C-IMT which helps in evaluating atherosclerosis in cerebral vessels.
Abstract ID:934

ABSTRACT TITLE: DIFFERENTIAL DIAGNOSIS OF SEGMENTAL NON MASS ENHANCEMENT ON BREAST MRI

PRESENTING AUTHOR: KUSUM PATHANIA
CO-AUTHOR: DR JYOTI ARORA

Objective: To correlate segmental non mass enhancement categories detected by MRI with corresponding histopathological findings.

Study And Design: Retrospective and prospective observational study in department of radiology, MEDANTA-THE MEDICITY GURGAON, HARYANA.

Materials and Methods: 83 breast MRI of the patients revealing segmental non mass enhancement who had performed histopathological evaluation were reviewed and correlated with corresponding histopathological findings.

Results: Among 83 MRI revealing segmental NME, the histological diagnosis was malignant in 48 cases, mastitis in 24 cases and benign breast disease in 10 cases. Of the 48 malignant cases, the histological diagnosis was infiltrating ductal carcinoma+ ductal carcinoma in situ (IDC+DCIS) in 26, DCIS in 13, IDC in 6, infiltrating lobular carcinoma (ILC) in 2 and ILC+IDC in 1 case. The positive predictive value of segmental non mass enhancement for malignancy was 58% in our study.

Of the 63 lesions showing clumped and clustered ring pattern, 38(60%) were malignant and 25 (40%)were benign (P value is < 0.2). The PPV of this pattern for malignancy is 60% in our study.

We evaluated incidence of focal ductal dilatation and T2 perifocal edema in mastitis and malignant lesions. Focal ductal dilatation was seen in 90% of patients with mastitis and one patient with malignancy. T2 perilesional edema was seen in 65% of patients with mastitis and 32% with malignancy due to involvement of lymphatics.

Conclusion: In our study, segmental non mass enhancement with clumped and clustered ring enhancement was not only seen in malignant cases but significant number of cases were benign, probably due to high incidence of mastitis in indian population. Internal enhancement pattern alone was not sufficient criteria to differentiate between benign and malignant lesions in our study as the internal enhancement pattern of mastitis and malignancy overlaps. However focal ductal dilatation and T2 perilesional edema in the area of segmental NME are important clues.

Abstract ID:968

ABSTRACT TITLE: ACCURACY OF SONOELASTOGRAPHY IN US-BIRADS CATEGORY 4 LESIONS.

PRESENTING AUTHOR: MITHUN BHOYAR
CO-AUTHOR: ATUL T TAYADE, SAURABH PATIL

Purpose: To evaluate the role of sonoelastography in distinguishing benign from malignant breast masses and thus avoiding unwanted biopsies of US-BIRADS category 4 lesions.

Materials and Methods: B-mode ultrasound & strain sonoelastography was performed on 218 females with palpable breast masses. Total 91 females (Mean age: 39.1years) had US-BIRADS category 4 lesions. Four sonoelastography parameters- Tsukuba elastography score, strain ratio, length ratio and area ratio were
evaluated. Final diagnosis was made by histopathological analysis. The area under the curve and cutoff point, were obtained by using a receiver operating characteristic (ROC) curve analysis. Sensitivity, specificity, and accuracy were compared by using Medcalc version 18.9.

Results: Out of 91 lesions, 39 had malignancy & 52 were benign. Cutoff points were: elastography score>3, strain ratio>2.6, length ratio>1.01 and area ratio>1.07 (p<0.0001). Areas under ROC curve were: Length ratio (0.787), strain ratio (0.778), area ratio (0.765) and elastography score (0.680). Sensitivities were: Length ratio (100%), elastography score (94%), strain ratio (92%) and area ratio (87%). Specificities were: Strain ratio (59%), length ratio (55%), area ratio (55%) and elastography score (36%). All four parameters in combination improved specificity to 80.77% (p<0.0001). Specificity of all four parameters improved to 96-98 % for >42 years females (P<0.0001).

Conclusion: This study indicates that diagnostic performance in differentiating malignant from benign lesions is improved when all four sonoelastography parameters are used in combination. These results imply that sonoelastography can reduce biopsy rates by increasing specificity especially in above 42 year females. Study needs correlation with larger sample size.

Abstract ID:982

ABSTRACT TITLE : DOES SHEAR WAVE ELASTOGRAPHY SCORE OVER STRAIN ELASTOGRAPHY IN BREAST MASSES OR VICE VERSA?

PRESENTING AUTHOR : NIDHI PRABHAKAR

CO-AUTHOR : VEENU SINGLA, APARNA PRAKASH, TULIKA SINGH, AMANJIT BAL, GURPREET SINGH, NIRANJAN KHANDELWAL

Purpose: This study was done to compare parameters of strain elastography (SE) and shear-wave elastography (SWE) for differentiation of benign and malignant breast masses.

Materials and Methods: B mode ultrasound (USG), SE, and SWE were performed in 199 breast lesions. During SE, 5-point visual elastography score (SEvisual score) and strain ratio (SEstrain ratio) were obtained. During SWE, mean and maximum elasticity values in kilopascals and shear wave ratio were obtained in two orthogonal planes. The shear wave mean average (SWEmean avg), shear wave maximum average (SWEmax avg) and shear wave ratio average (SWEratio avg) were calculated by averaging the respective values in the two planes. The SE and SWE parameters of a lesion were correlated with its histopathology.

Results: The areas under the receiver operating characteristic curve of SEvisual score, SEstrain ratio, SWEmean avg, SWEmax avg, and SWEratio avg were 0.815, 0.814, 0.846, 0.846 and 0.799 respectively. The best cut-off values (that achieved the highest sensitivity and specificity) for SEstrain ratio, SWEmean avg, SWEmax avg, and SWEratio avg were 3.91, 113 kPa, 123.5 kPa and 7.32 respectively.

Conclusion: SE showed comparable diagnostic performance to SWE.
### Abstract ID: 985

**ABSTRACT TITLE**  
EVALUATION OF BREAST CANCER RISK DUE TO INCREASED BREAST DENSITY USING VOLUMETRIC BREAST DENSITY SOFTWARE.

**PRESENTING AUTHOR**  
VEENU SINGLA

**CO-AUTHOR**  
SUZANNE KOSHI, TULIKA SINGH, NIDHI PRABHAKAR, AMANJIT BAL, GURPREET SINGH

**Purpose**  
The aim of this study was to assess the importance of breast density as a risk factor for breast cancer using automated volumetric breast density software and study the relationship of breast density with tumour characteristics and other known risk factors for breast cancer, so that there is density based risk stratification.

**Materials and Methods**  
134 breast cancer cases and 201 normal age matched controls were enrolled, who were divided into pre and postmenopausal subgroups. The mammograms of the contralateral breast of the cases and both breasts of the controls were evaluated by automated volumetric breast density software and classified into four density grades. The tumour characteristics in various density grades were also studied.

**Results**  
In premenopausal women, the odds of having breast cancer were significantly higher for grade 3 breasts [OR 3.03; 95% CI (1.19 – 7.71)] versus grade 1 and 2 breasts. Grade 4 premenopausal breasts also had greater odds [OR 3.09; 95% CI (0.89 – 10.78)] of developing breast cancer; however, the p value was not significant, likely due to smaller number of Grade 4 breasts. No such relationship was established for postmenopausal women or between tumour characteristics and breast density grades.

**Conclusion**  
Increased breast density can be considered as an inherent, independent risk factor for developing breast cancer, in premenopausal women.

### Abstract ID: 986

**ABSTRACT TITLE**  
FACTORS AFFECTING MEAN GLANDULAR DOSE OF MAMMOGRAPHY IN A NORTH INDIAN POPULATION.

**PRESENTING AUTHOR**  
VEENU SINGLA

**CO-AUTHOR**  
CHIRAG KAMAL AHUJA, NIDHI PRABHAKAR, TULIKA SINGH, MANDEEP KANG, GURPREET SINGH, NIRANJAN KHANDELWAL

**Purpose**  
To estimate the mammographic mean glandular dose (MGD) in North Indian females and establish the various factors, which affect the radiation dose and compare it with global results.

**Materials and Methods**  
490 consecutive females referred for diagnostic and screening mammography were enrolled in the study over four months duration. Standard two mammographic views of bilateral breasts, viz., mediolateral oblique (MLO) and craniocaudal (CC) views were taken, generating a total of 1960 views. The tube voltage (kV), current (mA) (available as automatic exposure controls (AEC)), and other variables like compressed breast thickness (CBT), applied compression force (CF) and mean glandular dose (MGD) per projection for each breast available as digital readouts were evaluated.

**Results**  
The mean CBT was 5.1+1.7 cm in CC views and 5.72+1.8 cm in MLO views. The mean CF was 99.8+35.9N and 117.7+36N in CC and MLO views respectively. The average MGD per view in CC and MLO views was 1.11+0.41 mGy and 1.27 + 0.47 mGy respectively and the mean MGD per woman for four views was 4.76 mGy. MGD was found to be directly proportional to the CBT, which was seen to be inversely related to age.
Conclusion: The mean MGD per view in the present study was 1.19 mGy, which is lower than average global values and is well within the stipulated guidelines of 3 mGy set by the American College of Radiology (ACR).

Abstract ID:1035

**ABSTRACT TITLE**: COMPARATIVE EVALUATION OF STRAIN ELASTOGRAPHY AND SHEAR WAVE ELASTOGRAPHY IN CHARACTERIZATION OF SOLID BREAST MASSES

**PRESENTING AUTHOR**: AKSHAYA KUMAR NAG

**CO-AUTHOR**: PROF. (DR.) SHABNAM BHANDARI GROVER, DR. AMIT KATYAN, DR. SUNIL KUMAR JAIN, DR. ASHISH KUMAR MANDAL

**Purpose**: The purpose of this study was to compare the diagnostic performance of strain wave and shear wave elastography for the characterization of solid breast masses using histopathology as gold standard.

**Material and Methods**: In this institutional review board approved cross sectional study, fifty solid breast masses were evaluated using both strain and shear wave elastography. Strain and shear wave elastographic measurements were obtained for each lesion using a high frequency linear transducer (4-9MHz). Strain and shear wave elastographic parameters were correlated with pathology in all patients. Difference in elastographic data between benign and malignant masses were evaluated using Mann Whitney U test. P value < 0.05 was considered as statistically significant.

**Results**: With a cut off point of 4 for strain ratio in strain elastography and E max of 80 kPa in shear-wave elastography, the sensitivity was higher in shear wave elastography, but specificity was higher in strain elastography (95.8% vs 81.7%, p = 0.002; 93.7% vs 84.8%, p = 0.016). The area under curve (AUC) for strain elastography was similar to that of shear wave elastography (0.940 vs 0.920, p value>0.05).

**Conclusion**: In this study, both strain and shear wave elastography showed similar diagnostic performances in characterization of breast masses. Elastographic techniques either strain or shear wave elastography, can both be therefore further explored and incorporated in the diagnostic protocol for characterization of breast masses.

Abstract ID:1041

**ABSTRACT TITLE**: ROLE OF CONTRAST ENHANCED ULTRASOUND IN CHARACTERIZATION OF SONOGRAPHICALLY SOLID BREAST MASSES

**PRESENTING AUTHOR**: APURVA SURANA

**CO-AUTHOR**: PROF. (DR.) SHABNAM BHANDARI GROVER, DR. AMIT KATYAN, DR. SUNIL KUMAR JAIN, DR. ASHISH KUMAR MANDAL

**Purpose**: The purpose of our study was to evaluate role of contrast enhanced ultrasound (CEUS) in the characterization of sonographically solid breast masses using histopathology as gold standard.

**Material and Methods**: This institutional review board approved prospective study comprised of fifty consenting female patients with sonographically solid breast masses. CEUS was performed on ultrasound equipment using high frequency linear probe (4-9 MHz). Breast masses were categorized into benign and malignant, based on qualitative (enhancement pattern, type of enhancement, enhancement margin, perfusion defect) and quantitative parameters (Time to peak; TTP, Mean transit time; MTT and area under curve; AUC) and the results were compared with histopathology. Statistical significance for qualitative and quantitative parameters were assessed using the Chi square and Student’s t test respectively.
RESULTS: In benign masses, majority had centrifugal or diffuse enhancement pattern (85%) with homogeneous enhancement and clear margins without perfusion defects (85%). In malignant masses, majority had centripetal (94%) with heterogeneous enhancement with unsharp margins and perfusion defects (100%). Qualitative CEUS enhancement pattern correctly classified 92.8% of benign masses and 92.7% malignant masses with p value of less than 0.0001. Of the four quantitative parameters, only AUC could correctly identify 89.5% benign masses and 85.2% of malignant masses with p value of less than 0.0001.

Conclusion: In our study, CEUS showed promising results for characterisation of solid breast masses. This technique therefore has a potential for greater exploitation in an endeavour to reduce negative biopsies in breast masses.

Abstract ID:1045

ABSTRACT TITLE: ROLE OF SHEAR WAVE ELASTOGRAPHY IN THE CHARACTERIZATION OF SOLID BREAST MASSES.

PRESENTING AUTHOR: SHABNAM BHANDARI GROVER

CO-AUTHOR: DR. AMIT KATYAN, DR. AKSHYAYA NAG, DR. SUNIL KUMAR JAIN, DR. ASHISH KUMAR MANDAL.

Purpose: The objective of the study was to evaluate the role of shear wave elastography in characterization of solid breast masses using histopathology as gold standard.

Material And Methods: This institutional review board approved prospective study comprised of fifty consenting female patients with solid breast masses. Shear wave elastographic measurements for each mass was obtained using a high frequency linear transducer (9L4, 4-9MHz). Maximum elasticity values were obtained by placing a region of interest over the stiffest area of mass. Shear wave elastographic parameters were correlated with pathology diagnosis in all patients. Difference in elastographic data in patients with benign and malignant masses were evaluated using Mann Whitney U test. P value less than 0.05 was considered as statistically significant.

Results: At pathology, 32% (16 out of 50) of the masses were found to be benign and 68% (34 out of 50) of the masses were found to be malignant. Maximum elasticity values were significantly higher in malignant masses as compared to benign masses. The maximum elasticity cut off value (80 kPa) was associated with a sensitivity, specificity, a NPV and a PPV of 95.8%, 84.8%, 94.2% and 86 % respectively with p value of less than 0.05.

Conclusion: In our study, shear wave elastography was found to be an accurate method in differentiating benign and malignant breast masses. Incorporation of this technique into routine clinical assessment has the potential to reduce negative biopsies in breast masses.
Abstract ID:1183

ABSTRACT TITLE: ROLE AND ACCURACY MR EVALUATION OF BREAST LESIONS WITH HISTOPATHOLOGY CORRELATION

PRESENTING AUTHOR: ARUT CHEZIAN
CO-AUTHOR: DR. BABU PHILIP

Aim: To study role and accuracy MR evaluation of breast lesions with histopathology correlation

Methods: A prospective study of 29 female and 1 male subject were included and comprehensive clinical history taken. The selection criteria involved patients with suspicion of breast CA and previously diagnosed breast CA patients with suspicion of recurrence. Ancillary findings from mammogram and ultrasound evaluation used for categorization. The patients underwent dynamic CEMRI and the findings were correlated with histopathology evaluation

Result: Out of the 30 subjects, the MRI evaluation categorized 16 subjects to be BIRADS IV and above. On subsequent histopathology evaluation 11 were found to be malignant. Two cases with BIRADS III and below were malignant under HPE. The loss of diagnostic accuracy was attributed to confounding factors due to postoperative fibrosis. All cases with BIRADS IV and above were malignant. The benign features noted were predominantly inflammatory changes.

Conclusion: MR Mammography is still less predominant in comparison with conventional mammography and breast USG. It can excel in situations which warrants high spatial resolution and in young females where refraining from ionizing radiation is beneficial. With the advantage of high sensitivity the main drawback is due to wide spectrum of specificity. Coupling with ultrasound and mammography increases its diagnostic accuracy. HPE correlation suggested in previous malignancy diagnosed and operated patients

Abstract ID:1227

ABSTRACT TITLE: ROLE OF THERMOGRAPHY IN DETECTING BREAST LESIONS AND SPECIFICITY IN CLASSIFYING BENIGN AND MALIGNANT LESIONS

PRESENTING AUTHOR: KARTHIK G
CO-AUTHOR: DR.B.SUHASINI, PROFESSOR ,DEPT OF RADIODIAGNOSIS, STANLEY MEDICAL COLLEGE DR.G.SATHYAN,PROFESSOR,DEPT OF RADIODIAGNOSIS,STANLEY MEDICAL COLLEGE

Aims & Objectives: 1.To compare the performance of thermography in accurately locating the presence and site of breast lesions either benign or malignant

2. To determine the role of thermography in categorising benign and malignant lesions.

Materials & Methods:

Study design: Prospective study.

Study population: Women with symptoms related to breast pathology and for routine breast screening who are referred to our department for mammography and Ultrasound

Sample size: A sample size of 250 patients as per the statistician advice.Patients with symptoms pertaining to breast pathology like pain, feeling of lump are subjected to scanning by ultrasonography. when mass
is detected, followed by thermography. Mammography indicated for above 40 years of age followed by thermography. FNAC to be done for all breast lesion detected patients.

**Results:** Out of the total 250 patients of our study, 208 study patients showed there is significant correlation between ultrasound, mammography findings with concurrent abnormal thermal findings in thermography. The study also able to distinguish between the benign and malignant nature of lesion based on thermograph findings.

**Summary:** Thermography showed significant correlation between ultrasound, mammography findings with concurrent abnormal thermal findings in thermography. The study also able to distinguish between the benign and malignant nature of lesion based on thermograph findings.

**Conclusion:** Thermography is able to pick up any local abnormality in breast which can be used as screening tool in detecting breast lesions.

**Abstract ID:1263**

**ABSTRACT TITLE:** AN UNUSUAL CASE OF BILATERAL MAMMARY PANNICULITIS  
**PRESENTING AUTHOR:** JYOTI GUPTA  
**CO-AUTHOR:** DR TULIKA

Mammogram is an old fashioned and irreplaceable investigation technique for investigating breast pathologies, usually it is used for screening as well as diagnostic purposes. Its sensitivity and specificity are increased by collaborating it with ultrasonogram findings. Hereby we present an unusual case of bilateral mammary panniculitis with other than than routine imaging finding.
Abstract ID:8

ABSTRACT TITLE: A CASE OF AORTIC DISSECTION
PRESENTING AUTHOR: G BALACHANDRAN
CO-AUTHOR: (None)

A 46 old female patient, known case of chronic kidney disease on haemodialysis, was referred for evaluation of acute chest pain. CT aortography showed Dilated entire descending aorta, displacement of focal aortic calcification medially, An intimal flap was seen extending from aortic knuckle up to aortic bifurcation, dividing the aortic lumen into true and false. The descending thoracic and abdominal aorta are dilated. The renal arteries are diminutive and not seen completely. The dissection did not extend to midline abdominal branches. No evidence of thrombosis.

Abstract ID: 55

ABSTRACT TITLE: CT CORONARY ANGIOGRAPHY VS CATHETER ANGIOGRAPHY IN DETECTION OF CORONARY ARTERY DISEASE.
PRESENTING AUTHOR: PALLABI MAZUMDAR
CO-AUTHOR: DR. GAURAV SARDESAI, DR. JEEVAN VERNEKAR, DR. SANJAY SARDESSAI

Introduction: Coronary Artery Disease is a major cause of death in all developed and developing countries in the world. While catheter angiography is the Gold Standard for diagnosis of CAD, only a small percentage of these patients undergo an intervention like angioplasty. This warrants a need for a competent diagnostic tool like CT coronary angiography.

Aim: This study compares the efficacy of CT coronary angiography as an effective diagnostic tool for the diagnosis of CAD in low risk patients.

Materials and Methods: One hundred symptomatic patients with a low risk of CAD and without a known history of CAD were included in this study. CTCA and catheter angiography was performed in these patients. The CT angiography images were reconstructed using various methods like MPR and MIP and a comparison between these two were analysed using medical statistical tools like sensitivity, specificity, positive and negative predictive value.

Conclusion: This study concludes a good Negative predictive value of CT Coronary angiography. Also, the sensitivity, specificity and Positive predictive values were such that CTCA can be used as a good screening test in patients with low risk of CAD.
Abstract ID:143

**ABSTRACT TITLE**: COMPARISON OF HIGH PITCHED ECG V/S NON-ECG GATED CT PULMONARY ANGIOGRAPHY IN SUSPECTED CASES OF PULMONARY EMBOLISM

**PRESENTING AUTHOR**: NISHANT THAPAR

**CO-AUTHOR**: DR. ASHWANI TOMAR, DR. VIJAY THAKUR, DR. NEERAJ GANJU, DR. MALAY SARKAR, DR. SANJIV SHARMA

**Purpose**: To study the benefits of high pitched ECG gating over standard Non-ECG gated CTPA for patient radiation dose, overall image quality and necessity of Intensive care treatment

**Method And Materials**: High pitched & ECG gated CTPA in 24 patients of case group was compared to Standard Non-ECG gated CTPA 24 patients of control group in suspected cases of PE with 50ml iohexol IV contrast on 64 slice MDCT scanner with follow up for 30 day mortality and intensive care treatment

**Results**:  
1. Radiation dose parameters revealed ECG gated CTPA lead to a significant decrease in radiation dose compared to Non ECG gated CTPA (2.65±0.45mSv and 3.19±0.57mSv, respectively) (p= 0.0016).  
2. One month follow up was completed for all patients in which 7 patients died mostly related to PE. Out of 48 patients; 19 (39.6%) patients needed intensive care support.  
3. Mostly 87.5% patients died who were needed ICU support. And the association between mortality and ICU support was statistically significant. (P<0.005)  
4. There was no significant difference between the two groups in terms of the mean attenuation achieved in the main pulmonary artery (p=0.594), left pulmonary artery (p=0.237) and right pulmonary artery (p=0.495). However; there was a significant difference was found in image noise (p =0.03) and background image noise (p =0.02) between the two procedures.

**Conclusion**: High pitched ECG Gated CTPA is better compared to standard Non ECG gated scans in terms of reduction in total Millisieverts and better image quality

**Clinical Relevance/Application**: Using High pitch technique & ECG gating in CTPA a reduction in patient radiation dose of upto 0.5 mSv can be achieved which is compared to approximately 27 Chest radiographs &reduced cardiac related motion artefacts and reduced image noise.

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Abstract ID:147

**ABSTRACT TITLE**: CASE STUDY OF ABERRANT SPLENIC ARTERY ANEURYSM - A COMPLICATION IN A RARE ANATOMIC VARIATION OF SPLENIC ARTERY

**PRESENTING AUTHOR**: DEEPAK VARSHNEY

**CO-AUTHOR**: ARCHIT GUPTA

The first anterior branch of the abdominal aorta is the celiac trunk which has a short course and divides into three branches the common hepatic, left gastric and splenic arteries. Quite commonly, we see anatomical variations in the gastric and the hepatic arteries. However, a relative constant branch of the celiac artery is the splenic artery and aberrances in the origin of the splenic artery are rarely seen. Superior Mesenteric Artery is the second anterior branch of abdominal aorta which arises at the level of the first lumbar vertebra.
This is a case of an aneurysm arising from the aberrant splenic artery which is not following the normal origin and course; instead, it arises from the right anterolateral side of SMA which was first diagnosed on ultrasound (grayscale and Doppler) and confirmed on CECT abdomen.

Abstract ID:163

ABSTRACT TITLE: COMPARATIVE EVALUATION OF CAROTID ARTERY DISEASE AND CORONARY CT ANGIOGRAM AS PREDICTORS OF CORONARY ARTERY DISEASE (CAD) IN PATIENTS WITH ACUTE CEREBROVASCULAR ACCIDENT (CVA)

PRESENTING AUTHOR: PRAGYA SINHA

CO-AUTHOR: RAJUL RASTOGI, VIJAI PRATAP SINGH

INTRODUCTION: Acute cardiac events are the most important cause of morbidity and mortality in patients who have suffered from a cerebrovascular accident. Assessment of coronary vessels in these patients may help prevent a catastrophic cardiac event and/or unnecessary medication. This study aimed to compare the effectiveness of carotid ultrasound vs CAC/CT Angiography in evaluating coronary disease

Methods: Patients coming to TMU with acute CVA were selected for this study. Consent was solicited and data collected. Tabulation was done in Excel (Microsoft Inc, 2007) sheets and analysis of Data was done with Stata (Stata corp 2012) Inclusion criteria- CVA confirmed on NCCT, Age >35y. Exclusion criteria- 1) Decreased eGFR (<30 ml/minute) 2) Bradycardia considered unsafe 3)Known history of contrast allergy or pregnancy

Results: total number of study participants was 68 (M=54, F=14). Mean age of population was 65 y +/- 14.3. Majority of patients (n=48, 71%) had at least one major cardiac risk factor out of hypertension, diabetes, smoking , prior cardiac disease & a family history. 28 patients(41) had more than 1 risk factor

Carotid atherosclerosis was seen in 78%(n=53) of all patients on Doppler evaluation. In contrast CT angiography demonstrated the presence of coronary atherosclerosis in 98%(n=67) of the evaluated patients, suggesting an improved discrimination to detect coronary disease. The correlation between Doppler & CT findings was weak (r = 0.23), likely due to the better detection of atherosclerosis on CTA. The correlation was improved in comparing cIMT & the CAC score (r =0.87) .

Conclusion: Doppler US underestimates coronary disease more often than direct CAC scoring of coronary vasculature. Early evaluation of the coronary arteries via Calcium scoring & CT angiography may help prevent a catastrophic cardiac event and/or excessive further hospitalization

Limitations: Small sample size; selection to CVA patients

Abstract ID:210

ABSTRACT TITLE: LERICHE SYNDROME/AORTO ILIAC OCCLUSIVE DISEASE-A CASE REPORT

PRESENTING AUTHOR: MOGILI VITTAL REDDY

CO-AUTHOR: DR.VENKAT RAM REDDY,DR.G.RAMAKRISHNA REDDY,DR.(BRIG).R.S.MOORTHY

Learning Objectives: Leriche syndrome is a rare peripheral arterial vasocclusive disorder.Demonstration of thrombus and its extent is necessary for early diagnosis and risk factor assessment in determining the outcome.CT Angiography allows direct anatomical visualisation of the location of the stenosis and occlusion. It also shows the type and extent of collateralisation,and the level of the most proximal and distal arterial segments amenable to stent-graft placement.
**Background:** A 63 year old male smoker with diabetes referred to radiology department with complaints of severe backpain, bilateral leg weakness and impotence since 6 months. On local examination feeble femoral pulses noted.

**Image Findings:** Colour Doppler examination showed occlusion of infrarenal aorta. CT angiogram showed total occlusion of infrarenal aorta and iliac arteries with femoral arterial flow was maintained through multiple collaterals.

**Conclusion:** Leriche syndrome is a peripheral arterial occlusive disorder. Rene Leriche in 1923 described occlusion of the distal aorta and iliac arteries, which includes both acute and chronic forms of the disease (1, 2). Patients classically present with a history of the following triad of symptoms: claudication, impotence and decreased lower limb pulses. Risk factors include hypertension, diabetes mellitus, hyperlipidemia and smoking [3]. Acute Leriche syndrome most commonly presents with symptoms of acute limb ischemia. However, patients with a more multilevel pattern of the disease are commonly older males, and are more likely to have diabetes and hypertension as risk factors.

Collateral arterial pathways to lower extremities in Leriche syndrome are:-

1) **Anterior:** Internal thoracic to superior epigastric to inferior epigastric to external iliac
2) **Middle:** Superior to Inferior mesenteric, superior to middle hemorrhoidal, internal to external iliac
3) **Posterior:** Subcostal and Lumbar to deep circumflex iliac to external iliac

**Treatment:** The acute period treatment consists of desobliteration with Fogarty catheter followed by a thromboendarterectomy procedure (7). For the chronic cases anatomical or extraanatomical by-pass is the first choice (6). Aorto-bifemoral, thoraco-bifemoral, or axillo-bifemoral depending on the location and extent of the lesion.

**Abstract ID: 211**

**ABSTRACT TITLE:** DIAGNOSTIC EVALUATION OF TAKAYASU ARTERITIS (AORTO-ARTERITIS AND PULSELESS DISEASE) BY IMAGING MODALITIES

**PRESENTING AUTHOR:** AKSHAY KUMAR

**CO-AUTHOR:** (None)

**Objective:** The objective of the our study was to evaluate the clinical usefulness of cross-sectional imaging for establishing the diagnosis of takayasu’s arteritis (TA).

It has been classified in to four major types: classic pulseless disease (type 1). A mixed type (type II), atypical coarctation type (type III) and the type IV is dilated type. In late stage luminal changes such as stenosis, occlusion, or aneurysmal dilatation of the aorta and pulmonary artery and its branches is noted.

Cross-sectional imaging is primary modality to diagnose TA.

TA is an autoimmune granulomatous inflammatory arteritis causing arterial stenosis and aneurysms mainly involving thoraco abdominal aorta, pulmonary arteries and it shows vascular wall thickening, arterial stenosis, luminal occlusion and aneurysm in the later stage of the disease.
CASE-1 Adult male presented with chest pain since 20 days, non-diabetic, non-hypertensive, chronic smoker.

**Color Doppler examination reveals:** - Bilateral iliac arteries shows stenosis>90%.

CT angiography of abdominal aorta with both lower limbs shows: Post renal abdominal aorta shows 100% stenosis with near total block .90% block seen in both common iliac arteries and normal flow of contrast in both CFA, SFA, POPLITEAL and ATA, PTA and left dorsalis pedis. Reduced flow of contrast with stenosis seen in the right dorsalis pedis artery.

CASE-2 20 years old female presented with persistent abdominal pain from 2 months with generalized body aches and pains.

**Doppler upper limb study reveals:** – Decreased flow in left subclavian artery.

CT angiography: Diffuse circumferential inflammatory thickening of aortic arch ,proximal left subclavian artery,abdominal aorta and B/L renal arteries..

References:

Abstract ID:414

**ABSTRACT TITLE** : CARDIAC CT: ROLE BEYOND CORONARY ANGIOGRAPHY

**PRESENTING AUTHOR** : NEERAJA AKKI

**CO-AUTHOR** : DR. T. ARUL DASAN; M.D.R.D, PROFESSOR AND HOD RADIodiagnosis

**Purpose:** The aim of this study is to discuss and illustrate various non-coronary applications of cardiac CT.

**Materials and Methods:** A cross-sectional study was conducted in tertiary care center with study period expanding over 1 year in which 38 cardiac CT were conducted for varied indications. Cases were evaluated and divided into three groups. Group A – patients having only non-coronary findings, Group B – patients having coronary findings along with non-coronary findings, Group C- patients having only coronary artery disease. Group A and B patients were included in this study amounting to 14 patients.

**Results:** Among 14 cases, 05 cases belonged to group A and 09 cases belonged to group B, like case of aortic dissection, thoracic aortic aneurysm, non-compaction of myocardium, variations in pulmonary venous drainage, pericardial cyst.

**Conclusion:** Although cardiac CT is useful in evaluation of coronary artery disease, it is useful in evaluation of various non-coronary cardiac conditions involving pulmonary veins, coronary veins, pericardium, left ventricular function, valvular heart disease, congenital heart disease, cardiomyopathies and masses.
Abstract ID:463

ABSTRACT TITLE : RARE CASE OF CARDIAC METASTASIS FROM TESTICULAR LYMPHOMA
PRESENTING AUTHOR : ROSHNI VG
CO-AUTHOR : (None)

Learning Objective: To describe a rare case of cardiac metastasis involving right atrium and ventricle from non-Hodgkin’s lymphoma of testis.

Background: Testicular lymphoma is a rare and deadly disease representing 1-2% of all non-Hodgkin’s lymphomas and approximately 5% of all testicular neoplasms. Cardiac metastases are found in 6-20% of autopsies of patients with malignancies. The most common neoplasms that metastasize to heart are malignant melanoma, lymphoma and leukemia, but the relative numbers are greater with breast and lung cancers, reflecting the most common incidence of these tumours.

Imaging findings and details of the case:

A 43 year old male with history of trauma to right scrotum presented to us, as the swelling was not resolving even after 6 months.

USG scrotum showed right testis and epididymis replaced by heteroechoic lesion with internal vascularity. CECT abdomen showed heterogeneously enhancing soft tissue lesion in right hemiscrotum with extensive intraabdominal lymphadenopathy, likely testicular lymphoma.

Right sided high inguinal orchidectomy was done and histopathology revealed non-Hodgkin’s lymphoma. Later he developed chest discomfort and dyspnoea.

CECT thorax showed multiple large hypodense lesions involving right atrium and ventricle with myocardial extension. Echocardiography showed highly echogenic mass attached to RA close to tricuspid annulus and another echogenic mass attached to RVOT causing significant RV inflow and mild RV outflow obstruction.

Prognosis explained and patient was referred to a higher centre for chemotherapy and palliative care.

Conclusion: For patients with known metastatic neoplasms presenting with chest symptoms, we should be alert for the possibility of cardiac metastases.

Abstract ID:472

ABSTRACT TITLE : IMAGING FINDINGS OF PULSELESS DISEASE (TAKAYASU ARTERITIS)
PRESENTING AUTHOR : SANMATHI ANBU
CO-AUTHOR : (None)

Familiarity with the demographic and imaging featurea of TA will facilitate accurate diagnosis and allow early treatment, improving patient outcome. Takayasu arteritis (TA) is a chronic, idiopathic, inflammatory disease that primarily affects large vessels, such as the aorta and its major branches, pulmonary and coronary arteries. Because of considerable morbidity and mortality, accurate and early diagnosis plays a crucial role in improving the outcomes for patients with TA. CT angiography (CTA) is emerging as a reliable tool in non-invasively depicting both luminal and mural lesions in the aorta and its main branches, which may facilitate the detection of vasculitis during the early phase of TA. Angiographic and cross sectional imaging of TA include vascular stenoses, occlusion and anurysm formation.
Abstract ID:538

ABSTRACT TITLE: MULTIDETECTOR COMPUTED TOMOGRAPHY (MDCT) IMAGING SPECTRUM OF ACUTE AORTIC SYNDROMES (AAS)
PRESENTING AUTHOR: NAVNI GARG
CO-AUTHOR: MONIKA AGGARWAL, NIMESH GUPTA

Purpose: To illustrate the spectrum of imaging findings in acute aortic syndromes and their complications

Materials and methods/ Background: Acute aortic syndromes refer to a range of potentially life threatening pathologies of aorta presenting with acute chest pain. It is difficult to differentiate these aortic diseases clinically. Non invasive imaging by MDCT helps in accurate diagnosis and appropriate timely management.

Results/Findings and procedure details: The MDCT protocol for diagnosis of AAS includes an unenhanced CT followed by EKG gated contrast enhanced CT of the entire aorta with 3 mm cuts and multiplanar reconstructions.

AAS include acute aortic dissection, aortic aneurysm rupture, intramural hematoma, penetrating atherosclerotic ulcer and traumatic aortic injury. In aortic dissection, there is formation of an intimal flap with internal displacement of intimal calcifications. CT helps in differentiating the true and false lumen, extent of involvement, type of dissection and associated complications. Intramural hematoma is hemorrhage within the medial layer of vasa vasorum without an intimal tear. There is crescent shaped hyperdense area in the aortic wall on non-contrast scan remaining unenhanced on contrast scan. In penetrating ulcer, there is focal outpouching of contrast outside the aortic lumen. Aortic aneurysm may rupture leading to periaortic stranding, retroperitoneal hematoma and extravasation of contrast material. Traumatic aortic injuries are comparatively rare, however trauma may cause partial/complete aortic transection.

Conclusion: AAS is a clinical emergency requiring early diagnosis and treatment. MDCT plays a pivotal role in diagnosis of AAS and their complications and aids in planning timely medical/surgical management.

Abstract ID:568

ABSTRACT TITLE: ROLE OF MDCT IN EVALUATION OF CONGENITAL HEART DISEASES
PRESENTING AUTHOR: POOJA G KULKARNI
CO-AUTHOR: DR GURURAJ SHARMA, DR PREM ALVA

Purpose:

- To study the diagnostic accuracy of MULTIDETECTOR COMPUTED TOMOGRAPHY in diagnosing and delineating congenital cardiac anomalies
- To assess the role of MULTIDETECTOR COMPUTED TOMOGRAPHY to efficiently guide the surgeon in making therapeutic decisions

Materials And Methods:

Source Of Data:

- All patients with suspected or diagnosed to have CHD, after an initial assessment by Echocardiography were referred to department of radiology, A J Institute of Medical Sciences. They were then evaluated by 64*2 DUAL ENERGY SIEMENS SOMATOM DEFINATION COMPUTERIZED TOMOGRAPHY UNIT
Inclusion Criteria:
- All patients with suspected diagnosis of CHD either clinically or by Echocardiography and referred for MULTIDETECTOR COMPUTED TOMOGRAPHY evaluated

Exclusion Criteria:
- Patient not willing for the procedure, uncooperative patients, and patients too sick to undergo the protocol
- Patients who are at risk for Contrast Induced Nephropathy (CIN) (Serum- Creatinine > 2.0 mg/dl)

RESULTS:
- This study included 30 patients. The clinical consensus diagnosis defined various cardiovascular lesions in the patients, and the results were classified in groups.
- The study presents the appearance of various congenital cardiac lesions seen in clinical practice

CONCLUSION: The primary role of CT is non-invasive assessment of the extracardiac vascular anomalies, lungs and abdomen in one acquisition

Abstract ID:599

ABSTRACT TITLE: IMAGING REVIEW OF EXTRACRANIAL ANEURYSMS
PRESENTING AUTHOR: AMMAR S MODI
CO-AUTHOR: DR.GAGANDEEPSINGH SALUJA , DR. AKASH RAMTEKE

Learning Objectives:
- To know various sites and diagnostic features of Extracranial aneurysms.
- To know common condition associated with Aneurysms.

Background: Evaluation of aneurysm can be performed by various imaging methods including CT and MR angiography. CT Angiography is helpful for revealing the characteristic feature of aneurysm and is the primary modality used for serial imaging of aneurysms. The advantage of CT angiography over conventional angiography include a non invasive technique and capability to reveal luminal and mural abnormalities. CT angiography results in superior image quality because of its abilities to obtain thinner sections in a shorter time with greater range of coverage. As a result, multi planner 2D and 3D images can be reconstructed with higher resolution and fewer artefacts. Purpose of this exhibit is to show the reader, various extracranial sites of aneurysm.

Imaging findings: True aneurysms is seen bounded by all the three layer of vessel wall.

Pseudo aneurysm is seen as breach in the vessel wall resulting in a blood leak that is contained by adventitia and surrounding perivascular soft tissue.

Aneurysm can be
1. Saccular : Eccenteric involving a portion of circumference of vessel wall.
2. Fusiform : Concentric involving full circumference of vessel wall.

Axial CT images area accurate method of measuring aneurysm. Measurement acts as an important guideline to decide the management.
Complication of aneurysm can be rupture, distal thromboembolism and pressure effects.

CT Findings reflecting aneurysm instability include luminal expansion with lysis of thrombus, intramural hemorrhage (Crescent sign), periaortic hemorrhage, penetrating atherosclerotic ulcer and contained rupture (draped aorta sign).

**Conclusion:** Extracranial aneurysm diagnosis, follow-up and management rely on high-quality Intravenous contrast material-enhanced MDCT with multiplaner reconstruction. Aneurysm should be thoroughly inspected for assessing complication and CT indicators of instability.

**Abstract ID: 637**

**ABSTRACT TITLE:** NEW IMAGING MARKER FOR PULMONARY HYPERTENSION: THE EGG AND BANANA SIGN

**PRESENTING AUTHOR:** ANADI GUPTA

**CO-AUTHOR:** DR. DEEPTI NAiK, DR. PRANEETHI K, DR. A. ASHOK KUMAR

**Purpose:** The purpose of this study was to determine if the visualization of the main pulmonary artery (PA) at the level of the aortic arch, is a sensitive and specific diagnostic marker for pulmonary hypertension.

**Materials and Methods:** This is a retrospective study of 160 patients who underwent Computed Tomography Pulmonary Angiogram (CT-PA) for the evaluation of pulmonary vascular pathology. Of these, 80 had pulmonary hypertension (PH) on CT, and 80 patients who did not have PH served as control subjects. The patients diagnosed with pulmonary hypertension on CT underwent 2D-Echocardiography also and findings of pulmonary hypertension were subsequently confirmed. The diameters of the main pulmonary artery (PA) and ascending aorta (Ao) were measured and each study was reviewed for the egg and banana sign. ROC curves, and a t test were used for statistical analysis and also sensitivity, specificity, positive and negative predictive value of each CT parameter was determined.

**Results:** The egg-and-banana sign was associated with a higher ratio of the diameter of the pulmonary artery to the diameter of the ascending aorta and a larger PA diameter (p < 0.05). It had a specificity of 80% and a positive predictive value (PPV) of 85%. When the egg-and-banana sign was used in combination with a main PA diameter larger than 29 mm and a PA-to-Ao ratio greater than 1, its specificity increased to 90% and 95%, respectively.

**Conclusion:** The egg-and-banana sign has a high specificity and PPV for Pulmonary hypertension. The specificity increased when the sign was used in combination with other known CT markers of pulmonary hypertension.

**Abstract ID: 651**

**ABSTRACT TITLE:** COMMON ORIGIN OF INNOMINATE ARTERY AND LEFT COMMON CAROTID ARTERY – A REVISED NOMENCLATURE.

**PRESENTING AUTHOR:** SURAJ GOWDA

**CO-AUTHOR:** DR. KUMAR VENKATESH, DR. SRIKAR C., DR. N. KUDVA

**Learning Objectives:** “Bovine aortic arch” is a celebrated term used to describe a common anatomic variant of the human aortic arch branching. Bearing no resemblance to the aortic arch branching pattern found in cattle, it is a misnomer and an alternative term is to be used.
Background:

Case 1: 80 year old male patient with bronchogenic carcinoma who underwent a contrast study of the thorax.

Case 2: 50 year old male patient with right subphrenic and subhepatic abscess and consolidation of right lung.

Both the patients underwent a contrast study for their respective conditions.

Imaging findings: The innominate artery and the left common carotid artery have a common origin from the aortic arch. Therefore, only 2 great vessels originate from the aortic arch, in contrast with the usual 3 vessel configuration. No symptoms could be attributable to the condition in both cases.

Conclusion and Teaching points: Configuration of the aortic arch and its branches is probably related to different growth rates in the various arteries and the associated migration and merging of the branches. The term “Common Origin of the Innominate Artery and Left Common Carotid Artery” is preferred to describe the innominate artery and the left common carotid artery having a common origin from the arch of aorta. It facilitates communication between consultants and excludes misnomers such as ‘bovine arch’.

Abstract ID:657

ABSTRACT TITLE: AORTIC DISSECTION AND ASSOCIATED COMPLICATIONS- CASE SERIES OF 20 PATIENTS

PRESENTING AUTHOR: RAJAT SINGHAL

CO-AUTHOR: DR. ARCHANA REDDY, DR. R S PRASAD, DR. K JITENDER REDDY

Objective: Aortic dissection is fatal disease causing sudden death of patients. Knowing its causes and complications is required to decrease mortality and morbidity in patients.

Material & Methods: We present 20 cases of aortic dissection and its complications which were referred to our Department of Radio Diagnosis, Apollo hospitals, Hyderabad during January 2016 to September 2017 period.

Observations/results: In our study most patients presented with retrosternal chest pain, shortness of breath and heaviness in chest. Out of 20 patients 9 were females and 11 were male. Age group was between 26 to 83 years with mean age of 61 years. Risk factors included hypertension associated with all 20 patients. Other risk factors were diabetes (8), bicuspid aortic valve (1) and atrial fibrillation (1). Based on Stanford classification, 18 patients fall in type A category and 2 patients in type B category. Dissection was noted extending till/beyond aortic bifurcation (7), subclavian (1), renal arteries (3), coeliac trunk (1), great vessels from arch (1) and coronary arteries (3).

Complications included aneurysm and thrombus formation noted in majority of patients (15), aortic rupture (1), cardiac tamponade (1) and haemopericardium (2) and aortic regurgitation (2). Other complications were pontine infarct (1), lower limb ischemia (2) and renal infract (3). One patient presented with chronic aortic dissection Post Bentollis procedure. Only 5 patients were not having any complications associated with aortic dissection.

Conclusion: Complications of aortic dissection are catastrophic with mortality increasing with each hour. Hence, it is important to diagnose aortic dissection and its complications and manage them early.
Abstract ID:700

**ABSTRACT TITLE**: 3D CT ANGIOGRAPHIC IMAGING OF AORTO-PULMONARY WINDOW WITH ANOMALOUS RIGHT PULMONARY ARTERY FROM ASCENDING AORTA

**PRESENTING AUTHOR**: SHANTALA METAGE

**CO-AUTHOR**: DR. BHUSHITA B L, DR. SATISH D PATIL

**Learning Objectives**: We present a rare case of aorto-pulmonary window with anomalous origin of right pulmonary artery from ascending aorta causing pulmonary hypertension. We emphasize on the need for CT angiography with 3D reconstruction for proper delineation of complex vascular anatomy.

**Background**: A 42 year old male was admitted with a history of respiratory distress. To evaluate for the symptoms, frontal chest radiography was done followed by echocardiography. Later computed tomography angiography with 3D volume rendering was done for further evaluation.

**Imaging Findings**: Chest x-ray showed prominence of pulmonary artery & its main branches. Echocardiography report showed dilated pulmonary vessels.

CT angiography revealed an abnormal communication between proximal part of aorta & pulmonary trunk at the level of T4-5 vertebra, with right pulmonary artery arising from ascending aorta. Bilateral pulmonary veins are prominent.

**Conclusion**: MDCT angiography with 3D reconstruction is a valuable imaging method in the evaluation of various congenital vascular anomalies, allowing a clear visualization of the defect location & delineation of complex vascular anatomy. CT angiography with 3D reconstruction can be used as primary non-invasive investigation in the evaluation of aorto-pulmonary window with anomalous right pulmonary artery from aorta and can eliminate the need for catheter angiography. It also enables a better planning of surgical approach.

Abstract ID:715

**ABSTRACT TITLE**: COARCTATION OF AORTA-SMART DIAGNOSIS ON MULTI-VESSEL DOPPLER STUDY

**PRESENTING AUTHOR**: MAHESH KARANJI

**CO-AUTHOR**: DR.J KRISHNA PRIYA RAJ, DR . ROYCE D’S A, DR.PARTHASARATHY K R (HOD AND PROFESSOR), DR. VEERESH PURAD, DR SHASHANK G H,DR VINAY DEV.

**Introduction**: Coarctation of aorta represents 5%-8% of all congenital heart diseases, with the isolated form comprising 4%-6% of all congenital heart diseases. Although diagnosis is mainly by clinical features and imaging modality like CT- Aortogram, MRI , our case report showed indirect diagnosis through doppler examination which is very rare.

**Materials and methods**: This pictorial assay is based on coarctation of aorta .The patient was relatively asymptomatic until he presented with palpitations and heaviness of head. The patient was referred to the radiology department to rule out renal artery stenosis and diagnosis of coarctation of aorta was made first by the radiologist through doppler study and was later confirmed by CT- Aortogram.
Results: CT Aortogram revealed, Severe descending thoracic aortic narrowing/stenosis seen 3 cm distal to the left subclavian artery origin.

Spectral Doppler of both renal arteries showed low flow volume, slow rising wave pattern with prolonged diastolic flow and acceleration time, i.e. parvus tardus pattern.

Evaluation of suprarenal segment of aorta showed reduced pulsatility with low volume, low velocity spectral pattern

Extended Doppler evaluation of Bilateral iliac arteries and femoral arteries were also showing similar changes of aorta

Conclusion: Coarctation of aorta is not an uncommon cause for secondary hypertension in young patients. Radiologists should be aware of this congenital entity and search for evidence of COA in young patients presenting with hypertension symptoms.

Differential Doppler findings in upper limb and lower limb arteries should raise the suspicion of this entity. Prompt early diagnosis and correction of coarctation of aorta will prevent the mortality and morbidity associated with the condition. Additional imaging modalities like CT angiogram will be useful to confirm this condition and plan further line of management.

Discussion: Coarctation of aorta (CoA) is seen in about 5 to 8 % of patients with congenital heart diseases patient. It is one of common causes of secondary hypertension

Abstract ID:717

ABSTRACT TITLE : DOUBLE AORTIC ARCH
PRESENTING AUTHOR : SIDDALING
CO-AUTHOR : DR SHIVANAND PATIL DR SURESH KANAMADI

Aims and Objectives: We present a rare case of double aortic arch causing tracheal and esophageal stenosis with five separate vessels seen arising from the left and right aortic arches. We emphasize on the need for CT angiography with 3D reconstruction for proper delineation of complex vascular anatomy.

Methods and Material: A 2-month-old male infant was admitted with a history of stridor and respiratory distress. To evaluate for the symptoms, frontal chest radiography was done followed by fibre optic bronchoscopy. Later computed tomography angiography with 3D volume rendering was done for further evaluation.

Results: Chest x-ray - smooth narrowing of the trachea at the level of T3 vertebra.

CT angiography revealed 2 arches arising from the ascending aorta at the level of T2-3 vertebra. The arches were seen encircling the trachea and the esophagus with no evidence of atretic segments in either arches. Five branches were seen arising from the arches of aorta, three from the left arch and two from right arch. Double aortic arch was not associated with any other cardiac abnormality on echocardiography and CT angiography.

Conclusion: Double aortic arch is a rare congenital cardiovascular anomaly however it is the most common cause of symptomatic vascular ring. MDCT angiography with 3D reconstruction delineates complex vascular anatomy and also assesses airway / esophageal compromise due to vascular ring impingement. CT
angiography with 3D reconstruction can be used as primary investigation in the evaluation of double aortic arch and can eliminate the need for barium swallow and catheter angiography.

**Abstract ID: 748**

**ABSTRACT TITLE:** CASE OF DOUBLE RIGHT CORONARY ARTERY: DIAGNOSED ON COMPUTED TOMOGRAPHY CORONARY ANGIOGRAPHY.

**PRESENTING AUTHOR:** RISHIKANT SINHA

**CO-AUTHOR:** (None)

**Background:** A 28-year-old man presented with the complaints of occasional episodes of left sided chest pain, especially on after exertion. He was a non diabetic, nonhypertensive with normal physical examination, cardiac enzymes and troponin-T and ECG. Calcium scoring, coronary CTA, left ventricular function and myocardial perfusion were studied as a single composite study on a 256 dual source CT scan. CT Coronary Angiography was done after intravenous injection of 90ml of 350 mg/ml non-ionic iodinated contrast followed by 50 ml normal saline @ 4.5ml per second. Left ventricular myocardial perfusion was obtained as 17 segment color coded polar map.

**Imaging Findings:** Right dominant circulation with insignificant calcium load. Two branches arising from anterior coronary sinus, likely double RCA.

**Discussion:** Coronary anomalies are incidentally detected during coronary angiography and are not common. Double RCA are defined as double, duplicated, dual, or split and most of these patients have double RCA originated from the single ostium and few have double RCA, with separate ostia located in close proximity, in the right coronary sinus.

Although the double RCA is generally considered as a benign entity, it might be atherosclerotic and can cause acute coronary syndromes including myocardial infarction, sudden death, and be associated with other anomalies. The incidence of stenotic coronary lesions is more prevalent, especially in cases with single than the separate ostia and the prevalence of atherosclerotic coronary artery disease are higher. MDCT allows three-dimensional comprehension of the coronary artery system, and it is extremely useful to identify the congenital coronary anomalies such as the anomalous origin of the RCA.

**Abstract ID: 761**

**ABSTRACT TITLE:** SPONTANEOUS RIGHT CORONARY ARTERY DISSECTION IN YOUNG MALES

**PRESENTING AUTHOR:** HIMA BINDU TUMU

**CO-AUTHOR:** DR. VENKAT RAM REDDY . DR. R.S. MOORTHY DR.SRAVANTHI

**Learning Objectives:** SCAD (SPONTANEOUS CORONARY ARTERY DISSECTION) is a rare non atherosclerotic cause of acute coronary syndrome which is more likely seen in younger adults (females > males) without any classic cardiovascular (CVS) risk factors. The pathophysiology and treatment differ significantly among patients with plaque instability and fragility of arterial walls. SCAD is rarely seen in young males involving RCA(RIGHT CORONARY ARTERY) even though common in young females involving LAD(LEFT ANTERIOR DESCENDING ARTERY) and can be seen in hemodynamically stable young adults with normal sinus rhythm, subtle ECG changes, normal 2D ECHO, calcium scoring zero, no atherosclerotic changes.
SCAD can also involve proximal segment of coronary artery eventhough mid and distal segments are common. finally, highlights the importance of diagnosis of SCAD by coronary angiography when other investigations are normal.

**Background:** A 34 yr old male was brought to our hospital with chest pain and dyspnea grade-II. The patient was hemodynamically stable, afebrile and tachypneic, normal 2D ECHO, T waves on ECG.

**IMAGING FINDINGS ON DIAGNOSTIC CT (128 slice scanner) AND CATH LAB CORONARY ANGIOGRAPHY:** eccentric thrombus with linear filling defect (dissection) at proximal and mid segments of RCA.

**Diagnosis:** SCAD in proximal and mid RCA with normal flow, for which he advised for PTCA + Stent to RCA Under IVUS guidance.

**Conclusion:** This report highlights SCAD occurrence in hemodynamically stable male without classic CVS riskfactors with normal sinus rhythm, no atherosclerotic changes, normal 2D ECHO & Calicum scoring zero and also emphasis on involving uncommon proximal & mid segments of RCA type-I SCAD in young males. It highlights the importance of diagnosis of coronary angiography when other investigations are normal and thus preventing mortality and helping in early management.

**References:** Mortensen, Thuesen L, Kristensen IB, Christiansen A Western Denmark heart registry study

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**Abstract ID: 853**

**ABSTRACT TITLE:** “MDCT EVALUATION OF CORONARY-CAMERAL FISTULA: LEARNING POINTS”

**PRESENTING AUTHOR:** SACHIN T

**CO-AUTHOR:** DR VISHWANATH T, MD, DNB ASSOCIATE PROFESSOR

**Learning Objective:** To describe the evaluation of Coronary Cameral Fistula with MDCT angiography with a case report.

**Background:** Coronary artery fistulas are the most common congenital coronary anomalies. The connection can be between the coronary arteries and low-pressure veins (coronary arteriovenous malformations) or the cardiac chambers called as coronary-cameral fistula as we described in this case report. The most common drainage sites are the right ventricle (41%), right atrium (26%), pulmonary artery (17%), coronary sinus (7%), left atrium (5%), left ventricle (3%) – as in our case, and superior vena cava (1%).

**Imaging findings in our case:**

- Right coronary artery was dilated and seen running in the atroventricular groove, along the posterior aspect up to crux and continuing along the posterior atroventricular groove with demonstrable communication to the postero-superior aspect of left ventricle.
- Left main coronary artery was normal in origin, size and divides into LAD and LCX.

**Teaching points:**

- Coronary cameral fistulas are rare anomalies of coronary artery termination. They are best identified on MDCT coronary angiography with special focus on origin, course, communications and terminations.
- MDCT coronary angiography is a non-invasive imaging modality that is being used to delineate anatomy of coronary artery fistulas with greater accuracy and reliability.
- Multiplanar reformatted images and 3D reconstructions should be used to plan the intervention particularly in complex fistulas.
In our case we demonstrated the Coronary artery fistula from RCA to Left ventricle, which is very rare and accounts for 5% of cases.

**Abstract ID:951**

**ABSTRACT TITLE**: ROESLER IN COA

**PRESENTING AUTHOR**: NERELLA KRISHNA TEJA

**CO-AUTHOR**: DR. SAI KRISHNA, DR.V.N.NARVEKAR, DR.RAMA KRISHNA RAO BARU, DR.VEDA RAJU

**Objective**: Roesler sign a sign seen due to notching of inferior margins of ribs and is seen in coarctation of aorta. Coarctation refers to narrowing of the lumen of aorta. Patients present with symptoms such as angina pectoris and leg claudication.

**Imaging Findings**: On CT aortogram severe narrowing of the lumen of descending aorta immediately distal to the origin of left common carotid artery with no communication of the origin of left subclavian artery with arch or descending thoracic aorta.

Multiple right subclavian, posterior chest wall, para vertebral and inter coastal collaterals bypassing the clarification are seen as Dilated right subclavian artery via paravertebral arteries via descending thoracic aorta. Dilated right internal mammary artery via epigastric arteries. Celiac trunk via phrenic arteries via epigastric arteries. Inferior rob notching of the right 4th, 5th and 6th ribs are seen secondary to inter coastal collaterals.

**Summary**: The treatment depends on the presence of congestive cardiac failure which is seen in severe coartications found in infancy. The complications like rupture of aneurysms are seen. Infective endocarditis is seen in some cases.

**Abstract ID:958**

**Title**: Spectrum of Congenital Heart disease and an approach to their diagnosis: A case series

**Topic**: Cardiovascular Radiology

**Purpose**: To study some of the different types of congenital heart disease and an algorithmic approach to their diagnosis

**Materials and Methods**: We present an algorithmic approach to diagnosis of Congenital heart disease with a case series of 5 infants as an example to illustrate the approach. The spectrum of cases includes VSD, VSD with TOF, APW, congenital aortic stenosis and VSD with TOF with heterotaxy.

**Results**: 5 cases of congenital heart disease were studied and an algorithmic approach to their diagnosis was applied.

**Conclusion**: Congenital heart disease are a difficult topic to understand for most. We have presented an algorithmic approach to the diagnosis and presented 5 cases as an example.
Abstract ID:1021

ABSTRACT TITLE: CARDIAC MRI: PROBLEM SOLVING IN ASSESSMENT OF CARDIOMYOPATHY
PRESENTING AUTHOR: MAANSI PAREKH
CO-AUTHOR: A DONURU, P LAKHANI, B SUNDARAM

This presentation will discuss role of cardiac MRI in diagnosis, prognostication and discuss therapeutic interventions performed as a result during evaluation of ischemic, non-ischemic, stress induced cardiomyopathies, sarcoidosis, valvular heart diseases and malignancies.

Abstract ID:1053

Title: Cardiac CT scan of Tetralogy of Fallot with spectrum of other associated anomalies: A Pictorial Essay.

Topic: Cardiovascular Radiology

Learning Objectives:
1. To demonstrate CT findings of classical Tetralogy of Fallot [TOF].
2. To demonstrate other important vascular anomalies associated with TOF by CT scan.

Background:
• Tetralogy of Fallot accounts for 16.8% of Congenital Heart Diseases in India; while it has incidence of 6% in west. Entity “La Maladie Bleue” was first described by Louis Arthur Etienne Fallot in 1888.
• Classical findings of TOF are 1. Pulmonary Stenosis or Atresia (PS or PA) is usually infundibular or may be valvular; mostly they coexist. 2. Ventricular Septal Defect is sub-aortic in left ventricle and adjacent to hypoplastric parietal band in right ventricles. 3. Overriding of Aorta results due to rotation of aortic root more anterior and towards right. 4. Right Ventricular Hypertrophy occurs due to pressure overload.
• Various other vascular anomalies are associated with TOF.

Imaging Findings:
• Cardiac CT were performed on 128 slice GE Optima CT 660 with Medrad Stellant Dual Head pressure injector. Echo-doppler and surgical correlations were done.
• CT findings of classical TOF were shown with Echo-doppler correlation.
• CT also showed various vascular anomalies like ASD or PDA [Pentalogy of Fallot], right aortic arch, bovine aortic arch, subaortic left brachiocephalic vein, origin of left main coronary artery from right posterior cusp, dual left anterior descending artery etc.

Conclusion and/or Teaching Points:
• Cardiac CT scan is excellent modality to evaluate intra-cardiac anomalies of TOF, as well as associated vascular anomalies having significant implication on deciding surgical approach.

References:
Banderker E, Pretorius E, De Decker R. The role of cardiac CT angiography in the pre- and postoperative evaluation of tetralogy of Fallot. S Afr J Rad. 2015;19(2); Art. #899, 9 pages. http://dx.doi.org/10.4102/sajr.v19i2.899

Abstract ID:1091

ABSTRACT TITLE: "CARDIAC CT EVALUATION OF CONGENITAL HEART DISEASES IN ASPLENIA SYNDROME."

PRESENTING AUTHOR: DEEPAKKUMAR V. MEHTA

CO-AUTHOR: (None)

Learning Objectives:
1. To diagnose Asplenia Syndrome (rare entity) on CT scan.
2. To evaluate fully the Congenital Heart Diseases in Asplenia Syndrome on CT scan.

Background: About 1-3% of all congenital heart diseases are seen in Heterotaxy syndrome [Situs Ambiguous]; which has two types

1. Asplenia Syndrome (Right Isomerism) and
2. Polysplenia Syndrome (Left Isomerism).

Asplenia syndrome consists of midline liver with big left hepatic lobe, midline stomach, absent spleen, trilobed both lungs with horizontal fissure and middle lobe, as well as short wide main bronchus bilaterally. Asplenia syndrome is associated with more severe congenital heart disease (CHD) like Double Outlet Right Ventricle (DORV), Atrio-Ventricular Septal Defect (AVSD), Transposition of Great Vessels (TGA), Tetralogy of Fallot (TOF) and Pulmonary Stenosis/Atresia.

Imaging Findings: Cardiac CT scans were performed on 128 slice GE Optima CT 660 with Medrad Stellant Dual Head pressure injector. We are presenting two cases of asplenia syndrome with CHD. Echo-doppler and surgical findings were correlated.

Case 1: Eight months old girl was presented with cyanosis, tachypnea & poor feeding. CT scan had revealed asplenia syndrome with DORV, Ventricular Septal Defect (VSD), large Atrial Septal Defect (ASD) and small Patent Ductus Arteriosus (PDA).

Case 2: Three months old boy was presented with excessive crying. CT scan had shown asplenia syndrome having thoracic stomach with AVSD, Common Atrio-Ventricular Valve, Pulmonary Stenosis, markedly hypoplastic proximal main pulmonary artery, Infra-cardiac TAPVR (type III), 2 aorto-pulmonary collaterals, bovine aortic arch & anomalous hepatic arterial supply from branches of SMA & LRA.

Conclusion and/or Teaching Points: Whenever Heterotaxy syndrome is diagnosed; CHD is always a possibility. Asplenia syndrome is associated with more severe CHD.

References:
Abstract ID:1097

ABSTRACT TITLE: ISOLATION OF THE SUBCLAVIAN ARTERY
PRESENTING AUTHOR: TAHLEEL ALTAF SHERA
CO-AUTHOR: FAIZ ALTAF SHERA, NASEER AHMED CHOH, SHUMYLA JABEEN

Learning Objectives: To present two cases and review literature regarding Isolation of the Subclavian Artery

Background: Isolation of the Subclavian Artery is a rare congenital cardiac anomaly, in which there is loss of continuity between that aortic arch and the Subclavian Artery, with patent ducts arteriosus connecting it to the Pulmonary Artery

Imaging Findings: we present the imaging findings in two cases of Isolation of Subclavian Artery on CT and MRI and demonstrate the role of advanced imaging techniques such as VRT, phase contrast MRA and Time resolved MRA in the diagnosis

Conclusion: Isolation of the Subclavian Artery is a rare Aortic arch anomaly and may be missed on echocardiography due to similarities with PDA. Therefore sectional imaging with CT and MRI should be performed in cases where this diagnosis is suspected to guide proper management.

Abstract ID:1162

ABSTRACT TITLE: RARE CASE OF AORTA - RIGHT ATRIAL TUNNEL
PRESENTING AUTHOR: SUKHADA MANJARE
CO-AUTHOR: DR ATUL TAYADE, DR ATUL DHOK, DR SAURABH PATIL

Learning Objectives: Extra-cardiac connections between aorta and other chambers of heart are rare congenital anomalies. Here we discuss the role of CT angiography in definitive diagnosis of Aorta–right atrial tunnel, a rare congenital anomaly.

Background: A 26 year old male presented with exertional dyspnea and palpitation. With stable hemodynamics. Cardiovascular examination revealed continuous murmur and signs of right heart failure. Electrocardiography was suggestive of left ventricular hypertrophy. Trans-thoracic echocardiography was suggestive of aorta to right atrial tunnel, severe aortic regurgitation and severe TR with moderate pulmonary hypertension.

Imaging Findings: CT angiography was done for further anatomic details and more confirmatory diagnosis. It was suggestive of dilated right aortic sinus. A tubular connection of maximum diameter 17.5 mm and length of 9.5 cm noted, arising from right sinotubular junction extending anteriorly then curving posterosuperiorly to open into right atrium near the opening of SVC. Right coronary artery appeared to be arising just below the aorta-right atrial tunnel.

Conclusion: Though echocardiography can establish the diagnosis and Digital Subtraction Angiography can give better spatial resolution, CT angiography has an important role in definitive diagnosis of aorta-right atrial tunnel and differentiating this rare congenital anomaly from relatively common clinical conditions like ruptured sinus of valsava aneurysm and coronary-cameral fistula for proper surgical planning.
### Abstract ID: 1242

**ABSTRACT TITLE**: ROLE OF 3D COMPUTED TOMOGRAPHY (CT) IN THE EVALUATION OF ABERRANT ORIGINS OF SUBCLAVIAN ARTERY  

**PRESENTING AUTHOR**: ANADI GUPTA  
**CO-AUTHOR**: DR. BHAGYALAKSHMI, DR. ASHOK KUMAR  

**Learning Objective**: The purpose of this article is to review embryology and anatomy of the aortic arch system and its variants, describe imaging features of aberrant origin of right or left subclavian artery on CT and discuss the role of diagnostic imaging in surgical management.  

**Background**: Aberrant right subclavian artery (ARSA) is a rare congenital anomaly that usually does not produce symptoms. Symptomatic patients require surgical intervention. Aberrant left subclavian artery (ALSA) is most commonly associated with a right sided aortic arch and although rarely symptomatic, it can cause oesophageal or tracheal compression. Computed tomography can contribute significantly in delineating the variant anatomy and guide in evaluation and further management if clinically indicated.  

**Imaging findings**: We present a total of 11 cases who were found to have aberrant origin of the right or left subclavian artery and the associated anomalies. The aberrant origins of the subclavian arteries were evaluated and 3D volume rendered images were acquired to completely delineate the variant anatomy.  

**Teaching points**: Congenital variants and anomalies of the aortic arch are important to recognize as they may be associated with vascular rings, congenital heart disease, and chromosomal abnormalities, and can have important implications for prognosis and management. Pattern recognition approach in aberrant origin of the subclavian artery is important as it will help in the management by predicting associated multi-system anomalies.  

### Abstract ID: 1302

**ABSTRACT TITLE**: CAD-RADS: A NEW ERA IN THE REPORTING OF CORONARY CT ANGIOGRAM  

**PRESENTING AUTHOR**: SUBRAMANIYAN RAMANATHAN  
**CO-AUTHOR**: MAHMOUD AL HEIDOUS, MARYAM ALKUWARI  

**Learning Objectives**:  
1. To learn the new standardized reporting system for CT coronary angiogram - CAD-RADS (Coronary Artery Disease Reporting and Data Systems)  
2. To understand how the score is calculated for different components of CAD-RADS  
3. To discuss the strengths and limitations of CAD-RADS  

**Background**: A new standardized reporting system has been introduced recently for coronary CT angiography interpretation called CAD-RADS (Coronary Artery Disease Reporting and Data System: Strengths and limitations). Like any other new reporting platform, CAD-RADS has both advantages and disadvantages.  

CAD-RADS aims to classify the CTA based results on the severity of stenosis and to link this data to clinical patient management. The indication for coronary CTA, scan protocols and performance standards remains the same. Interpretation, training standards and quantification of coronary arterial stenosis is based on the 2014 SCCT reporting guidelines in both acute and non-acute settings.
Imaging details:

CAD-RADS dependent variables: Degree of stenosis, high-risk anatomy, plaque morphology, image quality, stents and coronary artery bypass grafts are evaluated to decide the final CAD-RADS category

There are 6 categories:

0 Normal: absence of plaque and no luminal stenosis
1 Minimal: 1% to 25% stenosis
2 Mild: 25% to 49% stenosis
3 Moderate: 50% to 69% stenosis
4 Severe: 70% to 99% stenosis
5 Occluded

Strengths - Consistent report, clarity of communication, clinical recommendations

Limitations: Misinterpretation, misclassification, missing components, misguidance

Conclusion: Coronary CTA is now well established diagnostic test in low-intermediate risk patients with chest pain. It is important to speak the same language and CADRADS definitely helps in achieving this goal. It decreases the variations in the reporting style thereby providing a more consistent reporting. It does not stop with categorizing the severity of stenosis but goes beyond and suggest next step in the clinical decision making in the form of further investigations and management thereby playing a central role in the patient care
Abstract ID:40

**ABSTRACT TITLE**: PULMONARY TUBERCULOSIS: A COMPUTED TOMOGRAPHIC COMPARISON IN BETWEEN IMMUNOCOMPROMISED PATIENTS AND IMMUNOCOMPETENT PATIENTS.

**PRESENTING AUTHOR**: ADITYA D. MEHTA

**CO-AUTHOR**: DR. JAGRUTI KALOLA

**Background**: Pulmonary tuberculosis has atypical radiological manifestations in patients with underlying immunocompromised disease like diabetes and human immunodeficient virus infection. Computed tomography has important role in such patients for early diagnosis of disease and management to minimize complication.

**Aim**: To evaluate and compare the computed tomography chest features of pulmonary tuberculosis in between immunocompromised patients and immunocompetent patients.

**Material and Methods**: This cross-sectional study was conducted in the PDU Civil Hospital, Rajkot on newly diagnosed 50 pulmonary tuberculosis patients of which 25 patients had no underlying disease (Immunocompetent Group) and 25 patients had diabetes mellitus or were human immunodeficiency virus seropositive (Immunocompromised Group). CT scan of chest were evaluated for each patient.

**Results**: In immunocompetent patients, 20% had radiologically atypical presentation, 66% had nodular opacities, 79% had consolidation, 39% had lymphadenopathy, 45% had cavitation and cavitatory lesion was single in 80% patients. Isolated upper lung field were involved in 60% patients.

In immunocompromised patients 85% had radiologically atypical presentation, 75% had nodular opacities, 45% had consolidation, 69% had lymphadenopathy, 20% had cavation and cavitatory lesions were multiple in 60% patients. Isolated lower lung field were involved in 27% patients.

**Conclusion**: We concluded that immunocompromised patients have more atypical involvement of lung fields, higher prevalence of lymphadenopathy as compared to immunocompetent patients. Diabetic patients have multiple cavitatory lesions as compared to non-diabetic patients. HIV seropositive patients have more prevalence of lymphadenopathy as compared to HIV seronegative patients.

**Keywords**: Computed tomography, Diabetes mellitus, Human immunodeficient virus

Abstract ID:80

**ABSTRACT TITLE**: EVALUATION OF MEDIASTINAL MASS LESIONS USING COMPUTED TOMOGRAPHY AND CORRELATION WITH HISTOPATHOLOGICAL DIAGNOSIS

**PRESENTING AUTHOR**: PRITAM GADIA

**CO-AUTHOR**: DR. BHAGVATI UKANI, DR AUM KOTAK

**Purpose**: Plain CT or contrast enhanced CT (CECT) has definitely a major role to play in the evaluation of mediastinal masses regarding the distribution pattern, diagnosis and mass effect upon adjacent structures.
and compare CT findings with histopathological findings. The additional role of CT is performing CT guided biopsies of lesions for histopathological correlation to evaluate the diagnostic accuracy of cect.

**Material and Methods**: 40 patients (age 7 years to 70 years) over a period of 1 year with clinically suspected mass lesion or those with suspicious mediastinal abnormality on chest radiogram referred to department of radiodiagnosis for doing plain ct or contrast enhanced ct or both. CT scan done using somatom emotion 16 slice CT machine. Patients were kept nil orally 4 hrs prior to the ct scan to avoid complications while administrating contrast medium. Risk of contrast administration were explained to patients and consent was obtained prior to the contrast study. Coronal, axial and sagital planes were analyzed for mediastinal masses regarding the distribution pattern, diagnosis and mass effect upon adjacent structures and findings are correlated with histopathological diagnosis. Type of study being prospective study.

**Results**: In our study, anterior mediastinum was the most commonly involved compartment, followed by superior mediastinum, posterior mediastinum and middle mediastinum. Lymphoma and thymic lesions are most common lesions in anterior and superior mediastinum. Teretoma and metastatic lymphadenopathy in middle mediastinum and neurogenic tumour like schwannoma in posterior mediastinum. Out of 38 patients who undergone biopsy, histopathology report of 34 patients indicates same diagnosis as indicated by cect.

**Conclusion**: From the above results, we conclude that computed tomography definitely has a major role to play in evaluation of a mediastinal mass regarding the compartmental distribution, mass effect and provisional diagnosis which was correlated with histopathological diagnosis.

**Abstract ID:81**

**ABSTRACT TITLE**: TO STUDY THE ROLE OF HRCT THORAX IN DIFFUSE LUNG DISEASES

**PRESENTING AUTHOR**: PRIYA LOHCHAB

**CO-AUTHOR**: PRATAP SINGH PARIHAR

**Purpose**: To study the role of HRCT thorax in diffuse lung diseases.

**Objectives**:
1. To study different distribution of abnormalities in diffuse lung diseases on HRCT.
2. Interpretation of patterns in relation to distribution of diffuse lung diseases
3. To study detection rate on HRCT of diffuse lung diseases suspected clinically with available normal chest radiographs

**Material and Method**: A prospective study of 300 patients of all age groups with clinically suspected diffuse lung disease was done in the Department of Radio-diagnosis, Acharya Vinoba Bhave Rural Hospital, Datta Meghe institute of medical sciences, Sawangi (Meghe), Wardha, Maharashtra.

**Result**: In our study most common finding was tuberculosis 62 (22.8%), Next common condition was idiopathic pulmonary fibrosis 56 (20.7%) cases, followed by bronchiectasis (16.1%) , pulmonary edema (13.6%), emphysema(8.4%), usual interstitial pneumonia(6.1%) , hematogenous metastases (4.8%), desquamative interstitial pneumonia(3%) , lymphangitic carcinomatosis (2.5%) , hypersensitivity pneumonitis (2%) . Morphologically most of them were having ground glass opacity (47%), followed by bronchiectasis (27%), reticulao-nodular opacities (17%) and honeycombing (9%).
Conclusion: HRCT is the most accurate non-invasive imaging modality for evaluation of lung parenchyma. It is a standard investigation to identify and quantify anatomic pattern and distribution of various interstitial lung diseases and also evaluates activeness and progression of disease in relation to prognosis and therapy.

Abstract ID: 82

**ABSTRACT TITLE**: TO STUDY THE ROLE OF LUNG ULTRASOUND IN EARLY DIAGNOSIS OF DIFFUSE PARENCHYMAL LUNG DISEASES.

**PRESENTING AUTHOR**: KIRAN PATEL

**CO-AUTHOR**: LT COL (DR) PUNEET SAXENA, LT COL (DR) VARGHESE KOSHY, COL (DR) DALBARA SINGH

**Aim**: To study the role of lung ultrasound in early diagnosis of diffuse parenchymal lung diseases

**Objective**: To correlate findings of lung ultrasound with HRCT chest in patient with clinical suspicion of diffuse parenchymal lung diseases.

**Materials and Methods**: The study was conducted on patients with pre-existing risk factor for DPLD in the department of radiodiagnosis; CH(WC), in association with the departments of rheumatology and medicine, from July’2016-Mar’2018.

**Sample Size**: 42 patients who met the eligibility criteria were included in the study. Out of 42 patients, 30 were females and 12 were males.

**Results and Conclusion**: All patients, suspected cases of DPLD, in the study were assessed by lung ultrasound followed by HRCT chest and PFT. Correlation of lung ultrasound findings with the HRCT chest findings was assessed. By using Fisher’s exact test, p-value > 0.05 was calculated and it was concluded that sensitivity and specificity of lung ultrasound with respect to high resolution computed tomography is 93.55% and 90.91% with positive and negative predictive values of LUS being 96.67% and 83.33% which are in concordance with other similar studies.

**Conclusion**: There is a tight correlation between DPLD and B-lines as well as findings on LUS with findings on HRCT chest. Ultrasonographically we also demonstrated severity of disease based on number of B-lines & distance between two B-lines which confirms lung ultrasound as a screening tool in DPLD patients in early phase, as proved in many other studies. Although HRCT is the gold-standard imaging modality; lung ultrasonography is a substitution as an initial screening modality to it where HRCT is not available or undesirable with many advantages over HRCT; i.e. it’s a bedside procedure, widely available, easily performed, inexpensive and requires no ionizing radiation.

Abstract ID: 91

**Title**: Pneumothorax and pneumomediastinum in HIV-positive patients: case series and literature review

**Topic**: Chest Radiology

**Purpose**: Pneumothorax and pneumomediastinum is a rare complication in HIV-positive patients. We reported three cases of HIV-positive patients presenting with pneumothorax and pneumomediastinum and reviewed the reported cases in the English literature.
Materials and Methods: We retrospectively reviewed the computed tomography (CT) report database and records in our hospital from August 2015 to July 2018. Three patients were identified. Radiologic findings, final outcomes and causative pathogen were evaluated. We also reviewed 11 cases of pneumothorax and pneumomediastinum in patients with AIDS reported in the English literature.

Results: Three patients were identified with the presentation of pneumothorax and pneumomediastinum. They had been HIV-tested and all were HIV-positive. One case was caused by Pneumocystis jirovecii (PJP), one by Cytomegalovirus (CMV), and one by both PJP and CMV. CT of the chest revealed diffuse ground-glass opacities in all cases.

Conclusion: Pneumothorax and pneumomediastinum is a rare complication of respiratory infections with high mortality rate in patients with HIV infection. The causative pathogens most commonly described to be pneumocystis pneumonia. But pneumothorax and pneumomediastinum may also complicate cytomegalovirus pneumonitis, and coexistence of both PJP and CMV is possible. This is important to consider cytomegalovirus pneumonitis as a differential diagnosis of pneumocystis pneumonia for prompt and adequate treatment.

Abstract ID:175

ABSTRACT TITLE : A CASE OF OSTEOPETROSIS PRESENTING WITH CHRONIC OSTEOMYELITIS OF MAXILLA

PRESENTING AUTHOR : T RANI

CO-AUTHOR : DR.V.BALAMURALI KRISHNA MD RD ASST.PROF DR.PSIMS&RF
DR.K.CHANDRASEKHAR,MD RD, PROF&HOD,DR.PSIMS&RF. DR.K.PRAFUL KUMAR MD RD ASSOC.PROF DR.PSIMS &RF

Objective: To evaluate the spectrum of pulmonary infections prevalent in our hospital in immuno compromised patients

Background: Superadded infection in immunocompromised patients was a significant cause of mortality. Major immunocompromised state was due to diabetes, malignancy, steroid intake or chemotherapy. Organisms isolated were pneumocystis, candida and aspergillus

Imaging Findings: Pattern of lung infection varied from ground glass infiltrates to extensive consolidation. Ground glass infiltrates was the commonest finding in those affected with pneumocystis. Cavitation was associated with good response in patients on anti fungal treatment

Teaching Points: There are several Key findings which would enable us to narrow the differential diagnosis
Purpose:
- To determine the efficacy of Multi-Detector Computed Tomography (MDCT) in characterization of mediastinal and hilar lymph nodes as benign or malignant.
- To correlate MDCT findings of benign/malignant lymph nodes with histopathology.

Methods and Criterion:
- Ethical permission was given by VIMS & RC ethics committee and informed consent was obtained from all patients. 50 patients underwent MDCT (Plain and contrast scan) with 128 slice MDCT scanner. Sagittal, coronal and 3D images were reconstructed wherever necessary (Mediastinal window - 320/40, Lung window – 1400/-600, bone window – 2400/200) to evaluate differences in tissue density.
- The size, location, number, pre and post contrast attenuation values, presence of calcification, necrosis, and mass effect on adjoining structures were evaluated.
- Biopsy of the mediastinal or lung mass and associated mediastinal and hilar lymph nodes was done and sent for HPE.
- All parameters were taken into consideration, analytical and comparative study was done.

Results:
- CT is (100% sensitive) in identification of mediastinal and hilar lymphadenopathy.
- Benign lymph nodes occur in younger patients, common station (2>4 >7), oval in shape, discreet, no necrosis (except tuberculosis), have calcifications and no contrast enhancement.
- The malignant lymph nodes occurs in much older age, common stations(7>2>4), had larger mean short and long axis diameter, round in shape, showed coalescence, necrosis and contrast enhancement.

Conclusion: Study suggests that MDCT has a major role to play in the evaluation of mediastinal and hilar lymphadenopathy and their characterization and differentiating benign and malignant lesions.
Abstract: Bronchogenic carcinoma is the leading cause of death in developed countries. MDCT plays an important role in evaluating and staging of bronchogenic carcinoma. CT provides precise characterization of size, extent, contour, assessing intra and extra thoracic spread of lung cancer.

Aims and Objectives:
- To assess the role of MDCT in diagnosis and characterization of bronchogenic carcinoma.
- To study the role of CT for assessment of tumor extent and invasion.
- To document the CT appearances of various histological types of bronchogenic carcinoma.

Materials and Methods:
- 40 patients who were clinically and radiologically suspected to have bronchogenic carcinoma were subjected to plain and contrast enhanced CT thorax.
- CT guided FNAC/Biopsy and post-surgical confirmation was done.
- The machines used SEIMENS somatom emotion 16-slice CT machine.

Results and Conclusion:
- Out of 40 patients studied 35 patients were found to be having Malignant lesion and 5 patients were having Benign lesion.
- Out of 35 patients who were having Malignancy, 26 Male and 9 Female were studied. There were 16 cases of Adenocarcinoma, 14 cases of Squamous cell carcinoma, 4 large cell carcinoma, 1 small cell carcinoma.
- Squamous cell carcinoma showed a central predominance whereas adenocarcinoma showed a peripheral predominance in location.
- Out of 35 cases 17 shows spiculated margin, 14 shows lobulated and 4 shows smooth margins.
- 37% of cases had distant metastasis, brain being the most common site followed by Adrenal glands and liver.
Background: In nearly all mediastinal masses cases, chest radiograph represents the first modality in imaging mediastinal masses and is advantageous because of its low cost, widespread availability, and ease of acquisition. Multi detector computed tomography is a very useful modality for evaluating the mediastinal lesions as it provides precise information regarding the extent, tissue composition, lesion enhancement pattern, airway, mediastinal and vascular invasion. Post-processing techniques further improve the diagnosis and surgical planning by better depicting the anatomy and reducing radiologist fatigue. The new three compartment based classification system by the International Thymic Malignancy Interest Group is simple, helps in identifying mediastinal mass lesions.

Aims:


Methods and Material: One year cross-sectional study was done in the Department of Radiodiagnosis & 45 patients referred for evaluation of suspicious mediastinal mass lesions clinically were subjected to MDCT to evaluate, characterize, localize and differentiate the various mediastinal mass lesions from September 2017 to August 2018. These patients were subjected to CT guided biopsy if necessary.

Results: Most common mediastinal lesion was lymphoma with heterogeneous enhancement, revealed solid component, infiltration and pleural effusion. Most common compartment involved was prevascular> visceral> paravertebral compartment. Thymoma was the most common lesion to be involved in the prevascular compartment. The vascular lesions were the most common lesions in the visceral compartment. The oesophageal lesions> schwannoma were the most common lesions of the paravertebral compartment.

Conclusions: MDCT is useful modality for evaluating the mediastinal lesions and provides precise information regarding the extent, tissue composition, lesion enhancement pattern, mediastinal and vascular invasion. New three compartment based classification system helpful in correctly identifying the mediastinal lesions.
Abstract ID:245

**ABSTRACT TITLE**: KARTAGENER’S SYNDROME : A RARE CAUSE OF BRONCHIECTASIS

**PRESENTING AUTHOR**: SUKANYA SARKAR

**CO-AUTHOR**: (None)

**Learning Objectives**:

1. To enlighten Kartagener’s Syndrome as one of the rare but important cause of Bronchiectasis and male infertility.
2. Early diagnosis and treatment to prevent deterioration of lung function and morbidity due to severe intractable respiratory tract infections.

**Background**: Kartagener’s Syndrome is a subset of primary ciliary dyskinesia, an autosomal recessive inherited disorder characterized by the clinical triad of Bronchiectasis, situs inversus and chronic sinusitis. Abnormal ciliary structure or function leading to impaired ciliary motility is the main pathophysiologic problem in Kartagener’s Syndrome.

**Imaging findings**: Chest x-ray posteroanterior view of a 24yrs old female showed dextrocardia with right sided aortic arch and inhomogeneous patchy opacity in mid and lower zone of both lung fields.

USG whole abdomen revealed liver and IVC on the left side and spleen on the right side with dextrocardia suggestive of situs inversus totalis.

CT scan of thorax showed dextrocardia and bronchiectatic changes in bilateral lower lobes.

NCCT scan of Paranasal sinuses showed pansinusitis.

**Conclusions or Teaching points**: Kartagener’s syndrome is a rare condition which in many times remains wrongly diagnosed as Tuberculosis and treated with Antitubercular drugs (ATD) like this case or underdiagnosed. In a country like India where tuberculosis has a high burden such irrational use of ATD can result in prospective Multi Drug Resistant Tuberculosis. So prompt and proper diagnosis of this syndrome is of utmost importance.

Abstract ID:259

**Title**: IMAGING OF RARE MEDIASTINAL MASSES

**Topic**: Chest Radiology

**Purpose**: Mediastinal masses span a wide histopathological spectrum. Tumours other than Primary thymic masses, thyroid masses and lymphomas can be considered as rare masses. We analysed and discussed the imaging features of such rare mediastinal masses in 15 histologically proven cases.

**Material and methods**: The imaging features of 15 histologically proven cases of rare mediastinal masses were analysed. There were 2 females. Maximum (n=4) were < 10 years of age with the youngest being 4 years. Neuroblastoma (3) and sarcomas (3) were the most common. The latter included one case each of liposarcoma, synovial sarcoma and spindle cell tumour. The rest of tumours were one each of Hemangiopericytoma, lymphoma (presenting as single mass), neuroendocrine tumor of anterior mediastinum, paraganglioma of posterior mediastinum, Fibrosing mediastinitis (presenting as highly vascular mass), inflammatory myofibroblastic tumour (mimicking cardiac angiosarcoma). There were 3 benign tumours (one each of bronchogenic cyst, parathyroid adenoma and Cattleman’s disease) included in our study.
Neuroblastomas were heterogenous and non-encapsulated masses with haemorrhage, necrosis and calcification. Sarcomas were large, ill-defined, heterogenous masses with infiltrating margins. Hemangiopericytoma was a large, highly vascular and infiltrative tumour. Fibrosing mediastinitis presented with compression signs over tracheobronchial tree, pulmonary artery/vein, svc and oesophagus. It was a large enhancing mass in right hilar region with infiltration into mediastinum. We had one case of inflammatory myofibroblastic tumor misdiagnosed as densely enhancing infiltrative cardiac mass. Rest of the tumours had typical imaging features.

Conclusions: Awareness of the imaging features of rare mediastinal tumours can help in appropriate evaluation.

Abstract ID:275

ABSTRACT TITLE: A RARE PRESENTATION OF SEPTIC PULMONARY EMBOLI AND CT HALO SIGN
PRESENTING AUTHOR: VYSHNAVI BOLLAM
CO-AUTHOR: DR VENKATRAM REDDY, DR RAMKRISHNA REDDY, DR RS MOORTHY

Learning Objective: Septic pulmonary emboli very rarely can also be seen without any common risk factor-like bacterial endocarditis, indwelling catheter-in-situ and IV drug abuser. The CT halo sign rarely may also be observed in nonhemorrhagic nodules, in which case either tumor cells or inflammatory infiltrate account for the halo of ground-glass attenuation. Early diagnosis and prompt antimicrobial therapy or surgical intervention can lead to a successful treatment outcome.

Background: 51-year-old female diabetic patient came with complaints of high grade fever which is not subsiding with medication. No other respiratory complaints noted.

Imaging Findings: The CT scan was obtained to search for a source of fever. HRCT CHEST showed the halo sign i.e. multiple patchy areas of hyperdense nodules with surrounding groundglass opacities in bilateral lungs. Chest radiograph revealed few patchy areas of consolidation with few areas of breakdown in bilateral lungfields. Diagnosis of septic pulmonary emboli was made. Patient was put on i.v antibiotic clarithromycin for 1 week. A month after her antibiotics therapy, repeat HRCT chest shows complete disappearance of parenchymal lesions.

Conclusion: Septic pulmonary embolism (SPE) is an uncommon disease without a specific clinical presentation and may present with an insidious onset of fever, cough, or hemoptysis combined with characteristic radiographic findings of multiple peripheral lung nodules with or without cavitation.

We have presented an unusual case of 51-year-old female patient, non-smoker, normotensive, diabetic, who presented with fever without any respiratory complaints.

Chest radiography and computed tomography examination revealed bilateral multiple hyperdense nodules with surrounding groundglass opacities. We diagnosed this as a case of SPE without known primary focus.

The patient responded both clinically and radiologically with antibiotics treatment.

TEACHING POINTS: The presence of a halo of ground-glass attenuation is usually associated with hemorrhagic nodules. It may also be observed in nonhemorrhagic nodules, in which case either tumor cells or inflammatory infiltrate account for the halo of ground-glass attenuation. Though its nonspecific sign, its auseful diagnostic clue in the appropriate clinical setting.
ABSTRACT TITLE: HRCT IN PROGRESSIVE SYSTEMIC SCLEROSIS: REVIEW OF SCORING SYSTEMS AND PATTERNS

PRESENTING AUTHOR: SURABHI VYAS
CO-AUTHOR: PRIYANKA NARANJE, ASHU SEITH BHALLA

Learning objectives:
1. Review the pulmonary parenchymal manifestations of progressive systemic sclerosis
2. Review the various qualitative, semi quantitative and quantitative HRCT scoring systems
3. Imaging illustrations of findings on high resolution computed tomography of thorax

Background: Progressive systemic sclerosis (PSS) is a connective tissue disorder of unknown etiology affecting multiple systems with female to male ratio of 3:1. There are two forms; limited cutaneous and diffuse forms based on the distribution and extent of involvement. Pulmonary parenchymal involvement occurs in more than 50 to 60% of the patients.

Imaging (with illustrative examples)

Scoring systems: Various CT scoring systems have been proposed, the notable among which are:
1. Comparative score (Wells) - Extent of parenchymal disease is compared relative to the extent of reticular disease on HRCT.
2. Semi Quantitative score (Warrick) - Abnormalities are progressively graded according to severity (maximum score 15) and combined with extent of abnormality depending on the bronchopulmonary segments involved (maximum score 15).
3. Semi quantitative score (Scleroderma Lung study –Goldin) - Extent of abnormality is graded as a percentage of involvement which is then scored from 0 to 4. A composite score for three lung zones in each lung is then calculated.
4. Quantitative score (Wells) – similar to scoring system used in IPF, with extent of disease is estimated as a percentage at five separate levels
5. Quantitative CT- Histogram based methods and computer aided detection

Types of pulmonary involvement:
1. Ground glass opacities
2. Non-specific interstitial pneumonia
3. Usual interstitial pneumonia
4. Organizing pneumonia
5. Other changes - Pulmonary hypertension, dilated oesophagus, aspiration pneumonia, bronchiolitis, vascular and pleural complications

Teaching points/ conclusion:
1. Pulmonary findings vary depending on the pattern and extent of involvement.
2. Scoring systems are useful in follow-up and prognostication.
Abstract ID:338

ABSTRACT TITLE: ROLE AND EFFICACY OF MULTIDETECTOR COMPUTED TOMOGRAPHY AND PERCUTANEOUS COMPUTED TOMOGRAPHY GUIDED FINE NEEDLE ASPIRATION CYTOLOGY AND/OR BIOPSY IN THE TISSUE CHARACTERISATION OF INTRATHORACIC LESIONS

PRESENTING AUTHOR: VINAY B S
CO-AUTHOR: DR SANTOSH RAI

Introduction: Bronchogenic carcinoma being the most common thoracic lesion and being the leading cause of death hence the role of imaging in the form of MDCT. CT guided interventional procedures are the most preferred procedures in thoracic lesions. In oncology practice pathological diagnosis of the disease is of paramount importance and is always considered the standard for diagnosis. CT is particularly useful for guiding puncture of mediastinal lesions and intrapulmonary lesions that are difficult to localize.

Aims: To assess the role of MDCT in characterization of lesion in comparison of percutaneous CT guided FNAC/biopsy.

Materials and Methods:
- Multidetector 16 slice CT scanner (GE Brivo and GE Bright speed elite),
- 80 ml of non ionic contrast agent

N : 129 , prospective cross sectional study for 2 years

Results:
- CT had sensitivity of 96.67%, PPV of 86.14%, NPV of 82.35% and Diagnostic Accuracy of 85.59%. Kappa agreement between CT and biopsy was 0.539 (Moderate agreement).
- CT guided FNAC had sensitivity of 95.12%, specificity of 79.17%, PPV of 93.98%, NPV of 82.61% and Diagnostic Accuracy of 91.51%. Kappa agreement between FNAC and biopsy was 0.754 (Substantial agreement).

Conclusion: CT evaluation and CT guided interventions are effective tools in the diagnosis and management of patients with thoracic lesions having minimal risk of complications.
Abstract ID:346

ABSTRACT TITLE: CT VS PET/CT IN THE PRETREATMENT EVALUATION OF NON SMALL CELL LUNG CANCER

PRESENTING AUTHOR: LINDA KALLIATH

CO-AUTHOR: DR AJAY CHUGH, DR GOVINDARAJAN MJ, DR ARUNA PATIL

Author List:
1. DR. LINDA KALLIATH, MBBS;
2. DR. AJAY CHUGH, MBBS;
3. DR. GOVINDARAJAN MJ, MBBS, MD;
4. DR. ARUNA PATIL, MBBS, MD, DNB, FRCR.

Corresponding Author: DR. LINDA KALLIATH (lindakalliath@gmail.com)

INSTITUTION: Apollo hospitals Bangalore, 154/11, opp. IIM Bannerghatta road , Bangalore-560076

Aims And Objectives:
1. To stage NSCLC with the help of CT alone and PET/CT
2. To study the Additional advantage of PET/CT over CT in NSCLC staging.
3. To analyze its role in the change of treatment and prognosis.

Materials And Methods: PET/CT scans were performed on Philips TruFlight Select PET/CT System, consisting of a dedicated PET scanner and a 16-slice CT scanner and appropriate image reconstructions were obtained.

Results: Sample cases with imaging findings will be displayed

Conclusion: Integrated PET/CT is the best imaging tool for staging non-small cell lung cancer since it includes both anatomic and metabolic information. The metabolic information (SUVmax) provided by PET/CT is very important in assessing the prognosis of the patient. Integrated PET/CT changed the treatment plan in many cases by classifying them correctly into surgical and non-surgical groups, thereby improving the prognosis.

Abstract ID:385

ABSTRACT TITLE: ROLE OF HRCT IN GRADING THE SEVERITY AND EXTENT OF DIFFUSE PARENCHYMAL LUNG DISEASES (DLPDS) AND CORRELATION OF HRCT SEVERITY RESULTS WITH CLINICAL SEVERITY ASSESSED BY SPIROMETRY

PRESENTING AUTHOR: RAMAN DEEP

CO-AUTHOR: DR. RAVINDER KAUR (PROF), DR. SUMAN KOCHHAR (PROF), DR DEEPAK AGGARWAL (ASST PROF)

Objective: To evaluate the role of HRCT in grading the severity and extent of diffuse parenchymal lung diseases(DPLDs) and correlating the HRCT severity results with clinical severity assessed by spirometry.

Material and Methods: Patients from pulmonary medicine OPD with suspected/confirmed DPLDs referred for HRCT thorax were enrolled in the study over a period of 1 year. All patients underwent spirometry and pulmonary function tests( FVC, FEV1) FEV1/FVC ratios were calculated and severity was graded as mild/
The diagnosis of DPLDs was done on HRCT on the basis of standard patterns of DLPDs. HRCT chest was done with standard protocols and severity of DPLDs was assessed by using Morelli et al. scoring system (higher score represents greater severity). The HRCT severity scores were correlated with spirometry values.

**Results:** Of the 25 cases studied (mean age 56 yrs), (64% females, 36% males) IPF was the most common (48%), NSIP (32%), sarcoidosis (8%), CPFE (8%) and DIP (4%). HRCT scoring system classified 7 mild, 14 moderate and 4 as severe grades. Spirometry classified them as 11 mild, 11 moderate and 3 severe. On Pearson and chi square test, HRCT and spirometry showed excellent correlation (P value < 0.001). The mean inter observer agreement kappa was 0.542 and the corresponding p value was < 0.001.

**Conclusion:** Our study demonstrated that HRCT scoring system based on grading scale (Morelleli et al.) shows excellent correlation with clinical severity assessed by spirometry. It plays an important role in predicting the clinical outcomes in patients of DPLDs and identifying the patients with an adverse prognosis when used in combination with spirometry.

**Abstract ID: 388**

**ABSTRACT TITLE:** THE BUBBLY LUNG: DIFFERENTIALS & APPROACH TO DIAGNOSIS

**PRESENTING AUTHOR:** MANISH KUMAR

**CO-AUTHOR:** HIMANI SHARMA, TANUJA SHARMA

**Background:** Cystic lung diseases are one of the commonest presentations in radiological practice & they include true cystic lesions & cyst-like lesions or mimickers. There is an exhaustive list of differentials of cystic lesions, but the prime concern is differentiation of true cystic lesions from the mimickers. In practice, bronchiectasis, honeycombing & paraseptal emphysema are more frequently encountered. Extensive cavitation & cystic metastases also have greater incidence than true cystic lung diseases. Identification of diffuse cystic lung disease is important as they have completely different etiologies & clinical conditions.

**Aim & objective:**
1. Developing a pattern-recognition radiological approach for differentiation of true cystic lung disease from mimickers like honeycombing, paraseptal emphysema etc
2. Reviewing the other clinco-radiological features associated with the cystic-like lesions so as to diagnose them confidently on HRCT
3. Reviewing the HRCT features of diffuse true-cystic lung disease

**Material & Method:** This article focuses to formulate a radiological approach for the “bubbly lung” - an acronym for cystic-appearing lung disease. A retrospective analysis of HRCT scans performed at Rohilkhand Medical College, Bareilly in the past 1 year (September 2017- August 2018) was done and all the scans showing cystic change in the lungs were reviewed.

**Conclusion:** The diagnosis of cystic lung disease can be challenging on HRCT & mimickers are more frequently encountered than true cystic lung disease. A multi disciplinary approach requiring both clinical & radiographic inputs helps in reaching the correct diagnosis & in majority of cases. Based on a pattern – recognition approach on HRCT, the mimickers of cystic lung disease (honey combing, emphysema, bronchochicetasis) were adequately characterized in almost all the cases.

**References:** 1. Seaman DM et al. Diffuse Cystic Lung Disease at High-Resolution CT: AJR2011;196: 1305-1311. 10.2214/AJR.10.4420
Abstract ID: 401

ABSTRACT TITLE: RARE CASE OF POST-TRAUMATIC SYSTEMIC AIR EMBOLISM
PRESENTING AUTHOR: GEETHA MUKUNDA JAGADESH
CO-AUTHOR: (None)

Aim: Post-chest radiography CT chest done for Evaluation of right sided pneumothorax and for assessment of air outlining the left ventricle.

Objective: CT chest confirmed the right sided pneumothorax along with systemic air embolism.

Materials and Method: A 40-year-old gentleman was admitted with chest trauma after a road traffic accident. The patient had hemiparesis on left side and difficulty in breathing. Referred for Chest Radiography, CT head and Thorax. The chest X-ray revealed right mild pneumothorax and rib fractures. CT thorax revealed systemic air embolism delineating the left ventricle, aorta, celiac trunk, SMA, coronary vessels and bilateral CCA. CT head was normal.

Results: Post-traumatic Systemic air embolism is relatively rare and fatal condition.

Conclusion: Diagnostic accuracy of CT chest in the diagnosis of systemic air embolism is very high and helps in early intervention and treatment.

Abstract ID: 462

ABSTRACT TITLE: MILIARY LUNG NODULES: AN ATYPICAL PRESENTATION OF LYMPHOMA
PRESENTING AUTHOR: ROSHNI VG
CO-AUTHOR: (None)

Learning Objective: To describe an atypical presentation of lymphoma – as miliary lung nodules

Background: Lymphomas have a wide variety of imaging appearances and they can be characteristic or simulate other diseases. Hence familiarity with the spectrum of findings is essential for radiologists

Imaging findings and details of the case: A 50 year old male with history of weight loss and miliary mottling on chest x-ray, had completed course of ATT for 6 months, presented to us with complaints of dyspnoea on exertion, tiredness and generalised lymphadenopathy after 1 year of completing ATT.

Chest x-ray showed multiple miliary nodules distributed throughout bilateral hemithorax. CT thorax showed innumerable tiny nodules in both lungs and multiple enlarged lymph nodes in bilateral axilla, mediastinum and internal mammary areas. USG of the abdomen and CECT abdomen showed large uniformly enhancing conglomerate lymph nodes in retroperitoneum encasing aorta and its branches and proximal iliac arteries and multiple enlarged iliac, bilateral inguinal, peritoneal, retroperitoneal, and periportal lymph nodes, suggestive of lymphoma. Bilateral renal parenchyma showed differential enhancement with relatively hypodense area along the cortex with well defined external margins, suggestive of parenchymal infiltration.

Lymph node biopsy and lung tissue biopsy histopathological findings were consistent with non Hodgkin’s B cell lymphoma. After 6 months of chemotherapy, follow up CT of chest and abdomen showed regression of the lesions.

Conclusion: Some presentations of lymphoma are almost pathognomonic. Instead in other cases the findings lead to a different entity and after a detailed workup we may unravel the diagnosis of lymphoma.
Abstract ID:534

ABSTRACT TITLE : “INTERSTITIAL LUNG DISEASES ASSOCIATED WITH COLLAGEN VASCULAR DISEASES – RADIOLOGICAL FINDINGS”

PRESENTING AUTHOR : RAKSHITH R N

CO-AUTHOR : DR. ARUL DASAN .T, DR LOHITH YADAV, DR KAMESH G

Aims & Objectives: To describe the radiological findings of interstitial lung diseases associated with collagen vascular diseases.

Background with Imaging Findings: - HRCT Thorax is done for patients with suspected collagen vascular disease and associated pulmonary pathology. Collagen vascular diseases are associated with multiple thoracic disorders: interstitial pneumonia, bronchiolitis, pulmonary hypertension, pleural effusion and infection.

- Interstitial pneumonia associated with connective tissue disorder does not differ in histologic pattern of idiopathic interstitial pneumonia, but have some special characteristics such as co-existence of different histological patterns in same patient and better prognosis than idiopathic forms.

- The most prevalent radiological pattern found is non specific interstitial pneumonia, followed by organizing pneumonia.

Conclusion:
- Radiological examination of choice is HRCT Thorax.
- The interstitial pneumonia most prevalent in this group is Non specific interstitial pneumonia in contrast to idiopathic forms.
- Lung is affected in connective tissue disorder being one important cause of morbidity and mortality in these patients.
- The radiologist has a key role in detection and monitoring of lung disease.

Abstract ID:546

Title : High Resolution Computed Tomography (HRCT) of the chest in idiopathic interstitial pneumonias (IIP) : Pearls and Pitfalls.

Topic : Chest Radiology

Learning Objectives: Identification of the basic imaging findings in interstitial lung diseases on High Resolution Computed Tomography (HRCT) of the chest.

Morphological pattern recognition in the diagnosis of specific disease entities.

Background: Clinicians rely on imaging for the diagnosis of idiopathic interstitial pneumonias (IIP) as their clinical presentation is fairly non-specific. Although histopathological examination is the gold standard, Computed tomography is of undisputable value in the diagnosis and follow up of patients. The classification is based on histologic criteria, but each pattern is associated with characteristic imaging findings which correlate well with histologic findings.
**Imaging findings:** Basic changes include intra and / or interlobular septal thickening, parenchymal bands, centrilobular or septal nodularity, emphysematous changes, cysts, ground glass opacities and specific appearances including tree in bud and crazy paving.

A specified subset of the aforementioned changes are seen in each of the IIPs, which include Non-Specific Interstitial Pneumonia, Usual Interstitial Pneumonia, Cryptogenic Organizing Pneumonia and Respiratory Bronchiolitis associated Interstitial Lung Disease, while Acute Interstitial Pneumonia and Lymphoid Interstitial Pneumonia show non-specific changes.

**Conclusion and/or Teaching points:** The identification and understanding of HRCT changes and patterns underlying IIP by radiology residents is essential for proper diagnosis of this set of disorders which present with a vague clinical picture but cause significant morbidity.

**Abstract ID:555**

**ABSTRACT TITLE:** ROLE OF CT IN CHARACTERISATION OF MEDIASTINAL LESIONS AND ITS CORRELATION WITH HISTOPATHOLOGY REPORT

**PRESENTING AUTHOR:** AMMAR S. MODI

**CO-AUTHOR:** DR. SAHEBRAO KASLOD, DR. AKASH RAMTEKE

**Purpose:**
- To study the radiologic characteristics of various mediastinal lesions using CT Thorax and evaluate the efficacy of CT Thorax in diagnosis of mediastinal mass using histopathology as reference standard.
- To describe the distribution of lesion compartment wise, common compartment involvement

**Material and Methods:** 100 cases from different age group presenting in the outpatient and/or inpatient Departments of institute suspected to have mediastinal related complaints included in the study. All the cases taken up for the study are evaluated for the distribution, CT features and also the involvement of adjacent structures using multi-Slice CT scanner.

**Statistical Analysis:** The sensitivity of CT diagnosis was calculated. Qualitative data was represented in form of frequency and percentage and assessed by Chi-Square test. Quantitative data was represented using Mean ± SD and Median & Interquartile range and assessed by ANOVA test.

**Results:** Out of 100, 88 cases were histologically verified. 80 cases showed diagnosis consistent with that of CT diagnosis hence sensitivity of CT in diagnosing mediastinal lesions is 92%.

Maximum number of cases occurred between 31yrs to 45yrs age group commonly in males that is 65% and female 35%. Out of 100 cases of mediastinal lesions, the anterior mediastinum was the most common compartment (52%) involved followed by posterior (30%) and middle mediastinum (18%). Most common anterior and middle mediastinal lesion is TB lymph node constitutes 34.4% and 45% respectively. Majority of the posterior mediastinal lesions were neural tumors and TB lymph nodes which are 22.72% each. Heterogeneous enhancement pattern was the most common in mediastinal lesions.

**Conclusion:** CT is indicated when the clinician suspects mediastinal pathology or diagnose on plain chest radiographs. CT helps to localize the lesion and assess the extent and characteristics of lesion based on their site, size, nature, enhancement.
Abstract ID: 583

ABSTRACT TITLE: PERCUTANEOUS EMBOLISATION AS A TREATMENT OF CHOICE IN RASMUSSEN’S ANEURYSM CAUSING MASSIVE HEMOPTYSIS

PRESENTING AUTHOR: JYOTI G. DULLI
CO-AUTHOR: DR. SRINIVAS M R, DR. ARUL DASAN

Aim: Role of percutaneous coil embolisation in the emergency treatment of massive hemoptysis caused by Rasmussen’s aneurysm.

Materials and Method: This is a case report of a 53 year old male patient who presented with a history of cough with expectoration since 2 years in the Department of pulmonary medicine in Bangalore Medical College and Research Institute, Bangalore. Streaky hemoptysis since 2 months, around 4-5 episodes per day. One episode of massive hemoptysis >300ml at the time of presentation. No history of fever or breathlessness. Patient had pulmonary Koch’s in the year 2016, received ATT under RNTCP for 5 months and then discontinued the treatment by himself.

On examination
Vitals: Within normal limits
General physical examination: Clubbing and pallor present.
Systemic examination: Respiratory system-Inspiratory crepts in left infraclavicular area.
Other systems: Within normal limits.

Investigations:
Sputum AFB 2 samples-negative.
Sputum CBNAAT AFB-MTB not detected

IMAGING:
Chest x ray- shows a cavity in the left upper zone.
CECT Thorax- identified pseudianeurysm of one of the branches of left pulmonary artery.

Procedure: Percutaneous CT guided injection of N-BUTYL CYNO ACRYLATE (NBCA) directly into the pseudo aneurysm was done after contrast injection.

Results: Postprocedure x ray and CECT thorax revealed thrombosed pseudoaneurysm. Post procedure, patient improved symptomatically. Patients is on regular follow up till date, ATT was completed and no new episodes of hemoptysis have been come across.

Conclusion: Rasmussen’s aneurysm, a forgotten scourge- is a rare cause of hemoptysis in tuberculosis patients. Coil embolisation has evolved as a boon in the emergency treatment in controlling the massive hemoptysis and save the life of the patient. The above case reports illustrates the utility of per cutaneous management of pulmonary pseudoaneurysm in selected patients.
ABSTRACT TITLE: CASE OF PULMONARY ALVEOLAR MICROLITHIASIS WITH ASSOCIATED EXTRA-PULMONARY CALCIFICATIONS AND CALCULI

PRESENTING AUTHOR: GIRISH S. DESAI

CO-AUTHOR: (None)

Learning Objective: The objective of the study is to highlight the multisystem involvement of the Pulmonary alveolar microlithiasis with their imaging findings.

Clinical Background: 40 year old male farmer, presented to the OPD with obstructive uropathy and Fournier’s gangrene. Patient had no chest complaints and Chest X-Ray was taken as a part of pre-anaesthetic check-up and findings were incidentally noted.

Blood investigations: CBC, Sr. Calcium were in normal range.

Imaging Findings:

Chest X Ray:
- Diffuse haziness noted in bilateral mid and lower zones giving ‘Sand storm lung’ appearance.
- Thickened and calcified pleura & ‘Black pleura’ sign.
- Cardiac margins and hemi-diaphragms are silhouetted.

Usg Abdomen and Scrotum:
- Bilateral multiple renal calculi with staghorn calculus in left renal pelvis resulting in left hydronephrosis.
- Bilateral seminal vesicles show calcifications.
- Bilateral epididymal micro-calcifications with few scrotal wall calcifications.

CT Thorax:
- Diffuse ground-glass opacities and parenchymal micro-calcifications predominantly involving subpleural region of bilateral lung fields.
- Thickened and calcified fissures, peribronchial interstitium, inter-lobular septae and subpleural regions along with thickened pleura.

CT KUB:
- Bilateral multiple renal calculi with large staghorn calculus in left renal pelvis resulting in hydronephrosis.
- Multiple urethral calculi with bilateral epididymal and seminal vesicle calcification.

Diagnosis: Features of Pulmonary Alveolar Microlithiasis (PAM) with extra-pulmonary calcifications and calculi at multiple sites as described.

Conclusion: From the case we were able to conclude the multisystem involvement of the disease and often diagnosed incidentally on chest radiography and CT thorax by its classic signs and areas of pulmonary involvement. Patients may be asymptomatic or sometimes may have symptoms of obstructive uropathy as in this case or cardio-pulmonary symptoms.
Abstract ID:689

ABSTRACT TITLE: LUNG CANCER MANAGEMENT - WHATS NEW?

PRESENTING AUTHOR: SATYAPRAVEEN SAMANTULA

CO-AUTHOR: DR. G S KEJRIWAL, DR. K ANIL KUMAR, DR. SANGRAM PANDA

Objectives:

1. To discuss about lung cancer screening modalities and updates in 8th edition of TNM staging
2. To learn about management and the measurement of pulmonary nodules.

Background: Lung cancer may present as nodule or mass. Mass has a high likelihood of being malignant while the majority of lung nodules remains indeterminate at CT scans. The most reliable method to characterize lung nodules is to follow them over time with CT. Most lung cancer screening studies using low dose CT suffer from high rate of false positive results leading to an increase risk of overdiagnosis with yet unknown consequences. The next step is staging the disease once the lesion is characterized as malignant.

Details: The National Lung Screening Trial (NLST) showed a 20% reduction in lung cancer specific mortality in heavy (ex)-smokers screened by annual low-dose chest CT compared to annual chest radiography. The most relevant change in the new guidelines by the Fleischner society is the reduction of CT examinations performed during the follow-up period. Once a lung lesion is characterized as malignant, the further step is staging the disease. Key changes in 8th edition of include further modifications to the T descriptors based on 1 cm increments in tumour size; grouping of tumours resulting in partial or complete lung atelectasis/pneumonitis, and those involving a main bronchus regardless of distance from the carina, and reassignment of diaphragmatic invasion. The clinical N descriptors used are unchanged from the 7th edition; however, the description of the number of pathological lymph node stations involved, has been added. Further subdivision of metastatic disease into distinct descriptors based on the number of extrathoracic metastases and involved organs were also added.

Conclusion: Current guidelines provides a more standardized and rationale approach to the management of pulmonary nodules and TNM-8 represents more advanced understanding of tumour behavior and patient management.

Abstract ID:713

ABSTRACT TITLE: PICTORIAL REVIEW OF CARDIOPHRENIC ANGLE MASSES

PRESENTING AUTHOR: E.A. PARTHASARATHY

CO-AUTHOR: DR. KARTHIKA G

Learning Objectives: To study the roentgenographic and CT features of cardiophrenic angle masses.

Background: The cardiophrenic angles are not an uncommon site for tumefactive lesions. Most lesions are benign, but occasionally a mass in this location is malignant. Therefore it is important to make a definitive diagnosis when possible and this will serve to guide the clinician in the proper handling of the patient.

Imaging Findings:

Pericardial cyst:
X-ray: Mass like density in cardiophrenic sulcus.

CT: Well defined, non enhancing, fluid attenuation rounded mass next to pericardium.

**Morgagni hernia:**

**X-ray:** Well defined area of increased opacity, usually in the right cardiophrenic space. The presence of air within herniated intestinal loops is pathognomonic.

**CT:** Diaphragmatic defects and the relationship with the herniated structures depicted well.

**Pericardial fat pad:**

**X-ray:** Hazy opacity in the cardiophrenic angle

**CT:** Differentiates epicardial fat pad from pathology other than a lipoma.

**Lymphadenopathy:**

**X-ray:** Lymphadenopathy in the cardiophrenic space is often overlooked on chest radiographs.

**CT:** Particularly useful for nodal assessment. Node with a short-axis diameter greater than 8 mm is considered pathologic.

**Conclusion:** Knowledge of the anatomy and normal morphologic features of the cardiophrenic space is essential for accurate diagnosis. CT thorax is helpful to characterize lesions initially identified at plain radiography. This characterization helps narrow the differential diagnosis when a lesion is detected in this location.

**Abstract ID: 720**

**ABSTRACT TITLE:** PULMONARY ALVEOLAR MICROLITHIASIS – RARE CASE REPORT

**PRESENTING AUTHOR:** SUHAS C N

**CO-AUTHOR:** DR SATISH PATIL, DR RAVIKUMAR

**Learning Objectives:** To evaluate the findings of Pulmonary Alveolar Microlithiasis, a rare and chronic lung disorder which is characterised with calcium deposition within the alveoli of both lungs on Chest X ray and High Resolution Computed Tomography of chest.

**Background:** Two patients having complaints of cough with expectoration were clinically examined and were advised chest X ray examinations. Following X ray, High resolution Computed Tomography of chest was performed with slice thickness of 1.2 mm. Reconstructed images were obtained and evaluated. The Chest X ray and HRCT chest finding suggested finding characteristic of Pulmonary alveolar microlithiasis. Later biopsy was taken and diagnosis was confirmed.

**Imaging Findings:** Chest X ray showed diffuse, discrete calcifications scattered in bilateral lung fields obscuring the diaphragmatic, mediastinal, and cardiac borders. A ‘black pleural line’ was seen in bilateral lung apices, a zone of hyperlucency between the lung parenchyma and the ribs.

HRCT scan revealed diffuse and confluent calcifications in bilateral lung fields with thickening of pleura and fissures with subpleural calcification, multiple small calcified nodules along thickened interlobular septa.
Conclusion: Pulmonary Alveolar Microlithiasis is an uncommon disease characterized by widespread localization of 'calcipherites' within the alveoli without presence of any calcium metabolic disorder and its characteristic finding on chest X ray & HRCT chest help in diagnosis of the condition.

Abstract ID: 751

Abstract Title: ATYPICAL IMAGING FINDING OF PLEURAL Rhabdomyosarcoma – A RARE ENTITY IN YOUNG ADULT

Presenting Author: UPASNA SINHA

Co-Author: DR PRANAV KUMAR SANTHALIA, DR PREM KUMAR, DR NEETU SINHA

Learning Objective: Atypical imaging finding of pleural rhabdomyosarcoma – a rare entity in young adult

Background: Rhabdomyosarcoma is an aggressive malignant tumor of childhood mainly affecting head and neck region, urogenital tract and extremities. Thoracic rhabdomyosarcoma is uncommon and the pleura is one of the rarest sites for rhabdomyosarcoma. Till date about ten cases of pleural rhabdomyosarcoma have been reported in the literature. Most of the pleural rhabdomyosarcoma present as a thoracic mass and presentation as diffuse pleural mass like thickening is rare.

Here we present a case of 18 years old young female with complains of progressively increasing exertional breathlessness and cough with scanty sputum for one month.

Imaging findings: Chest X ray showed complete opacity of right hemithorax with contralateral mediastinal shift suggestive of gross right sided pleural effusion. Contrast enhanced CT chest showed diffuse, circumferential, heterogeneously enhancing nodular mass like thickening of right entire parietal pleura. There was gross pleural effusion with complete collapse of right lung. No chest wall involvement was seen. Possibilities of pleural metastasis, lymphoma or Askin tumor was kept. Possibility of mesothelioma was also kept, though it was unlikely due to young age and no history of asbestos exposure. Pleural fluid cytology showed no malignant cells.

Histopathological report gave the possibilities of Radomyosarcoma or Ewing's/PNET tumor. Immunohistochemistry was positive for desmin and myogenin, thus confirming Rhabdomyosarcoma and the patient was started on chemotherapy.

Conclusion: Pleural rhabdomyosarcoma is a rare condition and its presentation as diffuse, circumferential, nodular mass like pleural thickening is extremely rare. Thus pleural rhabdomyosarcoma should also be considered in differential diagnosis of diffuse mass like pleural thickening as seen in pleural metastasis and mesothelioma.

Abstract ID: 758

Title: Solitary Lung Cavities: Computed Tomographic Findings in Malignant and Non-malignant Diseases

Topic: Chest Radiology

Learning Object: To determine the CT findings of pulmonary cavitated lesions that help differentiate between benign or malignant diagnosis.
**Background:** A cavity is a gas-filled space seen as a lucency or low-attenuation area. Pulmonary cavities are often found as lesions on chest imaging studies and their differential diagnosis is wide-ranging, as this is the major concern regarding the differentiation between malignant or benign disorders.

**Methods and Materials:** We evaluated retrospective data from 50 patients who had undergone thoracic multislice CT in Department of Radiodiagnosis, R.N.T Medical College and had a pulmonary cavitary lesion, from April 2018 to October 2018 from various indoor & outdoor department of R.N.T Medical College and M.B hospital Udaipur. The final diagnosis was established by histological; bacilloscopy; or clinical, radiological and posttreatment evolution confirmations.

**Result:** Seventy percent (35/50) were diagnosed as benign diseases and 30% (15/50) as malignant. Among the benign diagnosis, 50% were inactive tuberculosis sequelae and 94% of the malignant were primary lung cancer. The average thickness of the wall cavity and the mean diameter of lesions were statistically significant for the difference between malignant and nonmalignant cavities (p<0.05). Among the associated findings on CT scans, centrilobular nodules was the most accurate criteria to benign lesion (Accuracy 100%; p<0.05). Also, perilesional consolidation were statistically significant in benign lesions (Accuracy 100%; p<0.05). The thickest lesion wall was the best criteria to differentiate benign and malignant diseases. The better threshold to diagnosis of malignant lesions was upper than 24mm to malignant lesions and lower than 7mm to benign lesions.

**Conclusion:** The thickest lesion wall, centrilobular nodules and perilesional consolidations were the best criteria to differentiate benign and malignant diseases.

**Abstract ID: 770**

**ABSTRACT TITLE:** CHEST MANIFESTATION IN HIV

**PRESENTING AUTHOR:** NISHIT VIRADIA

**CO-AUTHOR:** (None)

**Introduction:** HIV patients are more prone to get opportunistic as well as non-opportunistic infections and also some non-infectious chest manifestation. These poster help to diagnose and differentiate various chest manifestations among people living with HIV & AIDS.

**Abstract ID: 775**

**ABSTRACT TITLE:** A RARE CASE OF GIANT PULMONARY HAMARTOMA

**PRESENTING AUTHOR:** SOWMYA JAGADISH

**CO-AUTHOR:** DR. NANJARAJ C P, DR. JAGATH KUMAR B J, DR. SHRUTI MANKANI

**Institution:** Department of Radio-Diagnosis, Mysore medical college and research institute, Mysore (MMC&RI).

**Introduction:** Pulmonary hamartomas (mesenchymomas) are the most common benign tumors of the lung. They can be parenchymal (80%) or endobronchial (20%). Parenchymal lesions are 1-5 cm in diameter. However, Giant Pulmonary hamartomas are rare and measures between 9-30cms. They are asymptomatic & diagnosis is incidental. Histology reveals chondroid (80%), fibroblastic (12%), fatty (5%) & osseous (3%) differentiation.
Background: A 56yrs old male patient presented with right sided chest pain, fever since 1 week. The patient was referred to the Department of Radiodiagnosis, MMC&RI for a chest radiograph. The patient was subjected to CT for further radiological evaluation.

Imaging findings:

- Chest X-ray shows heterogeneous opacity occupying mid and lower zones of right hemithorax with a curvilinear calcification within. The lesion is silhouetting right cardiac border and part of right hemidiaphragm.
- Plain CT thorax revealed well defined, large, heterogeneous predominantly fat density lesion measuring 18.2 x 15.4 x 11 cms, involving mid and lower lung zones of right hemithorax with soft tissue density and chunks of calcification within. On postcontrast, the lesion shows no enhancement.

Imaging was followed by histopathological examination which revealed predominant adipose & chondroid differentiation, confirming our imaging findings.

Conclusions: Giant Pulmonary hamartoma is a rare condition. X-ray and CT are useful modalities in diagnosis. However, HPE is diagnostic. In our case, it was predominantly made of adipose and chondroid differentiation further confirming our diagnosis. The size of the tumor and the histology make it an unusual presentation.

Abstract ID: 792

ABSTRACT TITLE : CT IMAGING CHARACTERISTICS OF NON SMALL CELL LUNG CARCINOMA WITH EGFR AND ALK MUTATION
PRESENTING AUTHOR : GAURAV SHARMA
CO-AUTHOR : DR RASHMI SUDHIR, DR VEERAIAH KOPPULA

Purpose: CT imaging correlates of clinically relevant gene expression signatures, such as EGFR and ALK were established in NSCLC, this could help redefine existing staging and diagnostic paradigms and would thus be of clinical benefit.

Objective: To assess the association between CT imaging features and non-small cell lung carcinoma with EGFR and/or ALK mutation.

Material and Methods: In this prospective observational study consecutive patients who underwent pre-treatment CT chest, CT guided biopsy for histopathological and molecular analysis for EGFR and/or ALK mutations at our institution Basavatarakam Indo American Cancer Hospital and Research Institute, Hyderabad during June 2017 to September 2018 are included. Qualitative evaluation of CTs included: location (central/peripheral); lobe; lesion diameter; shape; margins; ground-glass opacity; cavitation; air bronchogram; pleural thickening; intratumoral necrosis; nodules in tumour lobe; nodules in non-tumour lobes; pleural retraction; calcifications; emphysema; fibrosis; pleural contact; pleural effusion & pericardial effusion.

Results: Of 195 patients, 98/195 (50.25 %) were positive for EGFR mutation; 9/85 (10.58%) for ALK rearrangement. EGFR mutation was associated with ground glass opacity, air bronchogram, pleural retraction, females, non-smokers, small lesion size while ALK rearrangements were associated with centrally located lesion, pleural effusion & mediastinal lymphadenopathy.
Conclusion: This study demonstrates associations between CT imaging characteristics and alterations of EGFR and ALK gene, which can provide an important information for the proper selection of patients treated with molecular targeted therapies in advanced non small cell lung carcinoma patients.

Abstract ID:843

ABSTRACT TITLE : CONGENITAL PULMONARY AIRWAY MALFORMATION
PRESENTING AUTHOR : SUNDEEP SAI
CO-AUTHOR : (None)

Learning Objectives: Congenital pulmonary airway malformation (CPAM), previously known as congenital cystic adenomatoid malformation is a congenital disorder of the lung similar to bronchopulmonary sequestration. In CPAM, usually an entire lobe of lung is replaced by a non-working cystic piece of abnormal lung tissue. This abnormal tissue will never function as normal lung tissue. The underlying cause for CPAM is not known. It occurs in approximately 1 in every 30000 pregnancies. The association between CPAM and malignancy has been well documented.

Background: A 22 year old female G1P0L0 came to the department of radiology for routine follow up antenatal check up with gestational age of 31 weeks (wrong dates). However by gestational age by ultrasound was 27 weeks. Previous ANC scan at 25 weeks showed few cystic spaces in the right fetal thorax.

Imaging findings:

USG(ANC) – Multiple cystic structures in the right lung. There was a triangular hyperechoic mass lesion in the thorax causing mediastinal shift to left side. This mass lesion showed feeding artery from the descending aorta on Doppler study.

MRI - T1WI showed multiple hypointense cysts in the fetal right thorax. These cystic spaces appeared hyperintense on T2WI.

Conclusion: CPAM can be detected in utero with both ultrasound and MRI. The evolution of better antenatal imaging has been crucial in changing thinking about appropriate management of CPAM. The antenatal diagnosis of this pathology has become more frequent with increasing sonographer training and higher resolution ultrasound imaging platforms.

Abstract ID:876

ABSTRACT TITLE : ROLE OF THORACIC COMPUTED TOMOGRAPHY IN IDENTIFYING CLINICALLY SIGNIFICANT OCCULT INJURIES IN PATIENTS OF BLUNT THORACIC TRAUMA
PRESENTING AUTHOR : YEMIKA DHAYAL
CO-AUTHOR : DR YATISH AGARWAL, DR AS CHAWLA, DR NEHA ANTIL

Purpose: To assess role of TCT in determining the proportion of thoracic injuries detected over and above CXR and evaluate the clinical importance of these occult injuries.

Materials and Methods: Cross sectional study was conducted on 60 patients presenting to ED for blunt chest trauma that occurred within 24-hours of arrival. Statistical analysis was done using Statistical Package for Social Sciences (SPSS) version 2.1.0. A p value of <0.05 was considered statistically significant. Qualita-
tive variables were correlated using Chi-Square test/Fisher exact test. Inter rater kappa agreement was used to find out the strength of agreement of CXR and CT.

**Results:** Of the total Occult injuries, 17% were significant enough to necessitate major intervention. Minor intervention was needed for 47.61% injuries, whereas 35.37% injuries were clinically insignificant.

The yield of CXR alone for thoracic injury with major clinical significance was 53.33% and for CT after normal CXR was 23.07%.

The p value of rate of injury detection on CT and CXR was found to be statistically significant with a poor strength of agreement.

**Conclusion:** Overall CXR can detect not all, but definitely a significant number of injuries. Majority of the major interventions done in our study group were CXR based. Also, when injuries were occult, patients were less likely to have major intervention. However, 23% of the total major interventions were purely CT based for which the CXR were normal. Therefore a validated decision instrument to support clinical judgment is needed to identify patients likely to benefit from chest CT.

**Abstract ID: 910**

**ABSTRACT TITLE:** “ROLE OF MULTIDETECTOR COMPUTED TOMOGRAPHY IN EVALUATION AND STAGING OF BRONCHOGENIC CARCINOMA WITH ITS HISTOPATHOLOGICAL CORRELATION”

**PRESENTING AUTHOR:** CHANDRAVEER SINGH GODARA

**CO-AUTHOR:** (None)

**Aims and Objective:**

1. To assess the diagnostic accuracy of multi detector computed tomography in evaluation of bronchogenic carcinoma.
2. To document the various CT appearances of bronchogenic carcinoma with histopathological correlation.
3. To assess the effectiveness of MDCT in staging bronchogenic carcinoma.

**Material & Methods:**

**Source of Data:** This is a diagnostic study. A minimum of fifty patients with clinical or radiological suspicion of bronchogenic carcinoma referred for CT scan of thorax to the Department of Radio Diagnosis, government medical college kota will be taken.

a. Sample size – 50 cases are considered for study but the scope for increasing the sample size is also considered depending upon the availability.

b. Design of study- prospective study.

**Equipment:** CT is performed with multi-slice CT scanner GE Bright Speed 16 and Siemen Somatom 40.

**Result:** Adenocarcinoma is the most common histologic subtype followed by squamous cell carcinoma. There was significant male preponderance with smoking being the most common risk factor. Adenocarcinoma is predominantly a peripheral lesion (70%). Squamous cell carcinoma is predominantly a central lesion (63%). MDCT has a positive predictive value of 92% in the accurate diagnosis of bronchogenic carcinoma in correlation with histopathology.
Conclusion: Multi Detector Computed Tomography plays an important role in evaluating bronchogenic carcinoma because of its greater coverage and better spatial image resolution. It provides accurate characterization of the size, contour, extent of the lesion. The multiplanar reformatted images of MDCT helps in the staging of bronchogenic carcinoma. There was significant correlation of MDCT diagnosis with that of histopathology in our study.

Abstract ID:915

ABSTRACT TITLE: LUNG CANCER AND OTHER COMORBIDITIES IN PATIENTS WITH USUAL INTERSTITIAL PNEUMONIA PATTERN: INSTITUTIONAL STUDY AND LITERATURE REVIEW

PRESENTING AUTHOR: SATHYA SAGAR R

CO-AUTHOR: UMA DEBI, ROHAN KAMAT, MANDEEP GARG, MANAVJIT SINGH SANDHU

Introduction: Idiopathic Pulmonary Fibrosis (IPF) is a chronic, irreversible, diffuse fibrotic disorder of the lung with unknown etiology. Many pulmonary and extra-pulmonary comorbidities are associated with IPF and can worsen the prognosis even further.

Purpose:

• To evaluate the prevalence of pulmonary comorbidities in patients with UIP pattern
• To analyse the histopathological, clinical, genetic and behavioural profiles of lung cancers in patients with IPF.

Methods:

• Retrospective analysis of HRCT and CECT of 65 patients with UIP pattern, acquired from November 2017 to June 2018, was done.
• The scans of these patients were reviewed by two radiologists. The epidemiological, clinical, biochemical and pathological data were also reviewed. The various associated comorbidities were noted in each of these patients.
• Five IPF patients with lung cancer were identified and selected for treatment response and follow-up.

Results:

• The CT scans were acquired in 256 slice scanner in the Outpatient department of PGIMER, Chandigarh.
• The mean age of the subjects was 59.6 (24 to 91, SD 14.3) with a male predominance (66.2%).
• The common comorbidities encountered in these patients were emphysema (n=9, 13.8%), lung cancer (n=5, 7.7%), secondary abdominal malignancy (n=3, 4.2%), superadded pulmonary parenchymal infection (n=4, 6.15%), pulmonary artery hypertension (n=2, 3.1%) and pneumothorax (n=1, 1.5%). Significant coronary artery calcification was seen in 8 patients (12.3%).

Conclusion:

• Significant pulmonary and non-pulmonary comorbidities were associated with IPF, which could be because of common risk factors or other unknown associations
• Knowledge of these comorbidities is essential to ensure appropriate clinical decision making and treatment planning.
Abstract ID: 918

ABSTRACT TITLE : IMAGING FINDING IN CHEST WALL LESION: A PICTORIAL ASSAY
PRESENTING AUTHOR : KAMAL PANT
CO-AUTHOR : DR. NATASHA GUPTA, DR. LALENDRA UPRETI, DR. ABHINAVA D. N. SINGH, DR. DAIZY GARG, DR. HARSHIT BANSAL

Learning Objectives: The purpose of this presentation is to illustrate imaging findings of various chest wall lesions and role of imaging modalities in diagnosis of these lesions.

Background: Chest wall acts as a protective cage around the vital structures of the thorax and extend from neck to diaphragm and comprises of both soft tissue (skin, fat, muscles) and skeletal elements (sternum, ribs, costal cartilage and thoracic spine) the lesions can arise from any of these structures and can be caused by many pathologic processes. As clinical assessment alone is not enough in these lesions, appropriate radiologic assessment is necessary to localize and characterize the lesion.

Imaging Findings: Patients presenting with a suspicious chest mass & referred to the Department of Radiology, were imaged using chest x-ray, ultrasonography and CT chest. A variety of lesions involving the chest wall were seen. Some of the lesions which shall be discussed in this review include:

1. Neurofibroma
2. Brown tumour
3. Fibrous dysplasia
4. Ewing’s sarcoma
5. Osteochondroma scapula
6. Tuberculosis ribs & joint
7. Sarcoma chest wall
8. Metastasis

Conclusion: Imaging is essential for accurate identification and characterization of chest wall lesion. It is of immense value for guiding further evaluation and treatment.

Abstract ID: 940

ABSTRACT TITLE : “HRCT CHEST FINDINGS IN IMMUNOCOMPROMISED HOST”
PRESENTING AUTHOR : NERELLA.KRISHNA TEJA
CO-AUTHOR : DR.RAMA KRISHNA RAO.BARU DR. NARVEKAR V N, DR.VEDA RAJU, DR. SUNEETHA.P

Aims and Objectives: To describe the HRCT (High Resolution Computed Tomography) chest findings in immunocompromised host.

Materials and Methods: Data will be collected from immunocompromised patients who are referred to the Radiology department of Narayana Medical College and hospital, Nellore for HRCT Chest examination. It is a prospective study and conducted on 50 patients and evaluated with 16 and 128 slice CT.

Results: In present study, based on the findings, out of 50 cases 42 cases are having active infection out of them 19 are fungal 21 are bacterial, 2 cases are viral infected and the rest 8 cases are normal.
**Conclusion:** Pulmonary infections are the most common complications of immunocompromised patients and are the major cause of morbidity and mortality. It is important for the radiologist to demand and utilize all available clinical information such as symptomatology, degree of immunocompromise, risk group for HIV infection, and time period since organ transplant, when considering differential probabilities. HRCT Chest plays an important role in identifying the presence of disease and may specifically diagnose many conditions.

**Abstract ID:948**

**ABSTRACT TITLE:** CT IMAGING SPECTRUM: CAUSES OF DYSPNEA IN PATIENTS WITH MALIGNANCY

**PRESENTING AUTHOR:** EKTA DHAMIJA

**CO-AUTHOR:** SANJAY THULKAR DEPARTMENT OF RADIODIAGNOSIS, IRCH, AIIMS, NEW DELHI

**Learning Objective:** To illustrate CT imaging spectrum of various etiologies causing dyspnea in patients with known malignancy

**Background:** Dyspnea is one of the most debilitating symptoms in cancer patients hampering the quality of life of such patients. Computed tomography (CT) is the imaging modality used for evaluation of persistent breathlessness in any patient. Most common cause in cancer patient is pleural effusion which can be malignant or non-malignant. Other causes are classified into two categories- infective and non-infective. Since the imaging features are often overlapping, it is important to be aware of various spectrums and is crucial to have clinical as well as laboratory correlation so as to provide appropriate differentials.

**Imaging findings:** The exhibit will demonstrate CT imaging spectrum in following categories:

Dyspnea due to-

1. Pleural effusion: with or without pleural deposits
2. Infective etiologies: Bacterial, Fungal, Viral, Pneumocystis pneumonia
3. Non-infective causes: Pulmonary hemorrhage, Acute respiratory distress syndrome, Engraftment syndrome, Drug induced Interstitial diseases
4. Miscellaneous causes: Post RT fibrosis, Ascites, Pulmonary thromboembolism due to deep vein thrombosis

**Conclusion:** It is crucial for radiologist to be familiar with the CT imaging spectrum of various etiologies known to present as dyspnea in patients with malignancy so as to suggest appropriate differential diagnosis.

**Abstract ID:1019**

**ABSTRACT TITLE:** EVALUATION OF CENTRAL CATHETER AND PICC LINE POSITIONING

**PRESENTING AUTHOR:** MAANSI PAREKH

**CO-AUTHOR:** P LAKHANI, A DONURU, B SUNDARAM

**Teaching Points:** This exhibit will discuss the different modalities used to verify appropriate positioning following central catheter and PICC placement, their indications, limitations and contraindications.

**Table of Contents/Outline:** A. Review of Indications: Standard guidelines for central venous and peripheral inserted central catheter positioning recommend the tip in the lower SVC near the cavoatrial junction. If a
PICC is not appropriately positioned it may not be used for its intended use, such as chemotherapy, parenteral nutrition or antibiotic infusion. The incidence of central catheter malpositioning ranges from 3-14%, hence it is vital to correctly identify incorrectly placed catheters as soon as possible after catheter placement. B. Modalities, indications and contraindications: portable x-rays are the most commonly used method however one has to take into account time taken to perform and interpret the xray. Fluoroscopy, ultrasound, agitated saline bubble enhanced ultrasound and transesophageal echocardiogram are additional modalities. Novel techniques include passive magnet tracking with ECG tracking. C. Complications: All providers must be able to recognize potential complications. Early complications include vascular injury, catheter rupture, pulmonary complications and cardiac arrhythmias. Delayed complications include infections and thrombosis.

Abstract ID: 1020

**ABSTRACT TITLE**: ROLE OF IMAGING IN ENDOBRONCHIAL VALVE PLACEMENT  
**PRESENTING AUTHOR**: MAANSI PAREKH  
**CO-AUTHOR**: A DONURU, H BOYD, B SUNDARAM

**Background Information/Purpose**: Interventional endoscopic treatments are commonly used in treatment of patients with severe pulmonary disease and poor patient functional status. These include endobronchial valves, sealants and coils. Endobronchial valves (EBV) are unidirectional valves preventing entry of air into an isolated lung segment/lobe. EBV’s are used in treatment of severe emphysema. Management of air leaks is an important alternative, especially for patients who are not candidates for surgical treatment.

**Educational Goals/Teaching Points**: Review of indications, role of imaging, contraindications, limitations and complications associated with placement of endobronchial valves (EBV’s). Key Anatomic or Pathophysiologic Issues, Imaging Findings or Imaging Technique

HRCT chest is used to assess for suitable tracheobronchial anatomy, completeness of fissures and distribution of emphysema, to determine if the patient is a candidate for EBV valve placement. Incomplete fissures can lead to failure of the endobronchial valves due to collateral drift across the lobes. EBVs are used in cases of heterogeneous distribution of emphysema, enabling redistribution of air to the healthier lung improving respiratory capacity. Other forms of minimally invasive treatment such as sealants or coils maybe used for homogenous type of emphysema.

**Conclusion**: Although the high cost seems to be the main drawback, EBV’s are a non-surgical, minimally invasive therapeutic option that may be appropriate for the treatment of persistent air leaks regardless of the initial cause, especially in high-risk patients.
Abstract ID: 1061

ABSTRACT TITLE: ROLE OF QUANTITATIVE CT IN COPD & ITS CORRELATION WITH PULMONARY FUNCTION TEST VALUES

PRESENTING AUTHOR: AISHWARYA RAVICHANDRAN
CO-AUTHOR: PROF. DR. K. MALATHY, PROF. DR. R. RAVI, PROF. DR. S. BABU PETER

Purpose: To assess the role of Quantitative CT in COPD & evaluate relationship between Quantitative CT(QCT) and spirometric measurements of disease severity in subjects with and without chronic obstructive pulmonary disease (COPD).

Inclusion Criteria:
CASES: Subjects between ages 40 and 65 years & having COPD.

Controls: Subjects between ages 40 and 65 years & not having COPD.

Exclusion Criteria: Subjects with concomitant respiratory disorders other than COPD.

Materials and Methods: QCT of subjects were performed in 16 slice CT and evaluated using Lung Volumetry Software. Measures examined include emphysema, defined as the percentage of low-attenuation areas ≤–950 HU on inspiratory CT, air trapping, defined as the percentage of low-attenuation areas ≤–856 HU on expiratory CT, and the inner diameter, inner and outer areas, wall area of segmental airways. Correlations determined between spirometry and several QCT measures.

Statistical Analysis: Collected data were analysed with IBM.SPSS statistics software 23.0 Version.

Results:
- Progressively increasing LAA-950I (Low attenuation area in Inspiration < -950HU) and LAA856E (Low attenuation areas in Expiration < -856HU) were noted for increasing GOLD stage and COPD disease severity.
- Mean LAA-950I and LAA856E values progressively increased with increasing GOLD stage (p < 0.005).
- For air trapping, LAA-856E showed correlation for both FEV1 and FEV1/FVC (r = -0.93 and -0.79 respectively).
- Emphysema showed similar results, with LAA-950I showing correlation for FEV1 and FEV1/FVC (r = -0.81 and -0.69 respectively).
- Both TLC and FRC increase across GOLD stage.
- Measures of inner diameter, inner area, outer area and airway wall thickness showed good correlation to both FEV1 and FEV1/FVC for all subjects in the cohort.
- Measures of wall area showed poor correlation to both FEV1 (r = -0.01) and FEV1/FVC (r = -0.02)

Limitations: Poor breath holding by patients with acute exacerbation.

Conclusion: QCT measurements of inspiratory and expiratory low-attenuation areas are strongly associated with spirometric impairment in COPD patients.
Abstract ID: 1095

**ABSTRACT TITLE**: LUNG CANCER IN IDIOPATHIC PULMONARY FIBROSIS

**PRESENTING AUTHOR**: TAHELLE ALTAF SHERA

**CO-AUTHOR**: ASHU SEITH BHALLA, PRIYANKA NARANJE, ANANT MOHAN

**Learning Objectives**: To highlight the imaging findings which should alert the radiologist to development of lung cancer in patients with Idiopathic Pulmonary Fibrosis (IPF)

**Background**: Lung cancer has a higher incidence in IPF patients as compared to general population. Identifying lung cancer especially in early and potentially curable stages is difficult, frequently resulting in a delay in diagnosis.

**Imaging Findings**: Most cancers are found in or abutting areas of honeycombing. Atypical morphologies may be present e.g. stellate or band-like. Detection of these early lesions in a background of fibrosis and identifying them as malignant is a challenge in patients who are undergoing routine follow up imaging for IPF. As in general population, lung cancer in Idiopathic Pulmonary fibrosis tends to present at an advanced stage. Squamous cell carcinoma is the commonest subtype followed by adenocarcinoma and small cell carcinoma.

**Conclusions**: Idiopathic Pulmonary fibrosis is an independent risk factor for the development of lung cancer and can lead to atypical morphologies in early stages. We need to recognise these lesions to prevent a delay in diagnosis.

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Abstract ID: 1096

**ABSTRACT TITLE**: CHEST RADIOGRAPHY FINDINGS IN THE INTENSIVE CARE UNITS: A PICTORIAL ESSAY AND GUIDANCE TO DEVICES AND VENTILATOR ASSOCIATED COMPLICATIONS.

**PRESENTING AUTHOR**: RASHMI SINGH

**CO-AUTHOR**: PRIYANKA NARANJE, ASHU SEITH BHALLA, SURABHI VYAS, ARUN KUMAR GUPTA

**Learning Objectives**: To discuss the findings on chest radiograph (CXR) in patients admitted in intensive care units (ICU) and illustrate ideal positioning and malpositioning of various devices as well as to illustrate ventilator associated complications (barotrauma and ventilator associated pneumonia (VAP)).

**Background**: CXR plays a crucial role in management of critically ill patients in ICU. However, interpreting such CXRs acquired in suboptimal technique poses a challenge. CXR is useful in assessing the correct position of various devices which can be life threatening, if misplaced and also for early detection of ventilator associated complications.

**Imaging findings**: Commonly used support devices in ICU patients can be categorised as airway, enteric, pleural and cardiovascular. Complications associated with airway devices such as endotracheal and tracheostomy tubes are malposition, selective intubation of right main bronchus, oesophageal intubation, perforation and stenosis. Nasogastric and nassoenteric tubes insertions are associated with tube coiling and malpositioning into tracheobronchial tree and oesophagus. Chest tube placement errors includes extra pleural, mediastinal and intraparenchymal placements. Cardiovascular devices are central venous catheter, pulmonary artery catheter, transvenous pacemakers, intraaortic counterpulsation balloon pump, umbilical artery and venous lines and various malpositions are described. Common complications detected on CXR...
associated with ventilator are barotrauma manifesting as pulmonary interstitial emphysema, pneumothorax, pneumomediastinun, pneumopericardium, subcutaneous emphysema and VAP manifesting as new and progressive pulmonary opacities.

Conclusion: CXR is the imaging workhorse in ICU patients. Having thorough understanding of appearance of various devices positions and ventilator associated complications can avoid diagnostic errors leading to early diagnosis and patient management.

Abstract ID:1123

ABSTRACT TITLE: EVALUATION OF INTERSTITIAL LUNG DISEASE IN PATIENTS USING HRCT CHEST IN FARMING BASED RURAL POPULATION OF CENTRAL INDIA.

PRESENTING AUTHOR: NIKHIL DODAKE

CO-AUTHOR: DR SAURABH PATIL DR SUSHILKUMAR KALE DR ATUL TAYADE

Purpose: Interstitial lung disease (ILD) is a group of diffuse parenchymal lung diseases affecting the pulmonary interstitium. High resolution computed tomography (HRCT) is the most accurate noninvasive, cross section imaging modality for the diagnosis and follow up monitoring of ILD. Study was done to check the basic HRCT patterns associated with Interstitial Lung Disease and correlation of HRCT patterns with clinical data in rural population of central part of India.

Material and Methods: Total 101 patients referred from medicine department of our institute having clinical suspicion of ILD were studied during 1st may 2015 to 1st jan 2018. HRCT chest was done in all patients on 8 slice GE revolution CT scanner in supine position using standard HRCT protocol. Parenchymal abnormalities were detected and categorized for specific diagnosis of ILD.

Result: ILD was found on imaging in 32% patients (n=33) with majority between the ages of 60- 80 years. The most common interstitial lung disease found in our study was usual interstitial pneumonia (n=30; 91%) followed by nonspecific interstitial pneumonia (n=2; 6%) and acute interstitial pneumonia (n=1; 3%).

Conclusions: UIP was the most common interstitial lung disease observed in our study of farming based rural population of India. These features are indicative of occupational hazard in farming based rural population and westernisation has changed the disease distribution in Indian population for age

Based on this study we would suggest, educating farming based rural population about preventive measure and early screening.

In patients with progressive dyspnea ILD should be ruled out as a cause. Clinical and laboratory finding along with HRCT workup is essential for the diagnosis of specific ILD.

Keywords: High resolution computed tomography, Interstitial lung disease, Usual interstitial pneumonia
Abstract ID:1131

ABSTRACT TITLE: HRCT THORAX IN PULMONARY ALVEOLAR PROTEINOSIS: AN UNUSUAL CASE
PRESENTING AUTHOR: SAMIR DERE
CO-AUTHOR: DR AVINASH DHOK

Learning Objectives: Evaluation of 6months child with tachypnoea using Toshiba 16 slice CT machine.

Background: A 6months old male child came to radiology department with chief complaints of breathlessness since 4days, Not accepting feeds since 4days and Diarrhea and vomiting since 8days.

On Examination: Pulse-136/MIN, RR-104/MIN, Subcostal and intercostal retractions present and SpO2 98% by O2 mask. On auscultation crackles present in bilateral lung.

Imaging findings: Chest radiograph was suggestive of consolidatory changes in bilateral lung field.

HRCT Thorax Study: Bilateral interlobular and intralobular septal thickening creating ground glass opacity and crazy paving pattern with branching air bronchogram.

- Suggestive of pulmonary alveolar proteinosis.
- Conclusion and/or Teaching points
- Diagnosis confirmed on Bronchoalveolar lavage.
- Pulmonary alveolar proteinosis (PAP) is a lung disease characterised by an abnormal intra-alveolar accumulation of surfactant-derived lipoproteinaceous material.

Clinical presentation is usually with non-specific respiratory symptoms such as dyspnoea or a minimally-productive cough. Approximately one-third of patients may be asymptomatic. In children, the presentation is often less clearly respiratory in nature, with diarrhoea, vomiting, failure to thrive and even cyanosis being more common. Symptoms may also be due to superadded opportunistic infections. Signs include crackles on auscultation, clubbing or cyanosis.

Abstract ID:1137

ABSTRACT TITLE: CHEST CT IN RHEUMATOID ARTHRITIS: A TERTIARY CENTER EXPERIENCE
PRESENTING AUTHOR: SURABHI VYAS
CO-AUTHOR: ASHU SEITH BHALLA, UMA KUMAR

Purpose: To retrospectively review the CT findings in series of patients of proven rheumatoid arthritis. To illustrate the imaging findings on high resolution computed tomography of thorax.

Materials and Methods: We reviewed the imaging records of patients referred to the radiology department of All India Institute of Medical Sciences from 2007 to 2018, with suspicion of pulmonary manifestations and complications of rheumatoid arthritis.

RA is associated with pulmonary complications in up to 40 % of patients, and the chest findings can take the form of:

- Pulmonary parenchymal involvement as interstitial lung disease- UIP is the commonest pattern followed by NSIP. Necrobiotic nodules (RA nodules) may as also occur.
• Vascular involvement in the form of vasculitis and pulmonary arterial hypertension.
• Pleural involvement as pleural effusion and/or thickening or pneumothorax.
• Airway involvement as small airway disease

The CT images were evaluated for the presence of interstitial lung disease (ILD), pattern of ILD, other parenchymal manifestations, airway and pleural involvement.

**Results:** Chest CT imaging of 96 patients of proven RA with suspected pulmonary complications of RA was reviewed. The age ranged from 30 to 75 years. There were 20 males and 76 females with a female to male ratio of 3.8:1. The predominant involvement was of the pulmonary parenchyma in the form of interstitial lung disease with NSIP pattern seen in 28 patients. Other patterns seen were UIP in 14 and organising pneumonia in 2 patients. Airway involvement was seen in 24 patients whereas 3 patients showed evidence of pulmonary infection on CT.

**Conclusion:**
• Pulmonary findings vary greatly in RA with either parenchymal, pleural or airway involvement or in combinations.
• The imaging appearance may also be complicated by secondary infection.
• A thorough clinical and biochemical correlation with previous imaging help in reaching the correct clinical diagnosis.

**Abstract ID:1194**

**ABSTRACT TITLE**: ROLE OF SCREENING CHEST X-RAY IN DETECTION OF INCIDENTAL PULMONARY INFECTION.

**PRESENTING AUTHOR**: ABHINAV JAIN
**CO-AUTHOR**: SS ANAND, TUSHAR GUPTA

**Purpose**: Non Randomized screening study to estimate the prevalence and spectrum of findings of active or old healed undetected infective disease on chest radiographs in a healthy population series.

**Materials and Methods**: A large series of 3200 volunteers enrolled in the database for a research trial in a single research center for a drug trial were selected for the study. All these healthy volunteers as determined by clinical examination, past medical and surgical history and laboratory test including haematology, biochemistry, serology and routine/microscopic urinalysis underwent Chest radiographs to screen for occult chest disease.

All the radiographs were carried out at Department of Radiodiagnosis of our institute using Siemens MultiX DR digital radiography system.

Images were interpreted by two experienced radiologists independently.

Any volunteer with past history of Antitubercular treatment was excluded from this non-randomized screening study.

These findings were tabulated with objective scoring system and analyzed.

Approval from local Institutional Ethics Committee (IEC) was obtained.
Results: Out of 3200 radiographs obtained, 118 radiographs (3.68%) showed presence of findings confirming to present or past infective disease. The most common clinically relevant finding was features suggestive of possible active tuberculosis (nodules with consolidation, cavitation, collapse, atelectasis and/or lymphadenopathy) which were reported in 1.93% (n = 62) of total radiographs. Nodules was reported in 0.81% (n=26) and fibrosis in 0.65% (n=21) of total radiographs. Pleural effusion was reported in 0.21% (n=7).

Conclusion: The study finds a significant population shows positive radiographs for infective disease (especially Tuberculosis) in Indian population and therefore must continue in screening protocols.

Abstract ID:1203

ABSTRACT TITLE : A RARE CASE OF DIFFUSE OSTEOGENIC METASTASES
PRESENTING AUTHOR : AMIT SINGLA
CO-AUTHOR : DR N DEEP BAG DR SUPRAVA NAIK DR VIJAYENDRA A

A 20 year old female presented with shortness of breath and chest pain for past one month which aggravated over last 10 days. On chest x ray, diffuse pleural and mediastinal opacities were seen. CT scan showed extensive calcification in pleura and mediastinum, and also in the peribronchovascular regions of the lungs. Multiple calcified medistinal and abdominal lymph nodes are seen. Calcifications are also seen in bilateral adrenal glands. On skeletal survey, an osteogenic lesion arising from femur was seen. On histopathology, it was reported as Osteosarcoma.

Metastatic osteosarcoma most commonly affects the lungs, bones, and regional and distant lymph nodes. However, the unusual findings in this case include extensive pleural and mediastinal calcifications, and adrenal calcifications.

Abstract ID:1234

ABSTRACT TITLE : SPECTRUM OF AIRWAY INVOLVEMENT IN PAEDIATRIC CHEST TUBERCULOSIS
PRESENTING AUTHOR : ANKITA RANA
CO-AUTHOR : DR. POOJA ABBEY, DR. RAMA ANAND, DR. VARINDER SINGH

Objective: To study imaging findings of airway involvement in paediatric chest tuberculosis.

Background: Lymphobronchial tuberculosis (LTB) is a complication of primary tuberculosis when enlarged lymph nodes involve airways, in form of external compression, erosion, ulceration, intraluminal caseation or granulation tissue. It is more common in young children and infants due to narrower and pliable airways. Left main bronchus and bronchus intermedius are the two common sites of involvement. LTB can present with collapse, hyperinflation, consolidation, necrosis, bulging fissures and eventual cavitation, as complication.

Imaging findings: Seven patients of chest tuberculosis with airway involvement were studied. Frontal radiograph was done in all patients and computed tomography (CT) in six cases. The imaging findings were:

a) PREDOMINANTLY LYMPH NODAL: In two patients CXR showed compression of left main bronchus by enlarged mediastinal lymph nodes. CT in one patient confirmed necrotic mediastinal nodes causing narrowing of trachea and carina.

b) PREDOMINANTLY PARENCHYMAL: One patient showed airway compression with associated consolidation.
c) COMBINED LYMPH NODAL AND PARENCHYMAL: In one patient, lymph nodal mass with consolidation was present with left bronchus narrowing.

d) LOBAR HYPERINFLATION: One patient showed hyperinflation on radiograph. CT revealed right middle lobe (RML) hyperinflation with bronchocele formation and intraluminal hypodensities in segmental branches of RML bronchus suggestive of granulation tissue.

e) SEQUELAE OF TB: Two patients showed volume loss in left lung with destroyed parenchyma and fibrobronchiectatic changes, along with bronchostenosis/complete bronchial occlusion.

Conclusion: Airway involvement in paediatric chest tuberculosis is an indirect sign of pulmonary or extra-pulmonary involvement. Frontal radiographs should always be assessed for tracheo-bronchial involvement. CT demonstrates the level of obstruction, whether intrinsic or extrinsic and has a complimentary role to bronchoscopy.

Abstract ID: 1260

ABSTRACT TITLE: SPECTRUM OF INFECTIVE AND NON-INFECTIVE PULMONARY MANIFESTATIONS IN PATIENTS WITH HAEMATOLOGICAL DISORDERS.

PRESENTING AUTHOR: PRIYANKA NARANJE

CO-AUTHOR: RASHMI SINGH, ASHU SEITH BHALLA, SMITA MANCHANDA, ARUN KUMAR GUPTA, MANORANJAN MAHAPATRA

Purpose: To illustrate infective and non-infective pulmonary manifestations in patients with haematological disorders.

Materials and Methods: From the period of Feb 2017 to July 2018, a retrospective evaluation was done of patients, referred from the Hematology Department of AIIMS, who underwent computed tomography (CT) of chest or chest-abdomen or head or paranasal sinuses, with suspicion of chest, abdominal, central nervous system, sinus complaints respectively. Out of these, the chest CTs were evaluated.

Results: Common haematological disorders who underwent CT were acute myeloid leukemia, acute lymphoblastic leukemia, aplastic anaemia, chronic myeloid leukemia, myelodysplastic syndrome, Non hodgkins lymphoma, chronic lymphocytic leukemia, acute promyelocytic leukemia, autoimmune haemolytic anemia and multiple myeloma. CT images were evaluated for various infectious and non-infectious pulmonary pathologies.

A total of 436 CTs were done and 184 patients revealed positive findings on CT Chest. Infection was seen in 148 patients which included- fungal (76), tubercular (14), viral (5), bacterial (8), mixed pulmonary infections (4), pleural effusion (3), empyema (3), cardiac vegetation (1) and non-specific findings (34). Non infectious complications were seen in 36 patients which were - hyperleukocytosis (9), diffuse alveolar haemorrhage (6), volume overload (5), All –Trans- Retinoic acid (ATRA) syndrome (3), bronchiolitis obliterans (2), Hodgkins nodule (1), lung infiltration by AML (1), pulmonary arterial hypertension (1), thymic hyperplasia (1), mediastinal mass (2), malignant pleural effusion (1), non cardiogenic pulmonary edema (1) and pulmonary thromboembolism (3).

Conclusion: Infections are the most common pulmonary complications in a patient with hematological disorders. Although non-infectious manifestations are less common, having a thorough knowledge of their radiological appearances will avoid diagnostic errors and prompt early appropriate treatment.
Abstract ID:1276

ABSTRACT TITLE : ROLE OF IMAGING IN ARDS
PRESENTING AUTHOR : SUBRAMANIYAN RAMANATHAN
CO-AUTHOR : MAHMOUD AL HEIDOUS

Learning Objectives:

• To review the role of various imaging modalities in the evaluation of Acute respiratory distress syndrome (ARDS)
• To discuss the role of imaging under the following:
  • Can it help in diagnosis?
  • Can it identify etiology?
  • Can it detect complications
  • Can it help in ventilation decisions?
  • Can it predict prognosis?

Background: ARDS is a type of acute diffuse inflammatory lung injury, characterised by increased permeability of the alveolar–capillary membrane with oedema, loss of aerated lung tissue, increased work of breathing and impaired gas exchange that requires mechanical ventilation. Chest radiograph, CT and lung ultrasound can be used in the diagnosis and management of ARDS.

Imaging findings:

- Diagnosis of ARDS: Chest radiograph, CT
- Etiology of ARDS: Pulmonary and extrapulmonary causes ARDS mimics
- Complications of ARDS: Lines and tubes, pneumothorax, pneumomediastinum from, subcutaneous emphysema, pleural effusion, collapse from malpositioned ET tube, nosocomial pneumonia, pulmonary fibrosis
- Role of CT in ventilatory management: Recruiters and non-recruiters Ichikado CT scoring
- Lung ultrasound: Indications, ultrasound patterns, scoring system Algorithmic approach in the management of ARDS

Conclusion and/or Teaching points: CT is the imaging modality of choice in ARDS. Bedside lung ultrasound is an useful tool in good hands. Imaging helps in more confident diagnosis, determining the cause, detecting complications, providing prognosis and assisting in ventilator settings
Abstract ID:1282

ABSTRACT TITLE: “ALL THAT GLITTERS IS NOT GOLD: MIMICKERS OF PULMONARY TUBERCULOSIS”.

PRESENTING AUTHOR: VANDANA S
CO-AUTHOR: DR RUDRESH HIREMATH, MD, DNB, EDIR PROFESSOR

Learning Objective: To discuss various diffuse parenchymal lung diseases which are the mimickers of pulmonary tuberculosis.

Background: Pulmonary tuberculosis remains a major health care challenge in the developing countries. Pulmonary tuberculosis demonstrates a variety of radiological features and often can be mimicked by a number of other disease entities. The purpose of this study is to review the imaging findings of various diffuse lung diseases which mimic pulmonary tuberculosis and to establish a diagnostic approach for timely management.

Imaging findings:
- We reviewed 170 HRCT thorax of patients with findings similar to pulmonary tuberculosis such as centrilobular miliary nodules, septal thickening, fibrosis, conglomerate consolidations, cavity, bronchiectasis and medistinal lymphadenopathy. The cases include Tropical pulmonary eosinophilia, Pneumoconiosis, Sarcoidosis, Lymphangitis carcinomatosa, Hypersensitivity pneumonitis, Miliary metastases and other conditions. We enumerate important findings and distribution in each case and highlight the importance of history, clinical findings and specific laboratory investigations.

Teaching points:
- Proper history and specific laboratory investigations are often needed to identify various disease entities which mimic pulmonary tuberculosis for prompt treatment of the patient.
- Knowledge about these common and rare entities helps to exclude pulmonary tuberculosis and should be considered as differentials.

Abstract ID:1291

ABSTRACT TITLE: LET US REDUCE THE CHAOS OF CHAOS!

PRESENTING AUTHOR: SRISHTI AGARWAL
CO-AUTHOR: DR. USHA JAIPAL

Learning Point: The importance of prenatal diagnosis of CHAOS.

Background: Congenital high airway obstruction syndrome (CHAOS) is the obstruction of the fetal upper airways, which may be partial or complete. The accumulation of the fetal lung fluid results in gradual increase of intratracheal pressure leading to lungs enlargement. Due to compression, the heart replaces centrally and becomes small and dysfunctional. Decreased venous return and dysfunctional cardiovascular system ends in ascites and hydrops.

Imaging: Bilateral large hyperechoic lungs; small, compressed, and centrally replaced heart; flattened or inverted diaphragm and ascites are characteristic findings on sonography.

Conclusion: With the advent of EXIT procedure (ex utero intrapartum treatment), prenatal diagnosis can lead to a better prognosis of a fatal disease.
Abstract ID: 96

ABSTRACT TITLE: GASTROINTESTINAL COMPLICATIONS IN ACUTE AND CHRONIC PANCREATITIS

PRESENTING AUTHOR: PANKAJ GUPTA

CO-AUTHOR: AKASH BANSAL, NARENDER DHAKA, SAROJ SINHA, HARJEET SINGH, RAKESH KOCHHAR

Learning Objective: An extensive update of the gastrointestinal complication of pancreatitis, both acute and chronic is presented.

Background: Pancreatitis is one of the important medical conditions. Gastrointestinal complications of pancreatitis are important and lead to significant morbidity and mortality. Diagnosis of these complications is difficult and may require a strong clinical suspicion coupled with various imaging features.

Imaging findings: Intestinal complications of acute pancreatitis can be broadly divided into complications caused by the action of pancreatic enzymes and complications caused by pseudocyst formation. The bowel complications associated with acute pancreatitis are predominantly due to the pancreatic enzymes released in the mesentery which can track along different paths to involve different segments of the intestine. The transverse colon and the splenic flexure of the colon are the most common sites of involvement. The manifestations of this type of bowel involvement are inflammation, ischemia and necrosis, obstruction, perforation, fistula and paralytic ileus. Complications associated with pseudocyst include spontaneous rupture and fistulisation, and obstruction. Complications associated with chronic pancreatitis include transient or fixed obstruction and groove pancreatitis.

Conclusion: Gastrointestinal complications are an important cause of morbidity and rarely mortality in patients with both acute and chronic pancreatitis. Imaging plays an important role in the identification and management of these complications.

Abstract ID: 156

ABSTRACT TITLE: CT EVALUATION OF TUMORS OF RETROPERITONEAL SPACE

PRESENTING AUTHOR: ASHUTOSH V PATEL

CO-AUTHOR: DR. HARSHAD SHAH, DR. NIRMALA CHUDASAMA, DR. AKANKSHA PATEL

Objectives: CT evaluation of Tumors of Retroperitoneal Space

Patients and Methods: Reviewed the CT findings in 63 Retroperitoneal Space mass patients admitted to C.U. Shah medical college & hospital. Study was undertaken using SIEMENS 16 slice CT machine.

Results: The most common CT findings include in retroperitoneal space lymph node masses (n=19, 31%) followed by renal mass (n=13, 21%), adrenal masses (n=11, 18%), primary retroperitoneal tumors (n=9, 15%), pancreatic tumors (n=6, 9%), rectal tumors (n=3, 4%) and urothelial and duodenal neuroendocrine tumors (n=2, 2%)
Conclusion: Retroperitoneal lesions are difficult to evaluate on ultrasound examination since they are deeper structures so CT gives an excellent opportunity to revisit normal anatomy of retroperitoneal space and to understand pathological aspect of various tumors in retroperitoneal space

Keywords: Tomography; X-Ray; retroperitoneal mass, lymph node mass

Abstract ID: 236

ABSTRACT TITLE : A CASE REPORT ON RETROGRADE JEJUNO-GASTRIC INTUSSUSCEPTION- A RARE FINDING

PRESENTING AUTHOR : PIYUSH JAIN

CO-AUTHOR : DR HIMANSHU CHOPRA DR RAHATDEEP S BRAR

Background:
- Intussusception is the invagination of a bowel loop with its mesenteric fold (intussusceptum) into the lumen of a contiguous portion of bowel (intussuscipiens) as a result of peristalsis.
- Depending on severity and orientation to the scanning axis, intussusception may have three different CT appearances: a target lesion representing an intraluminal soft tissue mass with mesenteric fat; a sausage-shaped mass with alternating layers of low and high attenuation; and reniform mass with focal ischemic changes.
- RetrogradeJejunogastricIntussusception is uncommon, life threatening complication of gastrojejunostomy or partial gastrectomy.
- Retrograde peristalsis is the main pathogenetic factor.

Aims and objectives: To evaluate a 54 year Female came to department of radiology with history of Insidious pain in abdomen, decrease in appetite since 1 month, vomiting (coffee colored), surgical history of gastric ulcer perforation (Billroth Type II) 27 years ago.

Per Abdomen findings: A hard palpable mobile mass felt with tenderness in the epigastric region, assessed with various imaging modalities and to study & correlate various imaging features and to find out the best modality to detect RETROGRADE JEJUNO-GASTRIC INTUSSUSCEPTION at the earliest stage.

Imaging features:
- USG -stomach with jejunal loops within it (detected due to presence of the valvulae conniventis) along with mesenteric vessels and lymph nodes dragged between entering and returning wall of intussusceptum.
- CT SCAN- “target like” lesion in the stomach with enhancement & opacification of the vessels in the arterial phase. On venous phase, further enhancement of the mass lesion & vessels & lymph nodes within the mass lesion.

Conclusions:
- Retrograde jejunogastric intussusception is rare, fatal complication of gastrojejunostomy.
- Diagnosis can be made with an upper gastrointestinal gastroscopy, CT is useful in early detection of any strangulation in the intussuscepted jejunal loop.
- Rapid bedside availability of usg, diagnosis can be readily done, thus rapid treatment given.
- No medical treatment for acute JGI, correct treatment is surgical earliest.
Abstract ID: 251

**ABSTRACT TITLE**: PORTAL VEIN THROMBOSIS IN GASTRIC CARCINOMA PATIENT: A RARE ENTITY

**PRESENTING AUTHOR**: RAJUL RASTOGI

**CO-AUTHOR**: ARUN KUMAR GAUR1,

Gastric carcinoma in advanced stages can directly involve or extend in to adjacent viscera with or without lymph nodal or haematological spread and may be associated with peritoneal seeding or distant dissemination. Though portal vein thrombosis (PVT) secondary to benign causes is common yet it is uncommonly encountered with malignant tumors as well. Malignant PVT is common with hepatic and pancreatic cancer but rare with gastric carcinoma. We report one such case where PVT was due to direct luminal invasion by malignant gastric carcinoma.

**Conclusion**: Portal vein thrombosis due to malignant causes is uncommon and PVT with gastric carcinoma is rare. Imaging findings can delineate this abnormality along with the primary tumor. Since presence of PVT may alter management hence it should be excluded in all cases of gastric cancer.

Abstract ID: 476

**ABSTRACT TITLE**: FROM INTESTINAL OBSTRUCTION TO PERFORATION: ROLE OF MDCT IN DIAGNOSIS AND MANAGEMENT

**PRESENTING AUTHOR**: MAYANK JAIN

**CO-AUTHOR**: MANISH KUMAR, ASSISTANT PROFESSOR

**Learning Objectives**: To study the imaging features of lissencephaly on MRI.

**Background**:
- 1.5Y/M presented with history of hypotonia and developmental delay.
- 1.5 Tesla MRI scanner (SIEMENS® MAGNETOM AVANTO) was used for diagnosis.

**Imaging Findings on MRI**:
- Near to complete agyria in parieto-occipital region and incomplete/pachygyria in fronto-temporo-parietal region with thickened and smooth cortex.
- Cerebral parenchyma is giving hourglass appearance with vertical and shallow Sylvian fissure.
- The subcortical white matter is thinned out with loss of grey white matter differentiation.
- Bilateral colpocephaly (right > left).
- Hyperintensities are seen in bilateral periventricular white matter region.
- MRI features are suggestive of lissencephaly.

**Conclusion**: MRI is the imaging modality of choice for suspected defects of cortex formation since it distinguishes gray from white matter and thereby is effective in diagnosing lissencephaly-pachygyria spectrum.
Abstract ID: 480

ABSTRACT TITLE: DIAGNOSTIC ROLE OF MRI IN THE PRE-OPRATIVE EVALUATION OF PERIANAL FISTULA

PRESENTING AUTHOR: BHERU DAN CHARAN

CO-AUTHOR: DR UDHA JAIPAL

Objective: Primary objectives of our study is to describe the MRI findings in perianal fistulae in terms of its grading, associated finding like abscess, secondary tract, internal opening and To relate MRI findings with intra-operative surgical findings. Secondary objective is To find out validity of MRI findings in perianal fistulae in terms of its sensitivity, specificity, diagnostic accuracy.

Method: Study was conducted on 55 consecutive patients with suspected perianal fistulae having one or more external openings for MRI [3T] evaluation. Previously operated or patients with recurrent perianal disease were excluded from the study. MRI findings were obtained according to “St. James’s University Hospital MR Imaging Classification of Perianal Fistulae” and correlated with surgical findings.

Result: Amongst all 55 patients, per-operative surgical findings confirmed the presence perianal fistulae in all 55 patients. The sensitivity and specificity of MRI in correctly detecting inter sphincteric fistulae found to be 93.1% and 92.3% respectively; trans sphincteric, it was 85% and 91.4% respectively and for supra levator it was 83.34% and 97.9% respectively. Sensitivity was for identification of secondary tract (94.45%), correct localization of internal opening (87.27%) and abscess (94.1%). Out of 55 internal openings, MRI only detected 50 opening, out of 50, 48 were correctly diagnosed and 2 were detected on wrong position. Sensitivity was 87.2%. And PPV was 96%.

Conclusion: MRI is a useful procedure for successful management of perianal fistulae by correct assessment of the extent of disease and relationship to sphincter complex. It also helps in the identification of ramifications and abscesses resulting in complete evaluation and highest possible diagnostic accuracy aiding successful surgical interventions, aiming to reduce complications and recurrences. The T2W SPAIR sequence in both coronal and axial planes provides most of the details necessary for accurate evaluation of perianal fistulae with the identification of ramifications and abscesses associated with the fistulous.

Abstract ID: 505

ABSTRACT TITLE: IMAGING IN BUDD CHAIRI SYNDROME

PRESENTING AUTHOR: YASH RATHOD

CO-AUTHOR: DR ANJU SHARMA, DR AUM KOTAK

Budd-Chiari syndrome is an uncommon, often fatal disorder resulting from an obstructed hepatic venous outflow tract. The obstructive lesion is situated in the main hepatic veins, in the inferior vena cava or in both. The nature, location and extent of the obstruction can be displayed on diagnostic imaging techniques. In addition to this direct evidence, the indirect findings of venous obstruction such as the presence of intra- and extrahepatic collateral veins, when combined with the altered morphology and enhancement pattern of the liver enables one to arrive at a confident diagnosis.

In patients with suspected Budd-Chiari syndrome, gray-scale sonography with complementary support of color and pulsed Doppler examinations is the first step in approaching the diagnosis. It is followed by a contrast-enhanced cross-sectional technique, preferentially by MR angiography. The patients with a high clinical suspicion of Budd-Chiari syndrome may undergo hepatic venography or venacavography directly.
so that a potential of recanalization (e.g. percutaneous transluminal angioplasty with or without stent placement or TIPS) of the obstructed segment under the guidance of these techniques would not be delayed.

Abstract ID: 522

ABSTRACT TITLE: IMAGING IN HEPATIC HEMANGIOMA
PRESENTING AUTHOR: VIVEK MAVANI
CO-AUTHOR: DR.PURVI DESAI, DR.YASH RATHOD

Hepatic hemangiomas are benign tumors of the liver consisting of clusters of blood-filled cavities, lined by endothelial cells, fed by the hepatic artery. The vast majority of HH are asymptomatic, most often being discovered incidentally during imaging investigations for various unrelated pathologies. Typical hemangiomas, the so-called capillary hemangiomas, range from a few mm to 3 cm, do not increase in size over time and therefore are unlikely to generate future symptomatology. Small (mm-3 cm) and medium (3 cm-10 cm) hemangiomas are well-defined lesions, requiring no active treatment beside regular follow-ups. However, the so-called giant liver hemangiomas, of up to 10 cm (most commonly) and even 20+ cm in size (according to occasional reports) can, and usually will develop symptoms and complications that require prompt surgical intervention or other kind of therapy.

HH belong to the class of hepatic “incidentalomas”, so-called because they are diagnosed incidentally, on imaging studies performed as routine examinations or for other reasons than the evaluation of a possible liver mass. Less than half of HH present with overt clinical symptoms, consisting, most often, of upper abdominal pain (this is usually the case for large lesions, which cause the distension of Glisson’s capsule).

Hepatic hemangiomas require a careful diagnosis to differentiate from other focal hepatic lesions, co-occurring diagnoses are also possible.

Abstract ID: 548

ABSTRACT TITLE: MESENTRIC LYMPHANGIOMA
PRESENTING AUTHOR: BHUVANESHAWARI
CO-AUTHOR: DR. SANJAY SC, DR. SANDEEP, DR. PRANAV, DR. AVISHA

CT scan of abdomen with contras observations: evidence of a predominantly hypodense lesion with significant cystic component noted in the right subhepatic region anterior to ascending colon measuring approximatly 5.4X5.2X8.8Cms. The lesion shows multifocal internal calcific foci with one rim calcification measuring 28x30mm showing internal fat component. The lesion is seen forming acute angle with small bowel arising from it.

Microscopy: Multiple sections studied from the mensentry showed dilated cystic spaces lined by flattened endothelium along with few ectatic vascular spaces. Some of these cystic spaces show proteinaceous material with stroma in between the cyst containing presence of smooth muscle fibres. Few of the spaces contain lymphocytes occasional RBCs and hemosiderin laden macrophages Intervening stroma shows smooth muscle fibres reactive lymphoid aggregates and lobules of mature adipose tissue also seen are thick wall blood vessels. stroma show large area of dystrophic calcification along with giant cells and sheets of foam cells. The small intestinal mucosa appears unremarkable and the cyst does not show any connection with the overlying mucosa or muscularis layer microscopically section are negative for granulomas or malignancy.
Intra abdominal cystic lymphangioma is a rare lesion with an estimated incidence of less than one per 100,000 hospital admissions. It is exclusively a disease of childhood and young adults with a slight preponderance in males.

Image Findings:
- **USG**: Help in categorising the lesion cystic, however calculate preoperative detection is characterization and localization of the lesion.
- **CT**: Large thin walled single or multiple loculated cystic mass with contents of water to fat attenuation.
- **MRI**: Enhancement of cystic wall and septa seen it is frequently associated with small bowel. High signal intensity on T2 weighted.
- Differential diagnosis: Other teratoma
- Fetus in Fetu
- Enteric Duplication Cyst
- Mucocele of appendix
- Hydatid cyst

Abstract ID: 558

**ABSTRACT TITLE**: SPECTRUM OF IMAGING FINDINGS IN DUODENAL PATHOLOGIES: A PICTORIAL ESSAY

**PRESENTING AUTHOR**: ARUNIMA AGGARWAL

**CO-AUTHOR**: DR. LALENDRA UPRETI, DR. NATASHA GUPTA, DR. ANINDITA BOSE, DR. ASHANA SINGHAL, DR. TAMANNA KHULLAR

**Learning Objectives**: This presentation aims to illustrate the spectrum of imaging findings of various duodenal pathologies and role of various imaging modalities in diagnosis of these lesions.

**Background**: The increased requisition of abdominal CT for gastro-intestinal pathologies has resulted in the detection of various duodenal abnormalities some of which may be incidental. Owing to its location, small length and sometimes non specific imaging findings, duodenal pathologies are often missed or misinterpreted on cross sectional imaging.

**Imaging Findings**: Patients presenting to the Department of Radiology, UCMS and GTB hospital for suspected upper gastro-intestinal abnormalities were evaluated for duodenal pathologies using suitable and available modalities. A variety of lesions involving the duodenum were seen including:

**Congenital**
1. Duodenal atresia
2. Duodenal web
3. Annular pancreas
4. Duodenal diverticulum
5. Ladd’s Bands
Inflammatory

1. Tuberculosis involving duodenum
2. Crohn’s disease involving duodenum
3. Peptic stricture

Traumatic duodenal perforation

Neoplastic lesions of the duodenum

1. Adenocarcinoma
2. Lymphoma
3. Periampullary carcinoid

Miscellaneous: The imaging findings were recorded and are presented in form of a pictorial review.

Conclusion: Imaging is essential for accurate identification and characterization of duodenal lesions. It is of immense value for guiding treatment

Abstract ID: 596

ABSTRACT TITLE: GASTRIC CARCINOMA AND ITS COMMON MIMICKERS

PRESENTING AUTHOR: RENU YADAV

CO-AUTHOR: DR M K MITTAL

Learning objectives: To evaluate the imaging appearance in malignant gastric lesions and its imaging differential diagnosis.

Background: Malignant causes of stomach involvement includes adenocarcinoma, lymphoma, carcinoids gastrointestinal stromal tumors and metastasis. Among malignant causes adenocarcinoma and lymphoma account of majority. Imaging modalities available are barium studies, Multidetector Computed Tomography, Magnetic Resonance Imaging, PET-CT and endoscopy and biopsy play an important role in tumor diagnosis, pre-operative staging and post-intervention follow-up. Barium studies provides good mucosal details, however no extragastric disease assessment. MDCT most commonly used technique for disease assessment allows disease diagnosis, staging and differentiation between various pathologies.

Imaging findings: Gastric carcinoma may presents either as polypoidal, ulcerative or as diffusely infiltrating lesion mimicking lymphoma, GIST and metastasis. Secondary gastric lymphomatous involvement is more than primary. Lymphoma presents as bulky non-obstructing gastric thickening with lymphadenopathy extending below renal hila. GIST is the most common mesenchymal tumor may present as submucosal, intramural or extraluminal mass with imaging features as exophytic mass with variable enhancement which may show areas of cystic change, haemorrhage or fistulous communication with gut. Metastasis to stomach may be either by direct extension or haematogenous dissemination with malignant melanoma, breast and lung carcinoma being the most common primaries.

Conclusions: Certain imaging features helps to narrow down the differential diagnosis for malignant gastric lesion, however close overlap between the malignant lesions lay emphasis for the close clinical, imaging and histological correlation.
Abstract ID: 641

**ABSTRACT TITLE**: CORROSIVE INJURIES OF THE UPPER GASTROINTESTINAL TRACT: A PICTORIAL REVIEW OF THE BARIUM FEATURES

**PRESENTING AUTHOR**: PANKAJ GUPTA

**CO-AUTHOR**: ROHAN KAMAT, YALAKA RAMI REDDY, SUMAN KOCHHAR, BIRINDER NAGI, RAKESH KOCHHAR

**Learning Objective**: To describe the barium findings of corrosive injury of the upper gastrointestinal tract.

**Background**: Corrosive ingestion is a common form of poisoning. Corrosive agents cause severe damage to the gastrointestinal (GI) tract. The most severe forms of injury can lead to mortality, however, the major concern with this type of injury is severe and often life-long morbidity. Upper GI endoscopy is the test of choice for assessing severity in the acute phase of the disease. The long-term management is based on the site, number, location, and tightness of the stricture. This information is best provided by the barium contrast studies.

**Imaging findings**: A typical corrosive stricture is a smooth concentric narrowing of the lumen with tapered proximal and distal margins. Strictures may affect a short segment of the esophagus (~1cm) or may involve long segments, affecting almost the entire esophagus with or without gastric involvement. Very short segment strictures in the cervical esophagus may resemble webs and the ones at the gastroesophageal junction may mimic primary achalasia. Strictures can be single or multiple. Gastric strictures can be classified into five types as follows: a) Short ring stricture within 1-2cm of the pylorus, b) Strictures extending up to the antrum, c) Strictures involving the body of the stomach (mid part), d) Linitis plastica due to diffuse gastric involvement, e) Strictures involving the stomach and the first part of the duodenum. Antropyloric region is the most frequent site of gastric narrowing following corrosive intake. Uncommon features of corrosive injury are intramural diverticulae of the esophagus and stomach, tracheoesophageal fistula, gastro-colic fistula, aorto-enteric fistula, and esophageal carcinoma.

**Conclusion**: Site, extent, and morphology of stricture, as well as other patterns of injury, are well depicted by barium contrast studies. This knowledge is important for management as well as the prognosis of patients.

Abstract ID: 680

**Title**: Carcinoma of stomach presenting as obstructive jaundice.

**Topic**: Gastrointestinal Imaging

**Learning Objective**:

- To be familiar with the patterns of spread of gastric adenocarcinoma.
- To know the different ways of presentation of gastric cancer.

**Background**: Gastric cancer is the fourth most common cause of cancer-related deaths worldwide. While the usual presentation is of a gastric outlet obstruction, in the form of nausea, vomiting, dysphagia and postprandial fullness, along with loss of appetite and weight, atypical presentation include hematemesis, melena, backache (vertebral metastasis), left supraclavicular swelling (Virchow nodes), etc. Here, we present a case of a 52 years old, female who presented with acute onset, obstructive jaundice, which on imaging was found to be carcinoma arising from the pylorus of stomach. Carcinoma stomach presenting with obstructive jaundice is, although rare, but known. The usual culprit being metastatic periportal lymph nodes compressing upon the common hepatic duct (CHD) or proximal common bile duct (CBD). However,
the cause for obstructive jaundice in our case was spread across the antrum, along the D1 and D2 segment of duodenum, involving the ampulla, resulting in obstructive jaundice. Here, there were no symptoms of gastric outlet obstruction. Also, on imaging, the longitudinal mucosal spread was substantial as compared to the circumferential growth, consistent with a high grade malignancy, which was later confirmed on histopathology (undifferentiated adenocarcinoma).

Conclusion:

- Imaging is important in cases of gastric cancers, to know the specific subtype (adenocarcinoma, GIST or lymphoma), to delineate the disease burden and to guide management (curative or palliative/ surgical, chemotherapy or both).
- We should have a suspicion of gastric carcinoma in a patient presenting with obstructive jaundice, especially in elderly population.

Abstract ID: 708

Title
MR Imaging Classification of Perianal Fistulas - A pictorial review

Topic
Gastrointestinal Imaging

Learning Objectives: To demonstrate accurately the anatomy of the perianal region and to grade perianal fistula.

Background: The incidence of perianal fistula is 10 in 100,000 persons. It is 2-6 times more prevalent in males than females and in 3rd and 4th decades of life. Anal fistula commonly occur in people with a history of anal abscesses. Recurrent abscesses may lead to significant short term morbidity due to pain and become a source for systemic infection.

Imaging Findings: MR imaging clearly depicts the relationship of fistulas to the pelvic diaphragm (levator plate) and the ischiorectal fossae. It not only demonstrates the primary fistulous track but also with secondary ramifications and associated abscesses. This relationship has important implications for surgical management and outcome and has been classified into five grades (the St James's University Hospital classification).

Grade
0 Normal appearance
1 Simple linear intersphincteric fistula
2 Intersphincteric fistula with intersphincteric abscess or secondary fistulous track
3 Transphincteric fistula
4 Transphincteric fistula with abscess or secondary track within the ischioanal or ischiorectal fossa
5 Supralelevator and translevator disease

Conclusion: MR imaging has a major role in the preoperative assessment of perianal fistulas. By using this classification, the radiologist can alert the clinician to the presence of complex disease that may require expert surgical management.
Abstract ID: 732

**ABSTRACT TITLE**: IMAGING DIAGNOSIS OF INTERNAL HERNIAS

**PRESENTING AUTHOR**: AYUSH JAIN

**CO-AUTHOR**: DR SHEHBAZ ANSARI

**Learning Objectives:**

- To describe the diagnostic approach to internal hernias with MDCT.
- To identify the key vessels and imaging features of various types of Internal hernias.

**Background/Imaging findings**: Internal hernias form an important part of the differential diagnosis of acute intestinal obstruction, predominantly because of non specific signs and symptoms and increased incidence of morbidity and mortality associated with them. The incidence of internal hernias and their complications continues to be on the rise as newer techniques and surgical procedures are being performed. Early surgical intervention is warranted in such patients as the risk of ischaemia and strangulation is high. Currently Multidetector CT plays an important part in the preoperative diagnosis of Internal hernias. CT findings of small bowel obstruction with a closed loop with convergence, engorgement and twisting of the mesenteric vessels are indicative of an Internal hernia. Types of internal hernias are based on the congenital/acquired defects within the mesentry with displacement of specific vessels with a sac like contour and peripheral arrangement of herniated loops within. Many types of internal hernias have been described, the most common ones being transmesenteric. Most of the cases of transmesenteric hernia are acquired, with a history of an abdominal surgery in the past. Other rarer types, including right and left paraduodenal, pericaecal, greater omentum related, sigmoid mesocolon related, and pelvic internal hernias, most of which have a congenital defect within the peritoneal reflections, some of which have been described in the educational exhibit.

**Teaching points:**

- Early diagnosis and management of Internal hernias can result in reduced morbidity and mortality to the patient.
- It is important to identify the specific vascular anatomy and the characteristic locations within the peritoneal cavity involved in distinguishing various types of internal hernias.

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Abstract ID: 768

**ABSTRACT TITLE**: HYDATID – WHERE HAVE YOU HID?

**PRESENTING AUTHOR**: GIRISH BORAIAH

**CO-AUTHOR**: DR. BABU PHILIP (PROFESSOR AND HEAD), DR. V RAVI HOISALA (PROFESSOR AND FORMER HEAD)

**Introduction**: Hydatid cysts caused by Echinococcus can occur anywhere in the body. FNAC/Biopsy is most often contraindicated due to possible allergic reaction.

**Aims and Objectives**: To emphasize various imaging findings of Hydatid cysts in different locations and thus guide the viewers to varied forms of the disease to achieve accurate diagnosis.

**Materials and Methods**: USG, CT and sometimes MR imaging of histopathologically proven Hydatid cysts in different locations.
Results: Diagnosis of Hydatid cysts can be difficult at times and can be achieved through awareness of different imaging findings in various location.

Conclusion: Hydatid cyst diagnosis sometimes requires various modalities of imaging. Most often understanding the multitude of imaging features helps to identify Hydatid cysts accurately. Unusual locations of hydatid can also be appreciated in few cases.

Abstract ID:815

ABSTRACT TITLE: BENIGN CONDITIONS SIMULATING LIVER MALIGNANCY
PRESENTING AUTHOR: CH MADHAVI
CO-AUTHOR: DR GS KEJRIWAL, DR. K ANIL KUMAR, DR. RAGHU TEJA

Objectives: To learn about pitfalls, imaging features and clues to diagnosis of various benign liver conditions which may mimic malignancies.

Background: Although diagnostic accuracy of imaging technique for liver disease has been improved, misdiagnosis is encountered not uncommonly in real clinical practice.

Imaging Details:

INFLAMMATORY PSEUDOTUMOR may be mistaken for FR or metastasis, ICC or Atypical HCC. Clinical picture should be considered before making correct diagnosis.

GIANT REGENERATIVE CIRRHOTIC Nodule maybe mistaken for HCC. However there is Hypointense signal intensity on T2WI, No arterial enhancement or delayed enhancement washout as opposed to HCC.

FOCAL CONFLUENT Fibrosis can be confused with cholangiocarcinoma (peripheral), treated malignancies, hepatic cavernous hemangioma. Review of previous imaging, Wedge-shaped with capsular retraction & Characteristic location (medial segment of left lobe, anterior segment of right lobe, or both) gives a clue.

SCLEROSED Hemangioma can be mistaken for metastasis in view of history and peripheral continuous enhancement. Geographic pattern, Capsular retraction, Decrease in size over time, Loss of previously seen regions of enhancement, Presence of transient hepatic attenuation difference, Rim enhancement during the arterial phase, Nodular regions of intense enhancement as seen in typical hemangioma.

SIDEROUS NODULE MIMICKING HCC on CECT. Review of NECT is hence necessary.

HEPATIC PSEUDOANEURYSM May be misinterpreted as arterially enhancing mass (e.g., HCC, especially in background of chronic liver disease). However history of liver biopsy, similar attenuation to arterial structures, signal void on T1WI and T2WI may be noted.

Conclusion: It is very essential to identify benign lesions which mimics malignancy and avoid unnecessary interventions for the liver.
Purpose: Fistulo-in-ano is a challenging clinical condition to treat. Optimal treatment requires obliteration of the fistulous tract and complete eradication of infection with preservation of sphincter function. Delineation of primary tract in relation to sphincters and associated complications is important. MRI is gold standard modality, provided it is available and affordable. Iso-volumetric MDCT imaging allows demonstration of contrast filled tract and the patho-anatomy of the ano-rectal region. We wish to share our experience of MDCT fistulography and present a kaleidoscopic view of this promising modality in evaluation of ano-rectal fistulas.

Materials and Methods: 64 slice multi-detector CT was used to perform fistulography in patients of fistula-in-ano.

2-5 ml of contrast (5% ionic/non-ionic water soluble iodine contrast) was instilled through the external opening via a cannula. Axial sections were obtained from mid sacrum to the gluteal folds using kV 140, mAs 205, collimation 64 x 0.6mm, pitch 1.2 to obtain 2mm thick slices. Images were presented in axial, coronal and sagittal planes in MPR and MIP format.

All components- external opening, internal opening, primary tract and complications (secondary tracts , abscesses , horse-shoeing and supra-levator extensions ) were noted.

Results:
- Normal anatomy of ano-rectal region- with identification of the sphincteric complex, anal canal, ano-rectal junction, puborectalis, levator ani, ischio-rectal and ischioanal fossae.
- All components of the fistula were well depicted in most cases and findings confirmed on surgery are being presented in images.
- All types of fistulas (Parks classification) are being presented.
  • -Type I - Intersphincteric
  • -Type-II - Trans-sphincteric
  • -Type III - Suprasphincteric
  • -Type IV - Extrasphincteric

Conclusion: MDCT Fistulography is a novel technique to study ano-rectal fistula and can be utilized in circumstances where MRI is not available or feasible.
Abstract ID:884

ABSTRACT TITLE: HYDATID CYST: ANYWHERE EVERYWHERE.
PRESENTING AUTHOR: MADHU P
CO-AUTHOR: DR NANJARAJ C.P, DR N L RAJENDRAKUMAR, DR MANUPRATAP N, DR. SANJAY P

Aims: To describe the imaging features of hydatid disease in various anatomic locations.

Materials and Method: USG (PHILIPS Affiniti 70) and Dual slice CT (GE) were used for the study.

Results:
• Hydatid disease (HD) can occur almost anywhere in the body and demonstrates a variety of imaging features that vary according to growth stage, associated complications, and affected tissue. Radiologic findings range from purely cystic lesions to a completely solid appearance. Calcification is more common in HD of the liver, spleen, and kidney
• Hydatid cysts (HCs) can be solitary or multiple. Chest radiography, ultrasonography (US), computed tomography (CT) can depict HCs.
• The imaging method used depends on the involved organ and the growth stage of the cyst. US most clearly demonstrate the hydatid sands in purely cystic lesions, as well as floating membranes, daughter cysts, and vesicles. CT is best for detecting calcification and revealing the internal cystic structure posterior to calcification.

Conclusion:
• HD is a dynamic entity with varying imaging appearances. It can arise in any part of the body. Familiarity with imaging findings, especially in patients living in countries where this disease is endemic, provides important advantages in making the diagnosis.
• HC should be kept in mind when a cystic lesion is encountered anywhere in the body.

Abstract ID:885

ABSTRACT TITLE: RARE CASE REPORT: PRIMARY MESENTRIC CARCINOID WITH LIVER METASTASIS
PRESENTING AUTHOR: MADHU P
CO-AUTHOR: DR NANJARAJ C P , DR N L RAJENDRAKUMAR, DR NISHANTH R K

Aims: To study imaging features of Primary mesenteric carcinoid.

Materials & Method: Dual slice CT (GE) Philips Affinity 70 G were used for diagnosis.

Background: 60 year old female presented with dull aching abdominal pain, loss of appetite, diarrhea -two weeks. Lab investigations -elevated urine 5-HIAA level.

Results: Abdominal USG revealed well-defined hypoechoic lesion 3.3 x 2.2 cms in mesentery, with few specks of calcification & internal vascularity. Multiple well-defined hypo echoic lesions with internal vascularity were in both lobes of the liver .

CT revealed well-defined hyperdense lesion with few specks of calcification, peripheral radiating fibrotic bands noted in mesentery. Multiple hyperdense lesions of varying sizes were seen in both lobes of liver . On
CECT, mesenteric & liver lesions showed intense enhancement with early contrast washout. There was no E/O enhancing mass lesions in GIT.

On these findings, primary mesenteric carcinoid with liver metastasis was diagnosed.

USG guided FNAC from the mesenteric and liver lesions confirmed diagnosis of carcinoid tumour.

**Conclusion:** Primary mesenteric carcinoid tumor are rare, occurrence of which can be explained by the presence of neural crest cells. In our case CECT revealed avidly enhancing hyperdense solid mass lesion with few specks of calcifications in root of mesentery. Complete endoscopic workup of entire GIT revealed no evidence of any other primary tumour. In conjunction with specific radiologic studies, pathologic analysis, comprehensive immunohistochemistry, primary nature of the mesenteric neuroendocrine tumours was confirmed in our case.

**Abstract ID:1084**

<table>
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<th>ABSTRACT TITLE</th>
<th>MDCT PREDICTORS FOR SURGICAL INTERVENTION IN ADHESIVE SMALL BOWEL OBSTRUCTION</th>
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<td>PRESENTING AUTHOR</td>
<td>PRIYANKA</td>
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<tr>
<td>CO-AUTHOR</td>
<td>DR. TBS BUXI, DR. SAMARJIT SINGH GHUMAN, DR. ABHISHEK JAYANT</td>
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**Purpose:** To assess, the accuracy of MDCT findings as predictors for impending surgical intervention in patients with adhesive small bowel obstruction.

**Material and Methods:** The study was done in the Department of Radiodiagnosis (CT) in collaboration with the Department of Surgical Gastroenterology at Sir Ganga Ram Hospital. The study was done in two phases. In the first phase, 75 retrospective cases meeting the inclusion criteria were included in this study. 8 MDCT features: small bowel dilatation, bowel wall thickening, degree of obstruction, small bowel air-fluid level, small bowel feces sign, mesenteric fatty stranding, presence of transition point and the presence of intraperitoneal free fluid were assessed in these patients. Sensitivity, specificity, positive predicative value, negative predictive value and accuracy of these features for prediction of surgical outcome were evaluated. Correlations of these features individually and in combination were assessed with surgical management. In the second phase of our study, validity of the results obtained in the retrospective group was tested by applying them to 25 prospective cases.

**Results:** In retrospective group, small bowel dilatation (>4cm) and high grade obstruction were found to be statistically significant and positive predictor of surgical outcome in patients of adhesive small bowel obstruction both individually and in combination. The model generated on the basis of retrospective data showed outstanding discrimination between surgical and conservative management when applied on prospective cases, thus validating our results.

**Conclusion:** MDCT features of small bowel dilatation >4cm and high grade obstruction can both independently and in combination predict surgical outcome in patients with adhesive small bowel obstruction.
Abstract ID: 1186

**ABSTRACT TITLE:** IMAGING EVALUATION OF ESOPHAGEAL CARCINOMA BY BARIUM STUDY & CT

**PRESENTING AUTHOR:** MOHSINA ISLAM BORA

**CO-AUTHOR:** (None)

**Purpose:**
1. To study imaging appearance of esophageal malignancies with Barium study & Computed Tomography
2. CT staging of esophageal carcinoma
3. To correlate the imaging findings with pathological diagnosis

**Material & Methods:** 50 cases of HPE proven carcinoma esophagus referred to the radiology department were included in the study

Study period- from September 2017 to August 2018

Fluoroscopy machine & 16 slice CT scanner (PHILIPS)

**Results:** All the 50 cases had CT demonstrable abnormal esophageal wall thickening. Most of the cases were advanced stage disease. There was good correlation between the imaging findings & HPE results.

Abstract ID: 1209

**ABSTRACT TITLE:** RARE CASE OF NON HODGKINS LYMPHOMA IN PSORIASIS PATIENT FOLLOWING LONG TERM METHOTREXATE THERAPY

**PRESENTING AUTHOR:** RAGHUKUL TILAK

**CO-AUTHOR:** KB GEHLOT, NK KARDAM, ROHIT YADAV

**Background & Aims & Objectives:** Psoriasis is a common chronic inflammatory disease which is associated with increased risk of lymphomas owing to its pathophysiology, its treatment and combination of these factors. Methotrexate is an immunosuppressive drug, which is used in treatment of various diseases such as rheumatoid arthritis, psoriasis, dermatomyositis etc. It has been well documented that it causes risk of development of various types of lymphoma in patients treated for above mentioned conditions on long term basis, however, only one case of non hodgkins lymphoma had been reported so far in patients of psoriasis treated with methotrexate. We present a case report of patient who came to the our Department of Radiodiagnosis, MBGH, Udaipur for routine sonographic examination and had no significant complaints.

**Material & Methods:** At our institution, Ultrasonography of abdomen was done and on the basis of USG findings CECT Abdomen was done on 128 slice MDCT (SIMENS). Further Biopsy and Immunohistochemistry were advised.

**Case History:** We present the case of a 50 year old, male patient, a known case of chronic plaque psoriasis diagnosed since 2003, had been receiving treatment with methotrexate 12mg/week from 2003 to 2013 intermittently and 15mg/week for the last two years. In addition, he had monitored his blood counts and liver function every two months during this period. Hematological investigations done at all times were normal.

**Result:** USG Abdomen was done, showed presence of multiple ill defined confluent hypoechoic lesions in retroperitoneum, para aortic region and peripancreatic region, presumptive diagnosis of lymph node was
given along with fatty changes in liver. Further CECT Abdomen Scan was done, which revealed the presence of multiple non enhancing hypodense masses in above mentioned regions and it confirmed the diagnosis of lymph node masses given on USG. Biopsy and immunohistochemistry was advised on CT which proved the masses to be small cell type of non hodgkins lymphoma. The biopsied specimen was CD20 and MIB1 positive.

Abstract ID: 1286

**ABSTRACT TITLE**: BARIUM FINDINGS IN PATIENTS OF CORROSIVE INJURY: A PICTORIAL ESSAY

**PRESENTING AUTHOR**: SUMAN KOCHHAR

**CO-AUTHOR**: DR PANKAJ GUPTA, DR RAKESH KOCHHAR

**Background**: Corrosive ingestion is a common form of poisoning. Corrosive agents cause severe damage to the gastrointestinal (GI) tract. The major concern with this type of injury is severe and often life-long morbidity. Upper GI endoscopy is the test of choice for assessing severity in the acute phase of the disease. The long-term management is based on the site, number, location, and tightness of the stricture. This information is best provided by the barium contrast studies.

**Aim**: To describe the barium findings of corrosive injury of the upper gastrointestinal tract in patients seen by us between 1986-2016.

**Imaging findings**: We observed that a typical esophageal corrosive stricture is a smooth concentric narrowing of the lumen with tapered proximal and distal margins. Strictures may affect a short segment of the esophagus (~1cm) or may involve long segments, affecting almost the entire esophagus with or without gastric involvement. Very short segment strictures in the cervical esophagus may resemble webs and the ones at the gastroesophageal junction may mimic primary achalasia. Strictures can be single or multiple. Gastric strictures can be classified into five types as follows: a) Short ring stricture within 1-2cm of the pylorus, b) Strictures extending up to the antrum, c) Strictures involving the body of the stomach (mid part), d) Linitis plastica due to diffuse gastric involvement, e) Strictures involving the stomach and the first part of the duodenum. Antropyloric region is the most frequent site of gastric narrowing following corrosive intake. Uncommon features of corrosive injury are intramural diverticulae of the esophagus and stomach, tracheoesophageal fistula, gastro-colic fistula, aorto-enteric fistula, and esophageal carcinoma.

**Conclusion**: Site, extent, and morphology of stricture, as well as other patterns of injury, are well depicted by barium contrast studies. This knowledge is important for management as well as the prognosis of patients.
Genito-urinary Imaging

Abstract ID: 48

ABSTRACT TITLE: TITLE - ROLE OF ULTRASOUND & COLOUR DOPPLER IN SCROTAL PATHOLOGIES
PRESENTING AUTHOR: SNEHA M KARWA
CO-AUTHOR: DR.DILIP LAKHKAR, DR.SUSHIL KACHEWAR, DVVPF’S MEDICAL COLLEGE, AHMEDNAGAR.

Purpose:
1. To characterize scrotal pathologies on a preliminary aspect using grey scale ultrasound.
2. To evaluate the role of Colour Doppler in addition to grey scale ultrasound in diagnosis of various scrotal pathologies.
3. To differentiate acute inflammatory process from testicular torsion.

Materials & Methods: The study was carried out on 100 patients within the age group of 10-60 years, who had complaints of scrotal swelling with or without pain, trauma or fever. Detailed history was taken, followed by imaging using USG machine equipped with high-frequency linear probe.

Results: Out of 100 cases, 45 cases had Infective etiology, 20 had vascular etiology, Torsion in 12, 10 had Traumatic, 10 with Mass Lesion & 3 had Gangrene. On colour Doppler, increased vascularity found in patients with Infective, Vascular etiology, Mass lesion, Decreased vascularity seen in Torsion, Trauma.

Conclusion:
1. Colour Doppler ultrasonography is a safe, non-invasive and reliable technique for evaluating patients with scrotal diseases.
2. It is especially important in conditions like testicular torsion where immediate diagnosis is required. Testicular viability can also be very well assessed with Colour Doppler in cases of testicular trauma.
3. High frequency transducers have made possible, to clearly show normal anatomy and pathology in the region such as infection, trauma, vascular etiology and tumors and hence, helpful in preventing unnecessary surgical explorations.
4. It is cost efficient, easily available modality with no radiation effects, as compared to other diagnostic techniques & is well tolerated by the patient.
Learning Objectives: To assess the role of contrast enhanced ultrasonography (CEUS) in characterizing adrenal masses using qualitative enhancement patterns.

Background:

• Adrenal incidentilomas have an incidence of 4-6 % with vast majority being adenomas.
• Triphasic CT is currently the investigation of choice for the evaluation of adrenal lesions, however, with the risk of renal toxicity of contrast agents and radiation exposure.
• As a part of pilot project, adrenal lesions detected on CT/MRI were subjected to CEUS as an add-on imaging technique. CEUS was performed using SonoVue contrast. Continuous scanning was done for 3 minutes at low mechanical index (MI = 0.1-0.5).

Imaging findings:

• Qualitative enhancement patterns were assessed in arterial (0-30 seconds), venous (30-120 seconds) and delayed (120-180 seconds) phases.
• CEUS was technically feasible in all patients.
• Both pheochromocytomas and adrenocortical carcinomas showed early arterial enhancement and washout while adenoma and granulomatous conditions were hypoenhancing. Necrosis was well picked up on CEUS and favored a non-adenomatous etiology.
• These findings were consistent with the early arterial and arterial pattern of enhancement (Type I and II curves respectively) described in malignant lesions by Freidrich-Rust et al (1).

Conclusion and/or Teaching points:

• CEUS is a viable tool to characterize adrenal masses without the risk of radiation exposure and renal toxicity of CT and MR contrast agents.
• Arterial phase enhancement and presence of necrosis are the most significant pointers towards a non-adenomatous etiology.
• CEUS can be used as a screening tool for adrenal incidentilomas and for follow up of benign nodules.

Abstract ID: 105

**ABSTRACT TITLE**: PELVIC FISTULAS - REVIEW OF CLINICAL PRESENTATIONS AND RADIOGRAPHIC IMAGING

**PRESENTING AUTHOR**: SURIYAPRAKASH N

**CO-AUTHOR**: DR. DEVIMEENAL J, DR. CHIRTRARASAN P, DR. GOPINATHAN K

**Learning Objectives**:
- Describe the anatomic locations, causes, and clinical features of lower genitourinary tract fistulas.
- Discuss the role of radiologists in the evaluation of pelvic fistulas.
- List the imaging modalities that are considered suitable for the evaluation of pelvic fistulas

**Background**: Fistulas of lower genitourinary tract have diverse anatomic location, etiology and clinical presentation. Common types of lower genitourinary tract fistulas includes vesico-uterine, vesico-enteric, uretero-vaginal, uretero-enteric, entero-vaginal, vesico-vaginal, urethro-vaginal, recto-urethral and ano-urethral fistulas. Etiology includes iatrogenic injury, infection, inflammatory disease, neoplasms and trauma. Cross sectional imaging with contrast administration may demonstrate the presence of contrast medium outside the appropriate organs. This exhibit reviews common types of lower genitourinary tract fistulas correlated with their cause, clinical presentation and imaging modalities for diagnosis.

**Imaging Findings**: Patients with complaints of dribbling of urine per vaginum and passage of feces per vaginum, unexplained abdominal distension post surgery were subjected to imaging studies. Computed tomography has proved superior in detecting a fistulous tract, and it also provides additional information regarding the etiology of fistula and extent of extraluminal disease. Such information has important implications for patient management and is particularly useful when planning surgical repair. MRI may also be useful in the evaluation of fistulas, but its usefulness is limited by artifacts secondary to physiological motion, such as respiration, cardiac pulsation and bowel peristalsis, which commonly lead to image degradation.

**Conclusion**: Correct evaluation of genitourinary fistula depends on appropriate imaging study, selection of which demands adequate awareness about the type of surgery, clinical symptoms and history of the patient. Radiologists should be familiar with the radiologic features of genitourinary tract fistulas for accurate diagnosis and treatment planning.

Abstract ID: 110

**ABSTRACT TITLE**: CT FEATURES OF PELVIC SPACE OCCUPYING LESIONS IN FEMALE AND ITS CO-RELATION WITH CT GUIDED FINE NEEDLE ASPIRATION CYTOLOGY

**PRESENTING AUTHOR**: SHIWANI VATSA

**CO-AUTHOR**: (None)

**Purpose**:
1. To study the various space occupying lesions of female pelvis.
2. To try to differentiate between inflammatory and neoplastic space occupying lesions of female pelvis by computed tomography.
3. To correlate the computed tomography diagnosis with that of fine needle aspiration cytology.
Materials and Methods: The present study included 50 patients who underwent Computed Tomography and subsequent Fine Needle Aspiration Cytology study. The study was conducted in the Radiology and Pathology department of Darbhanga Medical College from June 2017 to June 2018. All the patients were females with age ranging from 30 years to 70 years and were symptomatic.

Inclusion Criteria: Patients with pain in lower abdomen; bleeding per vagina, with anorexia, weakness and weight loss, hematuria, bleeding per rectum.

Exclusion Criteria: Patients with age <30 years; proven cerebral, pulmonary and hepatic metastasis; deranged BT/CT/PT/PTT.

Statistical Analysis was done by SPSS software.

Results:
1. CT detected the lesion in all the 50 cases
2. In 30 cases where the lesion was thought to be malignant on CT evaluation the FNAC findings correlated.
3. 3 cases of malignancy were missed on CT but detected on FNAC.

Conclusion: CT Scan is an excellent tool for imaging Pelvic Lesions in females and in conjuction with FNAC it can be used to exclude malignancy with accuracy.

Abstract ID: 133

ABSTRACT TITLE: SHEAR WAVE ELASTOGRAPHY TO ASSESS THE EFFECT OF VARICOCELE ON TESTES-A DESCRIPTIVE STUDY

PRESENTING AUTHOR: ABIN V L

CO-AUTHOR: DR. BABU PHILIP, DR. SURYAKANT CHOUBEY

Purpose: The aim of this study is to validate the safe, non-invasive and easily-performed technique of Shear wave elastography for the early detection of structural changes in testes due to varicocele.

Materials and Methods:

Subject selection: Study group-Individuals who are diagnosed with varicocele between the age group of 18-50 years.

Control group: Randomly selected adults with no history of a testicular disease between the age group of 18-50 years.

Sample size: Based on the literature review and statistical analysis, a 50 subjects were selected in each groups.

Methods: Ultrasound is performed with 5–10 MHz probes during spontaneous breathing and a Valsalva manoeuvre. Following which testicular elastography measurements were performed on each testis in free breathing with minimal probe compression: three each in the upper, middle and lower poles. Testicular Doppler ultrasounds and shear wave elastography were performed in the same session. Imaging will be done using Aplio500 ultrasound equipment (Toshiba Corporation)
Statistical Analysis: All the data were presented as mean ± SD. The distribution of the data will be evaluated

- Measuring testicular stiffness between group 1 and group 2
- Correlating grading of varicocele with elastography values of testes.

Results: The mean age of group 1 was 35 ± 7 years and group 2 was 33 ± 6 years. Mean elastography value of group 1 was 0.82 ± 0.7 and group 2 was 0.87 ± 0.06 with a P value of <0.05 which is statistically significant.

Conclusion: Mean elastography results were significantly different between the groups, and significantly lower in patients who had varicoceles. Additionally, a negative correlation was determined between varicocele grade and elasticity of testes. In conclusion shear wave elastography is superior to clinical palpation to determine early testicular damage in varicocele patient.

Abstract ID: 154

ABSTRACT TITLE: IMAGING OF CONGENITAL ANATOMIC VARIANTS OF THE KIDNEY AND URETER DETECTED IN ADULTHOOD

PRESENTING AUTHOR: SHWETA POOJARY

CO-AUTHOR: DR SRINIVAS MR, DR VEDARAJU KS, DR ARUL DASAN

Objective: To document the various types of congenital renal anomalies detected in adulthood, the clinical presentation and complications and the imaging modalities in detecting a renal anomaly.

Materials and Methods: In this retrospective study, the clinical data and imaging studies of 100 adult patients were reviewed. Renal anomalies of shape, position, rotation, number, lobar anatomic variants, calyeal variants, renal pelvis and ureteral variants were included. Statistics were expressed in terms of percentiles.

Results: Of the 100 patients, 18 had renal agenesis, 33 had ectopic kidneys, 13 had malrotated kidneys, 12 had horseshoe kidneys, nine had renal hypoplasia/dysplasia, two had pancake kidney, nine had ureteric duplication, one had supernumerary kidney, one had calyeal diverticulum, one had megaureter, and one had hypertrophied column of Bertin. Abdominal radiograph suggested renal anomalies in five out of 15 studies, while ultrasound suggested renal anomalies in 48 out of 60 studies. IVP, CT and MRI suggested anomalies in all patients in whom these studies performed.

Conclusion: Renal ectopia was found to be the most common anatomic variant followed by renal agenesis. Most cases were asymptomatic while abdominal pain was the next most common presentation. Hydronephrosis and urolithiasis were the most frequent complications. USG, IVP, CT and MRI can be used to diagnose renal anomalies with MDCT urography being the imaging modality of choice to evaluate renal anatomy, function and its complications. MRI can be used in case of impaired renal function, contrast allergy, or when radiation exposure is a problem.
Abstract ID: 190

ABSTRACT TITLE: “EFFECTIVENESS & VALIDITY OF SONOGRAPHIC EVALUATION IN ACUTE SCROTUM – A STUDY OF 50 CASES”

PRESENTING AUTHOR: PIYUSH JAIN

CO-AUTHOR: 1. DR. RAHATDEEP SINGH BRAR 2. DR. ABHISHEK PRASAD 3. DR. HIMANSHU CHOPRA

Contributors:
1. Dr. Piyush Jain
2. Dr. Rahatdeep Singh Brar
3. Dr. Abhishek Prasad
4. Dr. Himanshu Chopra

Department(s) and institution(s): Department of Radiology, FORTIS HOSPITAL, SECTOR- 62, PHASE-VIII, MOHALI (PUNJAB), 160062

Presentation at a meeting: IRIA national conference 2019, PGIMER CHANDIGARH

Background: Acute scrotum has different etiological factors. Some factors like epididymo-orchitis can be treated with medical management, but some conditions like torsion & incarcerated hernia require immediate surgical intervention to treat the patient. Ultrasound with colour Doppler is an important non-invasive tool to rule out these aetiologies for acute scrotum.

Aims:
1. To study cases of acute scrotum with ultrasound & color Doppler and note the diagnostic appearances of various diseases.
2. To correlate sonographic findings with clinical follow up & post operative diagnosis.
3. To find out limitations of sonography and color Doppler for evaluation of acute scrotum.

Settings and Design: This is a cross section type of study performed in our department of radiology.

Methods and Material: Patients of acute scrotal pain referred to Department of Radiology for sonographic evaluation were taken for study from September 2017 to August 2018. Echotexture & vascularity of both the testes & epididymis were evaluated.

Results: In our study of 50 patients presenting with acute scrotum, 5 cases were of torsion, 36 cases of epididymo-orchitis, 2 cases of incarcerated hernia and 7 cases of varicocele. The diagnosis was confirmed by surgical exploration or follow up on the medical line of treatment.

Conclusions: Ultrasound with colour Doppler is an excellent modality for diagnosis of acute scrotum.
Abstract ID: 205

**ABSTRACT TITLE**: STUDY USING MULTIDECTECTOR CT(128 SLICE) IN VARIOUS METASTATIC AND NON-METASTATIC OVARIAN TUMOURS AND IT’S CONFIRMATION ON HISTOPATHOLOGY

**PRESENTING AUTHOR**: SANJEEV CHHABRA

**CO-AUTHOR**: DR.SA RAO, DR.AK CHATURVEDI

**Background**: Ovarian cancer has worst prognosis amongst all gynecological malignancies. So to assess nature of lesion and staging of the tumour, CECT evaluation is currently the investigation of choice. CT of the abdomen and pelvis is standard imaging modality for preoperative imaging staging at presentation and in distinguishing between patients suitable for primary cyto-reductive surgery and patients requiring neoadjuvant chemotherapy prior to surgery.

**Aim of the Study**:

1. To evaluate role of CT in evaluation of ovarian tumors and its accuracy in distinguishing various malignant ovarian masses by correlating with histopathological diagnosis.
2. To evaluate metastatic and non-metastatic ovarian masses using MDCT

**Material and Methods**: It is a retrospective study conducted at Rajiv Gandhi and research institute New Delhi from August 2016 to August 2017.

**Results**: Age range of majority of women with ovarian cancer is between 51-60 years. Among the mean age for epithelial ovarian cancer is 55 years, dysgerminoma is 18-20 years and yolk sac tumors ranges between 21-30 years. Cases with bilateral involvement are 9 cases of HG serous, 5 cases of LG serous, 2 cases of mucinous, 7 cases of endometroid, 3 cases of dysgerminoma, 2 cases of granulosa cell tumor, 1 case of each mixed germ cell and undifferentiated type; 2 cases of clear cell tumor. In study there are two cases of serous adenocarcinomas which are associated with BRCA1 mutations and there age is less than 40 years. Most of ovarian cancers in the study are Stage 1a(30%) and Stage 1b(25%). Very few cases of stage 4a(2%) and stage 3c(7%). Study is showing 30 cases of metastasis.

**Conclusion**: A systematic review of the staging CT contributes significantly to decision-making and identifies resectable and non-resectable sites of disease, which alter the patient’s management at presentation. It serves as a roadmap for surgery and is one of major predictors for successful primary cytoreductive surgery.
ABSTRACT TITLE: “HIGH RESOLUTION SONOGRAPHY AND COLOUR DOPPLER EVALUATION OF SCROTAL PATHOLOGIES”

PRESENTING AUTHOR: PIYUSH JAIN

CO-AUTHOR: 1. DR. RAHATDEEP SINGH BRAR 2. DR. ABHISHEK PRASAD 3. DR. HIMANSHU CHOPRA

Contributors:
1. Dr. Piyush Jain
2. Dr. Rahatdeep Singh Brar
3. Dr. Abhishek Prasad
4. Dr. Himanshu Chopra

Department and Institution: Department of Radiology, FORTIS HOSPITAL, SECTOR- 62, PHASE-VIII, MOHALI (PUNJAB), 160062

Corresponding Author:
Name: DR. PIYUSH JAIN.
Phone numbers: 9650907201
E-mail address: piyush19dec@gmail.com

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Title of the article: “HIGH RESOLUTION SONOGRAPHY AND COLOUR DOPPLER EVALUATION OF SCROTAL PATHOLOGIES”

Background: Certain testicular swellings are most difficult to diagnose as it becomes difficult to decide whether a palpable scrotal mass is arising from the testes itself or from the extra testicular elements. Ultrasonography is exceptionally well suited to study the scrotum and its contents as it is easy to perform, rapid, non-invasive, inexpensive, easily reproducible, widely available and does not involve irradiation of gonads.

Aims: To evaluate scrotal pathologies by using High frequency real time ultrasonography.

Objectives:
1. To evaluate the sonographic appearance of spectrum of scrotal diseases.
2. To assess the role of High frequency real time ultrasonography and colour doppler in accurately distinguishing between Testicular and Extra testicular scrotal masses.

Methods and Material: A prospective study of 80 patients (of all age groups) was done over a period of 4 months (January 2018 to May 2018) who were referred to the radiology department for evaluation of scrotal pain, discomfort or scrotal swelling. Echotexture & vascularity of both the testes & epididymis were evaluated.
Cases were studied with HRCD (High resolution sonography and colour doppler) by using linear array transducer of 7-12 MHz on SIEMENS ACUSON S2000.

Results: In our study of 80 patients presenting with scrotal pathology, 36 cases of hydrocele, 21 cases of inflammatory conditions, 5 cases of hernia and 1 case of neoplasm, 16 others.

Conclusions: High-resolution and color Doppler remains the accurate and rapid imaging modality of choice for the scrotal pathologies.

Abstract ID: 228
ABSTRACT TITLE: RADIOLOGICAL EVALUATION OF RENAL MASSES IN ADULT PATIENTS
PRESENTING AUTHOR: MOHIT GOR
CO-AUTHOR: DR HARSHAD SHAH DR NIRMALA CHUDASAMA DR RASESH VYAS

Introduction:
• CECT scan has created many important advances in detection and characterization of renal masses, which are considered intermediate or malignant on Ultrasound.
• Current multidetector CT technology provides near isotropic acquisition, with three-dimensional reformatting capabilities.

Aims and Objectives:
• Characterize renal imaging findings of cystic as well as solid masses on CECT.
• Evaluate the sensitivity of CECT in the diagnosis of benign and malignant masses.

Materials and Methods:
• The study was conducted on 50 patients between 25-75 years of age who presented with renal complaints and showed a renal mass, cystic or solid on USG.
• They were evaluated through detailed history, physical examination, USG and CECT.
• The machines used were GE LOGIQ P5 USG machine, SEIMENS somatom emotion 16-slice CT machine.

Results and Interpretations:
• 29 males and 21 females were studied.
• There were 10 cases of renal cell carcinoma, 10 renal abscesses, 8 renal metastases, 6 angiomyolipomas, 5 renal hematomas (with 1 case of page kidney), 2 renal adenomas, 3 oncocytomas, 3 xanthogranulomatous pyelonephritis, 1 renal lipoma and 4 cases of renal pseudotumor (2 cross-fused ectopia, 1 Hypertrophy of column of Bertin, 1 extramedullary hematopoiesis).

Conclusion:
• CT scan with and without intravenous contrast, is the primary imaging test for characterization and staging of renal masses.
• Renal neoplasms show greater enhancement with or without involvement of renal vein in the nephrogenic phase compared with that in corticomедullary phase.
• Pattern of enhancement of benign masses depends on the etiology.
• Bosniak classification improves the sensitivity of lesion assessment.
• Imaging of renal masses includes
  - accurate characterization of the lesion
  - assistance with treatment planning
  - evaluation of treatment response.

**Abstract ID: 266**

**ABSTRACT TITLE**: DIFFERENT AETIOLOGIES OF AN UNUSUAL DISEASE - COLOCUTERINE FISTULA

**PRESENTING AUTHOR**: ROHIT AGGARWAL

**CO-AUTHOR**: DR. INDIRAN VENKATRAMAN, MDRD, DNB

**Aims and Objectives**:  
• To describe imaging features of colocuterine fistula on contrast enhanced computed tomography of abdomen.
• To describe different aetiologies of colocuterine fistula.

**Materials and Methods**: We present two different aetiologies for this rare condition - diverticulitis and malignancy. A 77-year-old female presented with complaints of fever and lower abdominal pain localized in the left iliac fossa. Another case, a 73-year-old female presented with abdominal pain, blood in stools and whitish discharge from vagina. Both cases were evaluated with contrast enhanced CT (CECT) and surgery was done post-evaluation.

**Results**: In case 1 a large collection was noted adjacent to the sigmoid colon, it was seen abutting the uterus and air-fluid level noted within the uterine cavity. Per-op a defect was noted in the posterior uterine wall communicating with the collection and sigmoid colon. In case 2 an irregular wall thickening involving the recto-sigmoid region and loss of fat plane between the uterus and the recto sigmoid colon with air pockets within the endometrial cavity. Per-op a defect was seen communicating with the uterus and sigmoid colon. Sigmoid colon was resected and proved to be adenocarcinoma of colon on biopsy.

**Conclusion**: Colocuterine fistula is a rare complication of diverticulitis of colon and malignancy of colon. It should be suspected when patient presents with malodorous discharge from vagina. It can be diagnosed by air-fluid within the uterus on ultrasound or CT scan. However, CT scan is essential for an accurate preoperative assessment. Surgical treatment is indicated in most of the patients.

**Abstract ID: 307**

**ABSTRACT TITLE**: MRI PELVIS IN RARE CONGENITAL MULLERIAN DUCT ANAMOLIES

**PRESENTING AUTHOR**: VANDANA V. AHLUWALIA

**CO-AUTHOR**: DR. HARI SINGH, DR. SUNANDA SAMANTA, DR. LILY UPRETI.

The Mullerian ducts are paired embryologic structures that undergo fusion in utero to give rise to the uterus, fallopian tubes, cervix and upper two-thirds of the vagina. Interruption of normal development of the Mullerian ducts results in Mullerian duct anomalies.
Diagnosis of Mullerian duct anomalies is clinically important because of the high associated risk of infertility, endometriosis, and miscarriage and can have a complex spectrum of abnormalities like renal agenesis. The radiological diagnosis is paramount in cases of Mullerian duct anomalies to guide the patient about fertility outcome and offers rehabilitation and corrective surgeries if possible. Though ultrasound of the pelvis is the first line of investigation to evaluate the cases of primary infertility or primary amenorrhea, MRI better depicts complex associated malformations and altered anatomy.

MRI remains the gold standard for complex interrogation of Mullerian anomalies owing to its multiplanar capability and allows excellent soft tissue characterization, especially in complex or indeterminate cases. It further categorizes the anomalies and thus determines the variable outcome.

We present few uncommon cases of Mullerian anomalies highlighting the MRI features and a brief review of the literature. We will further present various pitfalls and diagnostic challenges to correctly classify Mullerian duct anomalies.

**Abstract ID: 309**

**ABSTRACT TITLE**: A RARE CASE OF TRUE HERMAPHRODITISM OF A PHENOTYPICAL MALE WITH HEMATOMETRA AND HEMATOSALPHYNIX

**PRESENTING AUTHOR**: SUNANDA SAMANTA

**CO-AUTHOR**: DR. VANDANA V. AHLUWALIA, DR. HARI SINGH, DR. DIPU SINGH

True hermaphroditism also known as ovotesticular disorder of sex development and accounts for only a fraction of disorder of gender development.

Characteristic imaging feature is of the presence of an ovotestis or of one testis and one ovary in the same patient and uterus is almost always present. It reveals a variable phenotype ranging from a female with clitoromegaly to male with hypospadias and bifid scrotum; may also reveal a normal male/ female phenotype.

On karyotyping, the patients generally show (46, XX) on 60-70% of cases and rest shows mosaic karyotype (46 XY, 46 XX/XY).

We present a rare case of true hermaphroditism with a normal male phenotype, right testis, left empty scrotal sac, 46 XX karyotype with an ovary and malformed uterus, hematometra and hematosalpinx.

**Abstract ID: 342**

**ABSTRACT TITLE**: A RARE CASE OF BILATERAL PERINEPHRIC FIBROMATOSIS

**PRESENTING AUTHOR**: SUNANDA SAMANTA

**CO-AUTHOR**: PROF. DR. VANDANA V. AHLUWALIA, DR. HARI SINGH, DR. RACHNA PACHORI

The perinephric space plays host to a vast array of pathologies with includes both benign and malignant entities. Sole imaging identification and specific diagnosis is often difficult. The imaging, however, can help us in a confident assortment of pathologies into benign and malignant, and to narrow down the long list of differentials to few.

Fibromatosis are benign infiltrative tumours which can involve both superficial or deeper tissues (desmoids). Deeper isolated involvement of bilateral perinephric tissue is the rarest form in which fibromatoses can
present. The knowledge of perinephric fibromatosis as a possible differential of perinephric masses can allay the unnecessary anxiety of malignancy and save the patient from exhaustive work up. We are reporting one of the rarest case of bilateral perinephric fibromatosis.

Abstract ID: 360

Title: Role of MRI in Ultrasonographically Indeterminate Adnexal Masses

Topic: Genito-urinary Imaging

Purpose: To determine the role of conventional and advanced sequences of MRI in characterization of ultrasonographically indeterminate adnexal masses between November 2017 to August 2018.

Materials and Methods: 21 cases with ultrasonographically indeterminate adnexal mass were investigated with MRI prospectively. The images were analysed for origin, nature, contents-like haemorrhage and fat, enhancement pattern on dynamic contrast enhanced (DCE) MRI and diffusion restriction on diffusion weighted imaging (DWI), followed by ADNEX MR scoring (1-No mass, 2-benign; 3-probably benign; 4-Indeterminate, 5-probably malignant). The diagnosis of benign or malignant lesions was confirmed by FNAC (2 patients)/HPE (9 patients)/US (10 patients) follow up.

Results: Of the 21 cases, 95 % were diagnosed as benign (haemorrhagic cyst, endometriotic cyst, serous cystadenoma, mucinous cystadenoma, ovarian fibroma, benign ovarian cyst, broad ligament fibroid) and 5% as malignant (malignant ovarian mass) according to the ADNEX MR score. While the sensitivity of MRI along with diffusion imaging and DCE was 100%, specificity was found to be 92%. The coefficient of agreement between the MRI diagnosis and FNAC/HPE/US follow up was 0.469.

Conclusions: MRI, along with DWI and DCE sequences, is an excellent technique for determining the origin and characterization of ultrasonographically indeterminate adnexal masses. Also, MRI (using MR ADNEX score) is highly sensitive, as well specific, in characterizing such masses into benign or malignant.

Abstract ID: 381

ABSTRACT TITLE: DEMONSTRATION OF FILARIAL DANCE SIGN IN ASYMPTOMATIC PATIENTS WITH MILD SCROTAL SWELLING

PRESENTING AUTHOR: PHILIP MATHEW

CO-AUTHOR: (None)

Introduction: In high resolution ultrasonography we detected loculated collection in the region of spermatic cord in asymptomatic patients. Linear,echogenic,undulating structures with persistant twirling motion was seen within consistent with filarial dance sign (FDS).

Material and Methods: A group of 100 patients asymptomatic mild scrotal swelling underwent ultrasonography of scrotum. Patients with filarial dance sign had USG guided FNAC from the collection.

Results: Of the 100 patients, 12 patients were positive and showed filarial dance sign (FDS). Fluid cytology showed adult worm and live microfilariae on light microscopy.

Conclusion: Filarial dance sign is a valuable indicator of filariasis in endemic areas. Both adult worm and microfilaria has implicated as a cause of FDS. Early treatment can be started before the clinical manifestations for avoiding future complications.
Abstract ID: 382

ABSTRACT TITLE: CT IMAGING IN A CASE OF XANTHOGRANULOMATOUS PYELONEPHRITIS
PRESENTING AUTHOR: ANISH S
CO-AUTHOR: DR. K. KANAKARAJ, MD

Aim: To review and describe the Computed Tomography (CT) imaging of Xanthogranulomatous Pyelonephritis.

Materials and Method: A retrospective review of history, laboratory findings and CT imaging of pre-menopausal women of histological proven Xanthogranulomatous Pyelonephritis.

Result: A premenopausal woman with complaints of right sided flank pain, weight loss and feeling of discomfort. Laboratory finding showed Anaemia; Urinary Tract Infection (UTI) caused by “Klebsiella species”, which were treated by blood transfusion and antibiotics respectively. CT Abdomen done before and after the administration of oral and IV Contrast showed: Right sided enlarged kidney; Atrophied pelvis with multiple calcific-foci; Calyceal system and cortical parenchyma was diffusely thinned. Dilated right upper and mid ureter showed multiple calculi. Significant right peri-nephric and peri-ureteric fat stranding. Classical “bear paw sign” was seen. On Post Contrast no excretion of contrast noted in the kidney in delayed images (after 4 hours). Left kidney appears normal with no evidence of calculus or hydronephrosis. Multiple enlarged nodes of varying sizes noted in retro-caval, aorto-caval and para aortic region. From above findings the preoperative diagnosis of Xanthogranulomatous Pyelonephritis was considered. Right-sided Total Nephrectomy was done. Histopathology reported as Xanthogranulomatous Pyelonephritis and Microscopy showed areas of necrosis and calcification surrounded by dense inflammatory cell collection and Interstitium showed multinucleated giant cells, foamy macrophages, acute and chronic inflammatory cells.

Conclusion: Xanthogranulomatous Pyelonephritis is a chronic inflammatory process caused by immune response to bacterial infection associated with renal pelvic stones resulting in parenchymal destruction. CT demonstrated a high specific preoperative diagnosis of Xanthogranulomatous Pyelonephritis and the definitive diagnosis was carried out on histopathological examination of the operative specimen.

Abstract ID: 413

ABSTRACT TITLE: CT KUB—BEYOND UROLITHIASIS.
PRESENTING AUTHOR: NIKHIL TOSHNIWAL
CO-AUTHOR: DR AJIT KUMAR

Aims and Objectives: To evaluate the detection of clinically unsuspected pathologies using 16-slice multidetector computed tomography (CT) of the abdomen in patients with flank pain. The presence of significant incidental findings (those warranting immediate management) was also correlated with that of urolithiasis, to assess potential changes of management.

Patients and Methods: Retrospective study including 200 patients undergoing CT KUB for flank pain by using 16-slice multidetector computed tomography (CT). Patients those who were lost to follow-up, were excluded. All of the CT examinations were reported after a radiology resident and a consultant radiologist with >15yrs years of experience evaluated the CT. Incidental findings of bony degeneration, phleboliths, age-related calcification, were excluded due to commonality and lack of clinical significance. Genitourinary and extra-genitourinary findings were assessed and divided into clinically significant or not.

Result: Out of 200 cases 134(67%) cases were of male pts. 81 cases (40.5%) cases were of young male (age 20-40yrs). There were 67 incidental non genito-urinary finding in 45(22.5) individual. There were total 82
non urolithiasis genito-urinary findings out of which 24 were significant and 4 related to morphology.

Conclusion: The prevalence of incidental findings in this study was approximately 22.5 percent, as evidenced by the results obtained, a nebulous group of conditions can be incidentally discovered. Given the frequency of incidental findings an awareness of potential alternative diagnoses is useful when reporting CT KUB’s to elucidate the true cause of patients’ symptoms. And in country like India, many situations werein pt is not economically affordable, ct kub can be considered as alternative.

Abstract ID: 429

ABSTRACT TITLE: IMAGING SPECTRUM OF COMMON AND UNCOMMON RENAL MASSES IN PAEDIATRIC POPULATION

PRESENTING AUTHOR: PUNEET GUPTA

CO-AUTHOR: DR. KUSH RAJENDRA, DR R.S. SOLANKI, DR. RAMA ANAND, DR. POOJA ABBEY

Learning Objectives: To emphasize the role of MDCT in paediatric renal masses

To review the Ultrasound and multi-detector computed tomography (MDCT) findings in Wilm’s and other paediatric renal masses

Background: Incidence of paediatric renal masses has significantly increased in the last few decades owing to the widespread use of imaging modalities. Most commonly used amongst them includes USG, MDCT.

Paediatric renal masses are mostly neoplastic in nature with Wilms tumour were most commonly classified, however pathological updates revealed its several different subtypes including clear cell sarcoma, malignant rhabdoid tumor and mesoblastic nephroma. Clinical presentation and imaging features of these different pathologies have been described

Findings and Procedure Details: Wilms tumour is the most common primary malignant renal tumour in childhood.

Its uncommon variants includes Mesoblastic nephroma (in neonates), Clear cell sarcoma (frequently associated with skeletal metastases) and Rhabdoid tumor of the kidney (associated with brain neoplasms)

Nephroblastomatosis is difficult to differentiate from leukaemic infiltrates as both shows low-attenuating focal parenchymal lesions

Multilocular cystic nephroma and CPDN are grossly identical and cannot be distinguished at imaging alone, and hence needs histopathological correlation

Renal Lymphoma

B-cell type non Hodgkin lymphoma is most common type and it may mimic RCC

Conclusion: Although Nephroblastoma constitutes vast majority of renal masses in paediatric age group, other malignant and benign tumours that require more intensive and completely different therapies also occur. Knowledge of the clinico-pathologic features, some distinctive imaging features along with extent of the tumor and involvement of contralateral kidney and vascular structures, all help in making a proper diagnosis and better management
Abstract ID: 441

**ABSTRACT TITLE**: EVALUATION OF SPECTRUM OF SCROTAL PATHOLOGIES USING HIGH RESOLUTION ULTRASOUND

**PRESENTING AUTHOR**: RASHMI K.N

**CO-AUTHOR**: DR N L RAJENDRA KUMAR, DR ASHWIN RAGHAVENDRA, DR M R SHASHIKUMAR, DR NANJARAJ C P, DR NISHANTH R K

**Aims**: To study the pattern of distribution of non-traumatic scrotal diseases among patients attending the outpatient department of Mysore Medical College and Research Institute.

To study the sonographic appearance of the spectrum of scrotal diseases.

**Materials and Method**:

**Source of Data**: Patients attending the outpatient department of MMCRI with clinical features of scrotal diseases. (December 2017 – July 2018) SAMPLE SIZE – 70 USG (PHILIPS Affiniti 70 and 50) used for diagnosis.

**Results**: Hydrocele was the most common pathology accounting for 19.8%, 43.2% were left sided 41.45% were right sided & 15.3% were bilateral. Infective conditions (epididymitis and epididymo-orchitis) were the second most common pathology accounting for 22.6%. Epididymitis was seen in about 9% and epididymoorchitis was seen in about 13.6%. Bulky testis and epididymis showing hypoechoic echopattern and increased vascularity in majority of the cases of epididymoorchitis. Epididymal cyst was the third common pathology encountered accounting for 16.2%. Eight cases were diagnosed with varicocele accounting for 7.2%. Seven cases were left sided and one case was right sided. Four patients complained of infertility (50%).

**Conclusion**: High frequency ultrasonography with color Doppler study serves as an excellent diagnostic imaging modality in the evaluation of scrotal swellings. It is the investigation of choice as it is highly sensitive, easy to perform, widely available, repeatable and involves no risk of ionizing radiation, especially to radiosensitive parts like testis. It helps to arrive at an accurate diagnosis in a majority of patients with scrotal swellings, thus guiding further management.


Abstract ID: 490

**ABSTRACT TITLE**: RADIOLOGICAL DIAGNOSIS OF PRIMARY PRIMITIVE NEUROECTODERMAL TUMOR OF THE KIDNEY: A RARE RENAL TUMOR.

**PRESENTING AUTHOR**: CHANDANA V

**CO-AUTHOR**: DR PRADEEP H N, DR RASHMI U T, DR PRADEEP KUMAR C N, DR JAGATH KUMAR B G.

**Purpose**: To study the imaging features of Primary Renal Primitive Neuroectodermal Tumor with emphasis on differentials.

**Materials and Methods**: 23 year old male patient presented with right flank pain. No complaints of haematuria. No history of smoking.

USG machine (Philips Affiniti 50) and GE Hispeed dual slice CT scanner was used for diagnosis.

**Results**: Ultrasonography of abdomen showed a well-defined heterogeneous lesion measuring 4.3 x 5.2cm, involving lower pole of right kidney, with no evidence of calcification or internal vascularity.
Computed tomography shows a well-defined lobulated isodense mass lesion involving lower pole of right kidney with few areas of hypodensities and no evidence of calcification. Post contrast study showed minimal heterogeneous enhancement with few nonenhancing necrotic areas within, in both arterial and delayed phases. No evidence of ascites, lymphadenopathy, adjacent organ invasion or vascular complications.

Coronal and sagittal CT reformatted images demonstrated the tumor involving lower pole of right kidney which is minimally enhancing as compared to normal renal cortex.

Patient underwent nephrectomy. Biopsy and immunohistochemistry confirmed the diagnosis of PNET.

**Conclusion:** Primary PNET of the kidney is very rare which usually affects children and young adults, with a male predominance. On imaging, PNET shows very weak enhancement both on arterial and delayed phases. The degree of enhancement of PNET is negligible compared with that of normal renal cortex and shows diffuse multifocal haemorrhage and necrosis, which allows distinction from Renal Cell Carcinoma which is a close differential and has a significant impact on the treatment and prognosis.

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**Abstract ID: 510**

**ABSTRACT TITLE**: ROLE OF HOUNSFIELD UNIT OF STONE IN PREDICTABILITY OF SUCCESS RATE OF PERCUTANEOUS NEPHROLITHOTOMY IN UROLITHIASIS PATIENTS

**PRESENTERING AUTHOR**: ATHIRA P M

**CO-AUTHOR**: DR. RACHEGOWDA N

**Purpose**: To evaluate the role of Hounsfield unit of stone in predicting the success rate of PCNL in terms of stone clearance, and to correlate HU values with surgical parameters like duration, complications and modified Guy Stone score.

**Materials and Methods**: Study was conducted over a period of 8 months in 16 patients referred for NCCT KUB to R. L. Jalappa Hospital for urolithiasis and had undergone PCNL procedure. Data regarding Guy stone score, stone clearance rate, surgery duration, fluoroscopy duration, residual stone burden, and post-operative complications like hemorrhage was collected from patients who had undergone PCNL and interpreted for its correlation with HU values.

**Results**: Study included a total of 16 patients; it was noted that with HU value cut-off taken as 1000, all calculi with HU < 1000 had 100% clearance (p<0.05). All calculi with size < 2cm and HU < 1000 had 100% clearance and calculi with size > 2cm and HU > 1000 did not clear. Fluoroscopy duration was significantly lower in calculi with HU < 1000 (p<0.05). All calculi with Guy stone score 1 and HU < 1000 had 100% clearance and calculi with Guy stone core 3 and HU > 1000 did not clear. Post-operative hemorrhage occurred only in calculi with HU > 1000.

**Conclusion**: HU value, in addition with stone size, can predict the success rate of PCNL as well as the fluoroscopy duration and post-operative hemorrhage. HU < 1000 is a reasonable predictor of success rate of PCNL independently as well as in combination with size < 2 cm.
Abstract ID: 535

ABSTRACT TITLE: HERLYN WERNER WUNDERLICH SYNDROME
PRESENTING AUTHOR: SANJAY AGRAWAL
CO-AUTHOR: DR.VISHAL KUMAR JAIN, DR.S.B.S.NETAM

Introduction: HWW syndrome, recently known as obstructed hemi vagina and ipsilateral renal anomaly (OHVIRA) syndrome, is a rare complex of structural abnormalities of the female urogenital tract. It is characterised by the triad of mesonephric duct-induced müllerian anomalies including didelphys uterus, obstructed hemi vagina and ipsilateral renal agenesis.

Clinical Feature: Here we report an unusual presentation of HWW syndrome where an 25 year old female presented with difficulty in micturation since 2 month. She is systemically well. Examination was unremarkable and normal regular menstruation. The patient has normal secondary sexual characteristics. The abdomen was soft and non-tender. Vaginal examination was deferred at this time. Ultrasound was performed which revealed uterine didelphys with right haematocolpos and right renal agenesis.

Radiographic Features: MRI Pelvis shows didelphys uterus, obstructed right hemi vagina with haematocolpos and a complete septum. Based on imaging findings patient was diagnosed with HWW syndrome.

Discussion: HWW syndrome typically presents after menarche with non specific symptoms secondary to haematocolpos. The variation in presentation makes its diagnosis difficult and hence awareness regarding it is needed. MRI is suitable for diagnosis. Although vaginoplasty is the primary management method, successful fertility preserving laparoscopic hemi hysterectomies have been done recently.

Conclusion: The infrequency of HWW syndrome complicates its diagnosis and hence clinicians should consider Mullerian duct abnormalities among the differential diagnosis in young female patients presenting with abdominal symptoms. In conclusion, this is a complex and rare disorder which is possible to surgically correct with a simple procedure, once accurately diagnosed.

Abstract ID: 551

Title: Comparison of gradient echo techniques in characterization of adrenal lesions
Topic: Genito-urinary Imaging

Purpose: To compare the performance of 3D-GRE in-phase and out-of-phase sequences with standard 2D-GRE technique in characterization of adrenal lesions using quantitative evaluation methods.

Materials and Methods: The final study sample comprised of 44 subjects with 48 adrenal lesions (adenoma, metastasis, pheochromocytoma, myelolipoma, adrenocortical carcinoma, adrenal cysts and ganglioneuroma) & were evaluated with 2D & 3D-GRE in-phase and out-of-phase sequences on 1.5-T MRI. Quantitative measurements, ROC curve analysis and optimal threshold measurements were done for adrenal signal intensity index(ASII), adrenal to spleen(ASR), adrenal to liver(ALR) and adrenal to muscle(AMR) ratios to discriminate adenoma from nonadenoma.

Results: The mean ASII for adenomas was significantly higher than that of nonadenomas on both 2D & 3D-GRE techniques. The ASR, ALR & AMR differed significantly between adenoma & non adenoma for both 2D & 3D-GRE sequences. The 3D-GRE sequences had higher image quality, contiguous slices, thin sections & higher spatial resolution. ASII was the best parameter for differentiation of adenomas from nonadenomas for both 2D & 3D-GRE sequences. 2D-ASII had sensitivity of 100% & specificity of 92.3% at threshold value of
7.3. 3D-ASII had sensitivity of 95.5% & specificity of 88.5% at threshold value of 6.2. Among the signal ratios calculated using the reference organs, ASR was the best parameter for both 2D & 3D-GRE sequences with good sensitivity, specificity, accuracy & large area under curve.

**Conclusion:** Results of characterizing adrenal lesions with 3D-GRE in-phase & out-of-phase sequences are comparable to those obtained with 2D-GRE technique & optimal thresholds of each ratio should be selected for the differentiation of adenoma from nonadenoma.

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**Abstract ID: 592**

**ABSTRACT TITLE**: COMPARISON OF GRADIENT ECHO TECHNIQUES IN CHARACTERIZATION OF ADRENAL LESIONS

**PRESENTING AUTHOR**: NEHA CHOUDHARY

**CO-AUTHOR**: (None)

**Learning Object**: To diagnose a rare form of male pseudohermaphroditism (persistent Müllerian duct syndrome) in case of bilateral cryptorchidism and to review the clinical and radiological features of PMDS.

**Background**: Persistent mullerian duct syndrome is a rare form of male pseudohermaphroditism in which mullerian duct derivatives are present in an normally differentiated 46,XY male. PMDS develops due to absence of MIF, abnormal MIF and defects in its receptor in male fetuses, causing persistence of mullerian duct derivatives in a male fetus. We report a 22-year-old unmarried male patient presented with undescended testes.

**Imaging findings**: Ultrasound of pelvis showed hypoechoic structure posterior to urinary bladder. Both testis was not visualized in scrotal sacs.

**MRI Pelvis**: showed a well formed uterus and cervix with well defined three zones and blind ended upper third of vagina posterior to bladder. An oval structure with morphology and signal intensity consistent with testis was seen in the right hemipelvis, lateral to the uterus and medial to the iliac vessels. Left testis was absent (history of orchidectomy) with empty scrotal sacs.

**Conclusion**: In a case of bilateral cryptorchidism, the possibility of PMDS should be kept in mind with main therapeutic considerations are the potential for fertility and malignant changes.

E mail id: swati.chabarwal83@gmail.com

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**Abstract ID: 683**

**ABSTRACT TITLE**: MULTIPARAMETRIC MAGNETIC RESONANCE IMAGING OF PROSTATE AND ITS CORRELATION WITH HISTOPATHOLOGY

**PRESENTING AUTHOR**: ANSHUL SINGH

**CO-AUTHOR**: DR. A NABAKUMAR SINGH

**Purpose**: To evaluate the efficacy of MR imaging in identifying prostatic lesions in correlation with histopathology.

**Materials and Methods**: The study was conducted over a period of 8 months on 14 patients referred for MRI prostate following elevated PSA levels or clinical suspicion of prostatic lesion at Department of Radio Diagnosis, R. L. Jalappa Hospital and Research Centre. MRI findings in terms of T2 WI, DWI, MRS, and DCE
were recorded and these patients subsequently underwent biopsy for suspected prostate lesion. The benignity or malignancy was recorded for both MRI and biopsy.

Results: The study included a total of 14 patients out of which 12 were malignant on MRI while 8 were malignant on histopathology. Few of the lesions which were termed benign on histopathology were strongly suspicious of malignancy on MRI. This could indicate incorrect sampling during biopsy thereby missing the diagnosis.

Conclusion: MRI prostate could play an important role in diagnosis of carcinoma prostate and wrong sampling during biopsy can be avoided by performing MRI prior to TRUS biopsy.

Abstract ID: 688

Aims and Objectives: To discuss the MR technique and the MR imaging findings of vaginal pathologies.

Materials and Methods: This pictorial assay is based on eight female patients with vaginal abnormalities, aged 2 to 79 years were studied. A 1.5 T MRI (GE Signa) was utilized for images acquisition with T2W fast spin echo (FSE) sequences, in the axial, sagittal and coronal planes, T1W (axial plane), Gradient-echo(GRE) sequences and DWI (Axial plane). T1WI with a fat saturation after administration of gadolinium (in 3 planes) was performed wherever required.

Results: MR imaging findings in patients with varieties of vaginal abnormalities were studied. Sarcoma botryoids presented as large multilobulated heterogeneously enhancing intraluminal mass lesion having cystic and solid components. Squamous cell carcinoma presented as large irregular heterogenous enhancing mass mildly with necrotic areas, involving the vulva and vagina. A patient with sarcoma of uterus had multiple enhancing nodules in the vagina with central necrotic components. One patient had infected Bartholin cyst. MR of a 2 year old patient with developmental venous malformation showed multiple tortuous T2hyperintensities involving the vulva and vagina. A case of multiple small vaginal polyps was diagnosed to be angiofibroblastoma. A case of vaginal atresia was well demonstrated on MR. The focus of this exhibit is describing the key findings of different vaginal pathologies which help in diagnosis.

Conclusion: MR imaging plays an important role in the diagnosis and therapeutic planning of the vaginal diseases.
Abstract ID: 711

ABSTRACT TITLE: ACCURACY OF ULTRASOUND DETECTION OF URINARY TRACT CALCULI IN COMPARISON TO COMPUTED TOMOGRAPHY

PRESENTING AUTHOR: KARTHIKA. G
CO-AUTHOR: DR. E.A. PARTHASARATHY

Objectives: To determine
(i) The sensitivity and specificity of ultrasound in the detection of urinary tract calculi.
(ii) The size of renal calculi detected in ultrasound
(iii) The size of renal calculi not seen on ultrasound but detected on computed tomography.

Materials & Methods: 200 patients referred to radiology department with symptoms related to urinary tract calculi between January 2018 – May 2018 were included in the study. Both Ultrasound (USG) and Nonenhanced CT (NECT) was done prospectively for the patients. Sensitivity, specificity and accuracy of USG was calculated with NECT as the gold standard.

Results: Of these 200 patients, 65 calculi were seen both on CT and Ultrasound. 55 calculi were not detected on USG but seen on CT. The sensitivity and specificity of renal calculi detection on USG were 56 % and 86% respectively. The mean size of the renal calculus detected on USG was 7.0 +/- 4 mm and the mean size not visualized on USG but detected on CT was 4 mm +/- 2.0 mm. The sensitivity and specificity of ureteric calculi & bladder calculi detection on USG were 12 %, 97 %, 20% and 100% respectively.

Conclusion: This study showed the accuracy of ultrasound in detecting the renal, ureteric and bladder calculi. Using ultrasound to guide clinical decision making for residual or asymptomatic calculi is limited by low sensitivity and inability to size the stone properly. As a result one in five patients may be inappropriately counselled when using USG alone.

Abstract ID:724

Title: Imaging of the Prostate: The Basics
Topic: Genito-urinary Imaging

Objectives: To learn about imaging and reporting using prostate MRI.

To become familiar with the PiRADS classification system.

Background: Early prostate cancer detection with biologic characterization and staging is of primary importance for personalized decision-making. Localized, early-stage prostate cancer has been more frequently detected since the introduction of PSA screening. Active surveillance and less aggressive focal therapy options are accordingly emerging to reduce the side effects that may significantly reduce the quality of life.

Details: Multiparametric MRI (mpMR - T2, DWI and DCE) is helpful in detection and localization of suspicious malignant lesions, for biopsy guidance to finally diagnose or rule out significant cancer as well as for T-staging. PI-RADS could not detect all cancers, but majority of tumors capable of causing patient harms can be identified. Staging necessitate the correct assessment of the local tumour situation (T), involvement of lymph nodes (N) and of distant metastases (M). The aim of prostate imaging is to detect a significant cancer defined as a tumour with a volume > 0.5 cc or a Gleason score of > 7 and/or extraprostatic extension. PIRADS
v2 uses a 5-point scale based on the likelihood that a combination of mpMRI findings on T2w, DW-MRI and DCE-MRI correlates with the presence or absence of clinically significant prostate cancer for each lesion in the prostate gland. According to guidelines, assessment of lymph nodes is only useful in patients with a PSA >10, Gleason score >7, >cT2b. Imaging can be performed using the well known size criteria (round node >8mm, short axis of oval node >10mm) on CT or MRI but this lacks sensitivity & specificity. DW-MRI, MR-lymphangiography using USPIO, choline- and PSMA-PET/CT offer higher sensitivity and specificity but yet to replace gold standard (pelvic lymphadenectomy).

**Conclusion**: mpMRI can be integrated in urological context of the diagnosis, treatment & active surveillance to improve patient management.

### Abstract ID: 729

**ABSTRACT TITLE**: ROLE OF DYNAMIC CONTRAST ENHANCED MRI IN EVALUATION OF PROSTATE CANCER

**PRESENTING AUTHOR**: Lochan Gowda AS

**CO-AUTHOR**: (None)

Role of Dynamic Contrast Enhanced MRI in Evaluation of Prostate Cancer(DCE-MRI). Dr Lochan Gowda, Dr K Ganesh. A J Institute of Medical Sciences, Mangalore

**Aims and Objectives of the Study**: To study the sensitivity and specificity of Dynamic Contrast Enhanced MR imaging in the detection and characterization of Prostate in Prostatic cancer.

To study the applications of Dynamic Contrast Enhanced MR imaging in existing Prostate imaging protocols in supplement to conventional MR sequences.

**Materials and Methods**: 30 cases samples were taken suspecting prostatic cancer referred to radiology department for MRI prostate between 2016-2018 in A.J Institute Of Medical Sciences, Mangalore-575004. MRI Scan was done using Siemens 1.5 Tesla Magnetom Avanto. T1 weighted, T2 weighted, DWI and post-contrast dynamic sequences were taken.

**Result**: Out of 30 suspected cases of prostatic cancer who underwent DCE-MRI for evaluation. In 22 cases the lesions were Malignant with positive dynamic study and type 3 dynamic curves. In 6 cases the lesions were benign with Type1 and 2 dynamic curves respectively. And in 2 cases the lesions were benign with positive type 3 dynamic curve.

**Conclusion**: This study showed that diagnosis of prostate cancer can be more accurately evaluated by DCE-MRI.

**References**:

Type 2 diabetes is the most common type of diabetes. It usually occurs in adults, but is increasingly seen in children and adolescents. Duplex renal sonography is an easily applicable and non-invasive method for investigating renal haemodynamics. The large diabetic patient population, the complimentary role of conventional ultrasound and the promising potential of Doppler evaluation of kidneys in the assessment of diabetic renal disease were the motivating factors for undertaking this study.

**Learning objectives:** Duplex Doppler sonography may be a useful complementary test in the evaluation of diabetic nephropathy, especially in the early stages, in order to identify more patients at risk of developing diabetic nephropathy.

**Background:** The most disturbing trend is the shift in age of onset of type 2 diabetes to a younger age in recent years. A high proportion of patients with type 2 diabetes are found to have microalbuminuria and overt nephropathy shortly after the diagnosis of diabetes because diabetes is usually present for many years before the diagnosis.

**Imaging findings:** An elevated RI (≥0.70) was associated with impaired renal function, increased proteinuria at 24 hours.

**Conclusion:** In type II diabetic patients with normal renal function, high RI (≥0.73) is associated with features of diabetic nephropathy and its progression over time, independent of albuminuria.

**References:**

Abstract ID:793

ABSTRACT TITLE : MULTIPARAMETRIC 3 TESLA MRI OF SUSPECTED PROSTATIC MALIGNANCY
PRESENTING AUTHOR : PAWAN KUMAR
CO-AUTHOR : DR. ANJALI PRAKASH, DR. RASHMI DIXIT, DR. SAPNA SINGH, DR. ANURAG MISHRA

Purpose: Lab and clinical examination (S. PSA and digital rectal examination) and imaging modalities such as trans-rectal ultrasound and computed tomography provide limited accuracy in detection of prostatic malignancy.

The present study was undertaken to evaluate the role of multiparametric MRI in cases of suspected malignancy of prostate.

Materials and Methods: 24 adult male patients with clinical suspicion of prostatic malignancy were included in this study. All patients underwent multiparametric MRI of pelvis on a 3 Tesla MR Scanner. Conventional MR sequences, diffusion weighted imaging (DWI), dynamic contrast enhanced (DCE) and multivoxel proton spectroscopy sequences were performed and final diagnosis was compared to histopathological findings.

Results: Diffusion restriction was seen in all malignant pathologies with mean ADC values 0.41±0.06x10-3 mm2/s with no evidence of restricted diffusion in most of the benign pathologies with mean ADC value of 0.97±0.27x10-3 mm2/s. On dynamic curve analysis, Type 3 TIC(Time-signal intensity curve) curve had a sensitivity of 53.8%, specificity of 100%, PPV of 100%, NPV of 64.7% and accuracy of 75% in diagnosing malignant lesions with area under ROC of the TIC curves for diagnosis of malignant lesions as 0.79. On proton spectroscopy, choline peak with elevated choline+creatine/citrate ratio had a sensitivity of 100%, specificity of 90.9%, PPV of 92.8% and NPV of 100% in prediction of malignant lesion.

Conclusion: Different components of multiparametric MR imaging when used together improve the diagnostic accuracy of MRI in characterizing the nature of prostatic lesions. Diffusion restriction on DW imaging with type 3 TIC curve on DCE MRI and choline peak with elevated choline+creatine /citrate ratio on proton spectroscopy usually point towards malignant nature whereas no evidence of restricted diffusion , Type 1 or 2 curve and citrate peak usually point towards benign nature of the lesion.

Abstract ID:796

ABSTRACT TITLE : ROLE OF CROSS SECTIONAL IMAGING IN THE EVALUATION OF FISTULAS OF GENITOURINARY TRACT
PRESENTING AUTHOR : GAURAV SHARMA
CO-AUTHOR : DR ANITHA MANDAVA, DR VEERAIAH KOPPULA

Introduction: Fistulas of genitourinary tract are frequently seen as complications in patients with malignancies involving the pelvic organs. It important to recognize these abnormalities and delineate the extent of fistulous tracts and contrast leakages for appropriate treatment and follow-up.

Objective: To evaluate the role of cross sectional imaging in the evaluation of fistulas of genitourinary tract in oncological patients.

Material and Methods: A retrospective study was conducted in patients who underwent cross sectional imaging for the malignancies involving pelvic organs over a period of two years (June 2017 to July 2018) with the positive diagnosis of genitourinary fistulas at our institute, Basavataramakam Indo American Cancer
Hospital and Research Institute, Hyderabad. Inclusion criteria included the patients with malignancies of lower genitourinary tract i.e. urinary bladder, uterus, cervix, vaginal vault, ovary, prostate, colon and rectum. Patients with primary pelvic/retroperitoneal sarcomas and liposarcomas, metastatic lesions involving the lower genitourinary tract and malignancies of unknown origin were excluded from the study.

**Results:** A total of 57 cases (4 males, 53 females), mean age 52.28 years (age range 26 years - 78 years) were seen with fistulas of genitourinary tract. The commonest malignancies seen in these cases were carcinoma of cervix and rectum and the commonest fistulas seen were rectovaginal fistulas (36.84 %) followed by vesicovaginal fistulas (29.82 %).

**Conclusion:** Cross sectional imaging are extremely useful in detecting genitourinary fistulas in both symptomatic and asymptomatic oncologic patients.

**Abstract ID:817**

**ABSTRACT TITLE:** A CASE STUDY OF HERLYN-WERNER-WUNDERLICH (HWW) SYNDROME

**PRESENTING AUTHOR:** NILESH PARKAR

**CO-AUTHOR:** DR NIKUNJ DESAI

**Aim:** The main aim of this study is to focus the attention on the possible early presentation of this syndrome that should be suspected in all neonates (females) with renal agenesis confirmed postnatally or suspected prenatally.

**Background:** HWW syndrome also known as obstructed hemivagina and ipsilateral renal anomaly (OHVIRA), is a rare anomaly characterised by Mullerian duct anomalies associated with mesonephric duct anomalies.

I report a case of 17-year-old female with 4-day history of increasing right lower quadrant and hypogastric pain, nausea and sporadic vomiting. She was on the 4th day of menstrual bleeding. The menarche had occurred 5 months before, her cycles were regular and the menstrual bleeding usually lasted about 4–5 days with severe dysmenorrhoea with radiological features of HWW.

**Imaging findings:** CT Findings suggest duplication of the uterus, cervix and vagina, unilateral haematocolpos on right side, absent kidney on the same side as the uterovaginal obstruction.

**Conclusion:** HWW syndrome has variable onset of presentation. Identifying each of its components during the initial ultrasonographic approach and the subsequent CT scan allow the radiologist to make the diagnosis in most cases. Early intervention is needed to reduce risk of endometriosis and infertility.
Abstract ID: 846

ABSTRACT TITLE: CT FEATURES IN RENAL INFECTIONS
PRESENTING AUTHOR: PRASAD JAWALKAR
CO-AUTHOR: DR SAPANA JAWALKAR, DR DEEPAK VARSHNEY, DR DHAWAL KAUSHAL, DR TEJAS TAMHANE

Types of urinary tract infections: Cystitis, Pyelitis, Pyelonephritis, Xanthogranulomatus pyelonephritis, Renal abscess, Emphysematous pyelonephritis

Unenhanced CT features: Excellent for identifying urinary tract gas, calculi, hemorrhage, renal enlargement and obstruction.

Enhanced CT features: Recommended protocol- 1) precontrast imaging, 2) postcontrast imaging at 50 – 90 seconds after contrast injection, 3) delayed imaging.

Result: Crucial Role of CT in diagnosing Renal Infections.

Abstract ID: 892

Title: Bilateral Adrenal Tuberculosis – Diagnostic Approach
Topic: Genito-urinary Imaging

PURPOSE: To study the imaging features of adrenal tuberculosis

Materials and Method:
- USG (PHILIPS Affiniti 70), MRI scanner 1.5 Tesla (Siemens) and Dual slice CT (GE) were used for diagnosis.
- 50 year old male with c/o generalized weakness and weight loss for 4 months. O/E patient was cachectic with low BP (100/60mmHg) and generalized hyper pigmentation. H/O PTB 4 years back, treated with ATT for 6 months.

Results:
- On USG Ill-defined heterogeneous, predominantly hypoechoic lesion noted in the bilateral suprarenal region with e/o calcific specks within. There is e/o peripheral vascularity. Adrenal glands not visualized separately.
- On CECT abdomen bilateral adrenal gland appears heterogeneous and bulky. Contrast study shows heterogeneous, predominant peripheral enhancement with central non enhancing areas on both sides/s/o necrosis. Left adrenal gland shows peripheral rim calcification.
- On MRI, T1W and T2W images show mass like enlargement of bilateral adrenals with hypo-intense signal relative to liver on T1W and heterogeneous hyperintense signal relative to spleen on T2W images. Post contrast coronal T1W images show peripheral rim enhancement.

Conclusion:
- CT and MR imaging findings of preserved contour/fibrosis, rim calcification, bilateral involvement, rim enhancement and associated clinical features of adrenal hypo-function allows distinction from adrenal tumors which are main differentials.
MRI findings which reflect pathological changes can be used to infer activity of tuberculosis. MRI/CT with clinical findings can be used for differential diagnosis.

Adrenal biopsy is not necessary for primary adrenal insufficiency with bilateral adrenal enlargement in a patient with proven extra-adrenal tuberculosis.

Abstract ID:899

**ABSTRACT TITLE**: ROLE OF QUALITATIVE PARAMETERS OF CONTRAST ENHANCED ULTRASOUND IN CHARACTERISATION OF SOLID RENAL MASSES

**PRESENTING AUTHOR**: MOHD ALTAMASH

**CO-AUTHOR**: DR SHABNAM BHANDARI GROVER, DR SAURABH SUMAN, DR AMIT KATYAN, DR ANOOP KUMAR, DR AK MANDAL

**Purpose**: The purpose of our study was to evaluate role of qualitative parameters of contrast enhanced ultrasound (CEUS) in characterization of solid renal masses using histopathology as gold standard.

**Material and Methods**: In this institutional review board approved prospective cross-sectional study, twenty consenting patients with sonographically detected solid renal masses were included. CEUS was performed using a curvilinear transducer (1-6MHz) after administering 1.2ml of second generation contrast agent. Pattern and degree of enhancement of each renal mass was evaluated in comparison to normal renal parenchyma. Solid renal masses were categorized into benign and malignant based on qualitative parameters and results were compared with histopathology. Comparison of qualitative CEUS parameters between benign and malignant masses was assessed using Chi-Square test /Fisher’s exact test, p value < 0.05 was considered as statistically significant.

**Results**: At pathology, 30% (6 out of 20) were benign and 70% (14 out of 20) were malignant. Majority (85%) of benign masses showed homogenous hypo-enhancement and majority (94%) of malignant masses showed heterogeneous hyper-enhancement, as compared to normal adjacent renal parenchyma. CEUS showed a sensitivity of 94%, specificity of 68%, PPV of 92%, NPV of 74% and p-value of <0.05 in the differentiation of benign and malignant solid renal masses.

**Conclusion**: Our study showed that contrast-enhanced ultrasound (CEUS) is an accurate modality for characterization of solid renal masses. Its potential can therefore be further exploited in patients with chronic kidney disease and other medical conditions in whom injection of iodinated contrast media is contraindicated.

Abstract ID:913

**Title**: Genital Rhabdomyosarcoma in a 19 Yrs Old Girl : Radiologic Histopathologic Correlation

**Topic**: Genito-urinary Imaging

Rhabdomyosarcomas of the genitourinary tract are uncommon tumours occurring in pelvic organs. These are found essentially anywhere in the body.

The vagina, cervix and uterus may all be involved in females. The vagina is the most prevalent in the female genital tract.
Here we describe radiological imaging findings with pathological correlation of a vaginal rhabdomyosarcoma in a 19 yrs old girl.

A 19 yrs old girl presented with acute urinary retention since 5 days with intially having only burning micturition.

On Imaging: Here we describe radiological imaging findings with pathological correlation of a vaginal rhabdomyosarcoma in a 19 yrs old girl.

A 19 yrs old girl presented with acute urinary retention since 5 days with intially having only burning micturition.

On HISTOPATHOLOGICAL CORRELATION – malignant small round cell tumor.

All Above Described Findings Suggestive of Most Probable Diagnosis of Vaginal Rhabdomyosarcoma with Liver and Lung Mets.

Abstract ID:932

ABSTRACT TITLE: SPECTRUM OF RENAL TUBERCULOSIS IN IVP
PRESENTING AUTHOR: MOHD ZILLANI ALAM
CO-AUTHOR: DR. SUNITA KALE, DR. SONIYA PATANKAR, DR. ABHISHEK BAIRY

Learning Objectives:
1. Role of Intravenous pyelography in identifying early form of Renal tuberculosis.
2. Diffrent radiological features of Renal tuberculosis on intravenous pyelography

Background: The genitourinary system is one of the most common site of extra-pulmonary Tuberculosis. A high rate of oxygen tension and perfusion increase the bacilli proliferation in the renal parenchyma. Most patients present with frequent voiding, dysuria, pyuria, flank pain and hematuria. IVU is the most useful test for obtaining functional and anatomical details of the kidneys.

Imaging findings: IVU show broad range of findings which is depending on the severity of the infection. 10 to 15% of patients who has active renal tuberculosis have normal IVU findings. The earliest urographic changes is calyceal outline becomes irregular, fuzzy, feathery and moth-eaten in appearance. Although calyceal erosion has been first IVU sign but in practice early papillary necrosis which gives lobster claw sign in which necrotic papillary tip may remain within. Papillary cavitation results in the spread of infection to the urothelium and submucosa of the draining calix. Continued destruction of the minor calyx transform into large pocket of necrotic material with or without fibrous obstruction of the infundibulum. A completely stenosed infundibulum or calyx show failure of contrast excretion by renal parenchyma give rise to phantom calyx. This infundibular scarring leads to sharp angulation of the renal pelvis give rise kerr’s kink sign. Irregular pool of contrast material seen adjacent to the dilated calyces. There is focal or global compromise of renal function is seen. The late or advanced manifestation include fibrotic strictures, cortical scars, mass lesions, calcification, auto-nephrectomy and perinephric abscess.

Conclusion: the understanding of the clinical features and the spectrum of imaging features on intravenous pyelography will help us in diagnosis of renal tuberculosis. I would like to present pictorial exhibit of spectrum of renal tuberculosis in IVP.
Abstract ID:957

ABSTRACT TITLE: EVALUATION OF PAINLESS HEMATURIA USING MDCT UROGRAPHY: A PROSPECTIVE STUDY IN TERTIARY CARE CENTRE IN NORTH INDIA

PRESENTING AUTHOR: MANIK MAHAJAN
CO-AUTHOR: DR GHANSHYAM DEV GUPTA

Background: Hematuria is a common urological condition and may originate in any site in the urinary tract. Gross hematuria is alarming and has a high predictive value for malignancy while definition of microscopic hematuria is controversial. UB and renal masses are the commonest cause of painless hematuria. MDCT provides comprehensive non invasive evaluation of the urinary tract and is the modality of choice for evaluation of painless hematuria.

Aim: To evaluate the role of MDCT urography in patients with painless hematuria and to describe the MDCT findings of common etiologies causing it.

Material and Methods: One Hundred Fifty patients presenting with painless hematuria were included. Detailed history and findings of clinical examination were recorded. Non contrast, contrast enhanced and urographic phase images were obtained. Positive findings were recorded in detail and tabulated. Histopathological and cystoscopic correlation was performed wherever indicated.

Results: Maximum cases were seen in 6th decade with male preponderance (5:1). Positive MDCT findings were seen in 92% cases. The commonest findings were UB mass (58.7%), renal mass (16%) and BPH (5.3%). Three cases each of retrocaval/circumcaval ureter and partial PUJ obstruction and solitary case of parapelvic cyst were seen. No cause was identified in 8% cases. MDCT was 99% sensitive and 97% specific in diagnosing UB mass while it was 87.5 % sensitive in characterisation of renal mass.

Conclusions: MDCT urography should be considered as first line imaging modality in patients with painless hematuria and can also diagnose congenital urinary tract anomalies with fair accuracy.

Abstract ID:971

ABSTRACT TITLE: COLLISION TUMOUR OF OVARY - A RARE CASE REPORT

PRESENTING AUTHOR: AKSHIT AIYAPPA M J
CO-AUTHOR: DR. JINI ABRAHAM, DR. GANESH K.

Learning Objectives: To analyse the imaging features of collision tumours of ovary and to provide a guidance for appropriate treatment and management.

Background: Collision tumours of ovary represent a coexistence of two adjacent but histologically distinct tumours. The purpose of this study is to describe the imaging findings of collision tumours of the ovary associated with teratoma and to look for clues that might lead to the correct preoperative diagnosis. Here is a case of a 50 year old female patient, who presented to our hospital with complaints of pain abdomen since 4 months.

Imaging Findings: Ultrasound abdomen and pelvis revealed large cystic lesion in pelvis with bilateral hydroureteronephrosis. Later, she underwent MRI abdomen and pelvis that showed evidence of a well defined multiseptated predominantly cystic lesion in pelvis, which appears to be arising from the right ovary, with eccentric focal fat component along the right lateral wall of the lesion with internal debris, causing
bilateral hydroureteronephrosis. From the imaging findings, a conclusion of mucinous cystadenoma along with dermoid cyst of ovary was made, which was later confirmed on histopathology.

**Conclusion:** Collision tumours have been described in various organs including esophagus, stomach, liver, bone, kidney, brain, and lung. Such tumours involving the ovary are rare. Multiloculated cysts have to be extensively examined radiologically and histopathologically, not to miss any component which might have a bearing on prognosis of the patient. Knowledge of the imaging features of these rare tumours is crucial to aid preoperative diagnostic accuracy.

**Abstract ID:1010**

**ABSTRACT TITLE:** PERFORMANCE OF LOW DOSE NON ENHANCED MULTIDETECTOR CT IN EVALUATION OF URINARY CALCULI

**PRESENTING AUTHOR:** SIRISHA NAIDU

**CO-AUTHOR:** DR.SONALI ULLAL, DR.ASHIVINI KUMAR, DR.AJITH MAHALE

**Background:** Nephrolithiasis is a chronic recurrent problem and it is increasing in incidence in younger generation, patients are getting exposed repetitively to CT radiation with its attendant radiation hazards. So it is necessary to tailor a new and finer protocol with reduced dose without compromising optimum image quality. The main purpose of this study was to replace standard MDCT with low dose CT protocol thereby decreasing significant radiation dose.

**Methods:** This is a prospective cross sectional study of 52 adult patients, carried on Multidetector 16 slice CT scanner-G E Bright speed elite from November 2016 to May 2018. All the patients who were advised CT urogram or CT KUB in whom urinary calculus was detected by MDCT-KUB using an tube potential of 120 kVp and tube current of 270-350 mAs with a slice thickness of 5mm were selected and these patients were resubjected to low dose CT at the level of urinary calculus by using 100 kVp and 100 mAs with a slice thickness of 5 mm

**Results:** The mean stone size in standard dose is 13.395 mm and in low dose is 13.361 mm with no significant difference.

Mean CTDi vol in standard and low dose are respectively are 13.876 mGy and 2.796 mGy with average dose reduction by 79.92% in low dose.

**Interpretation & conclusions:** Low dose CT was found to be equally sensitive with equal positive predictive value in the detection and localisation of stones when compared to standard dose CT. At the same time, low dose protocol helped to reduce patient radiation dose by an average of 79.92%. Since urolithiasis is a recurring disease and patients are frequently subjected to repeat CT examinations, the present low dose CT protocol will help to reduce cumulative radiation dose to the patient without compromising the sensitivity.
Learning Objectives: Emphysematous pyelonephritis (EPN) is a rare, severe acute, necrotizing infection of the kidney characterized by presence of gas within the renal parenchyma, collecting system and perirenal tissues. It is commonly caused by ascending infection due to E.coli.

Background: Emphysematous pyelonephritis (EPN) is a life-threatening necrotizing gas forming infection of the kidneys and its surrounding tissues. Approximately 90% of patients are diabetics, while non-diabetic patients are immunocompromised with E.Coli the most common organism involved. In our study, all the patients were diabetics, invariably presented with pain, fever and abdominal discomfort. All patients had hyperglycemia with mean blood sugar level was 354mg/dl. Serum creatinine was raised with mean level of 3.7mg/dl suggesting renal dysfunction. The male to female ratio was 1:3.5 with age range of 42-65 years. Urine culture showed E.Coli the commonest organism.

Imaging findings: The radiological investigations like plain X ray, Ultrasound and Computed tomography of abdomen showed pockets of air in the renal regions in all 9(100%) patients, bilateral in two (22.3%) and unilateral in 7(77.7%) patients. Mild hydronephrosis was seen in 1(9%) patients. Perinephric extension of gas with perinephric collection was noted in 4(36%) patients. After clinicoradiological investigations the diagnosis and classification of EPN was made with 2(18%) cases of EPN Type I and 7(63%) cases of EPN Type II.

Conclusions: Emphysematous Pyelonephritis is an acute necrotizing renal parenchymal and perirenal infection caused by gas forming organisms. It has poor outcome and is associated with high mortality up to 80%. Early diagnosis of EPN especially Type I in poorly managed diabetics, helps reduce mortality to a larger extent.

Keywords: Emphysematous pyelonephritis, Diabetes, Radiological findings

Abstract ID: 1038

ABSTRACT TITLE: EVALUATION OF RENAL VASCULAR VARIATIONS ON 128 SLICE MDCT ANGIOGRAPHY

PRESENTING AUTHOR: SHIVANI AGARWAL

CO-AUTHOR: DR A SENTHIL KUMAR, DR PREM KUMAR CHIDAMBRAM

Purpose: To derive the prevalence of renal artery (RA) and renal vein (RV) variations, distributions of these variations with respect to gender and to assess the types of renal artery and vein variations on MDCT.

Materials and Methods: The total number of participants were 223, with all of them above 18 years of age. The patients who were referred for contrast MDCT abdomen were included. The study was done in 128 MDCT GE scanner. The axial images obtained were post-processed by MPR, MIP and VR techniques.

Result: Total number of participants were 223, out of which 60% were males and 40% females with mean age of 46.2 years. The study showed, the average RA length on right was 27.39 mm, on left was 26.28 mm, right RV was 22.28 mm and left RV 59.74 mm. The average main RA lumen size was 5.03 mm on right, 4.92 mm on left.
The study showed 29.10% accessory RA on both sides, out which 11.8% showed hilar, 7.79% showed upper polar and 4.09% lower polar variations. RV variations were seen in 47.92% of patients out of which 5.41% showed retroaortic vein, 2% circumaortic vein, 13.33% double renal vein and 17.21% late confluence.

**Conclusion:** MDCT is an excellent modality to identify renal vascular variations. The most common RA variation was accessory renal arteries. The most common RV variation was late confluence followed by multiple renal veins.

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**Abstract ID:1040**

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<th>ABSTRACT TITLE</th>
<th>IMAGING SPECTRUM OF CYSTIC RENAL DISEASES</th>
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<tr>
<td>PRESENTING AUTHOR</td>
<td>VARUN YADAV</td>
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<tr>
<td>CO-AUTHOR</td>
<td>DR LALENDRA UPRETI, DR NATASHA GUPTA, DR ASHANA SINGHAL, DR DEEPAWALI MALLA</td>
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**Learning Objectives:** To illustrate the spectrum of cystic renal diseases and to discuss the radiological approach to these diseases.

**Background:** Renal cysts can have varied causes - hereditary (ADPKD, Von Hippel-Lindau and Tuberous Sclerosis), developmental (Multicystic dysplastic kidney and Medullary sponge kidney disease), acquired (Parapelvic or renal sinus cysts, cystic nephroma and cystic variety of renal cell carcinoma) and infectious (Pyogenic renal abscess, renal hydatid or aspergillosis).

**Imaging Findings:** Patients of all age groups presenting to the Department of radiology of UCMS and GTB Hospital for abdominal imaging were evaluated.

Cystic renal masses are characterised on the basis of the following features: Calcification, septations, wall thickness, nodularity, attenuation, enhancement (perceived vs measurable) and locularity.

Renal cysts presenting during younger age are hereditary or developmental in origin, except for ADPKD which usually manifests in middle age or later. Multicystic dysplastic kidney is the 2nd most common cause of abdominal mass in a newborn after hydronephrosis. Bilaterality or associated findings in other organs point towards a syndromic origin. Medullary or cortico-medullary distribution of cysts is a feature of medullary cystic kidney disease while medullary nephrocalcinosis is seen in medullary sponge kidney disease. A complex cystic solid renal mass may be a cystic nephroma or a cystic renal cell carcinoma. Cystic nephroma tend to herniate into renal pelvis or proximal ureter. A renal cyst with enhancing walls or perinephric fat stranding has an infectious origin.

**Conclusion:** Cystic lesion in kidney is a very common finding. The main role of radiologist is to categorise the lesion as non-surgical, to be followed-up or surgical. Knowledge of Bosniak classification, which is an imaging based classification, is absolutely essential in guiding the management of renal cystic lesions. USG, CT and MRI – all of them play important and different roles in management of cystic renal disease. CT is the major imaging modality.
Abstract ID:1073

**ABSTRACT TITLE**: CHARACTERIZATION OF ADNEXAL MASSES USING SIMPLE INTERNATIONAL OVARIAN TUMOR ANALYSIS RULES (IOTA) AND SUBJECTIVE PATTERN RECOGNITION

**PRESENTING AUTHOR**: PRIYA SINGH

**CO-AUTHOR**: DR. RAMA ANAND, DR. SHAILI TOMER

**Objective**: To assess the diagnostic performance of IOTA rules and subjective pattern recognition to predict benignity or malignancy in an adnexal mass.

**Background**: IOTA consists of 5 M and 5 B rules. Presence of one or more M features in the absence of B feature classifies it as malignant and presence of one or more B features in the absence of M feature classifies it as benign. If both B and M features are present or if none of the features are present, it is considered inconclusive. The final report is given after subjective evaluation by experts.

**Imaging Findings**:

- 30 patients who were clinically suspected to have adnexal mass or detected with adnexal mass incidentally on USG were taken. With the help of IOTA rules they were classified into 16 benign, 12 malignant, and 2 inconclusive cases by 1st observer.
- On subjective evaluation by the experts, the masses were finally classified into 20 benign and 10 malignant cases. Out of 30 cases, 24 (14 benign, 10 malignant) were operated whereas 6 benign cases (2 endometriomas, 1 each of pelvic inflammatory disease, dermoid, peritoneal inclusion cyst and hemorrhagic cyst) were kept on follow up. Out of 10 malignant cases, 9 were malignant and out of 14 benign cases all were benign on histopathology. One incorrectly detected case was reported as malignant on ultrasound due to presence of ascitis and strong color flow in mass.
- Malignant cases included 2 sertoli-leydig tumors, 4 adenocarcinoma, 1 immature teratoma and 2 granulosa cell tumors. Benign cases included hydrosalpinx, dermoid, mucinous and

**Results And Conclusions**: IOTA because of its inherent simplicity makes it ideal for use by less experienced sonographers.

Abstract ID:1077

**ABSTRACT TITLE**: CONGENITAL ANOMALIES OF THE KIDNEY AND URETER ON INTRAVENOUS UROGRAPHY: A PICTORIAL ESSAY

**PRESENTING AUTHOR**: MITHUN BHOYAR

**CO-AUTHOR**: ATUL TAYADE, SAURABH PATIL

**Learning Objectives**: To demonstrate various congenital anomalies of renal parenchyma, pelvicalyceal system and ureter on intravenous urography (IVU).

**Background**: Congenital renal, pelvicalyceal & ureteric anomalies have a wide spectrum, like renal agenesis, renal ectopia, cross fused kidney, horseshoe kidney, etc. Although most of them are asymptomatic, some of these develop complications and may lead to renal failure and death. In the era of cross-sectional imaging with MRI and CT, conventional IVU is still the first modality of choice to study the urinary system especially in periphery.
**Imaging findings:** After reviewing departmental PACS, various anomalies involving renal parenchyma, pelvicalyceal system and ureter had been noted on IVU. Renal anomalies like renal agenesis, unilateral hypoplastic kidney, pelvic ectopic kidney, cross fused kidney, horseshoe kidney, renal malrotation, etc. Pelvicalyceal anomalies include- duplex collecting system, bifid collecting system, etc. Ureteric variants like-retrocaval ureter, duplicated ureter, etc were noted.

**Conclusion/Teaching points:** IVU done by skilled personnel with good interpretation of the images can easily demonstrate various congenital anomalies of urinary system. Low cost, easy availability, reduced incidence of contrast reactions and skilled radiology residents of most tertiary institutes are some of the advantages of IVU.

**Abstract ID:** 1079

**ABSTRACT TITLE:** ALVEOLAR RHABDOMYOSARCOMA OF PROSTATE IN YOUNG ADULT: A CASE REPORT

**PRESENTING AUTHOR:** VIHAG RAMAN

**CO-AUTHOR:** DR SANTOSH PATIL, DR RAJENDRA MALI, DR ASHWIN PATIL

**Learning Objectives:** Sarcomas of prostate are rare tumours, accounting for 0.1% of all primary prostatic neoplasms with Rhabdomyosarcomas being the most common type seen primarily in children and adolescents.

We report a case of 23 yr old male who was diagnosed with prostatic rhabdomyosarcoma (alveolar subtype) and had an extensive lesion invading periprostatic planes with distant metastases.

**Background:** 23-year-old male with suprapubic firm and non tender mass presented with acute retention of urine, hematuria, and constipation. Transurethral and transrectal biopsy prostate was done. Per-rectal examination revealed large prostatic growth.

Hemoglobin was 7.9 gm %, serum creatinine was 0.79 mg% and serum PSA was 1.1 mg% (within normal limits).

**Imaging findings:** Contrast enhanced MRI of prostate revealed a large heterogeneously enhancing T1 hypointense and T2 hyperintense mass with areas of necrosis and cystic changes. The lesion was seen infiltrating the urinary bladder and mesorectal fat. Altered signal intensities were seen in the right ala of sacrum that suggested metastases.

CT correlation revealed multiple pulmonary and pleural based metastatic nodules.

**Conclusion and/or teaching points:** Prostatic rhabdomyosarcoma is a rare locally aggressive tumor that presents with worst prognosis in adults compared to children. Most patients have distant metastases at time of diagnosis with lungs being commonest, followed by bones, lymph nodes and liver.

Diagnosis is based on biopsy and histopathological evaluation.

Even with little literature and varying imaging appearance of prostatic sarcomas, imaging can help in providing an accurate staging, allowing for better therapeutic planning.
Abstract ID:1093

ABSTRACT TITLE: IMAGING PANAROMA IN CARCINOMA PROSTATE WITH 68GA-PSMA LIGAND PET –CT

PRESENTING AUTHOR: BOSKY JAIN

CO-AUTHOR: DR NAVNI GARG DR MANAS SAHOO

Learning Objective: To illustrate the imaging spectrum of prostatic cancer and its metastases on 68Ga-PSMA PET –CT.

Background: Prostate cancer is the most commonly diagnosed cancer in men worldwide. 18F-fluorodeoxyglucose (FDG or 18F-FDG) is the most widely used radiotracer for Positron Emission Tomography/Computed Tomography (PET/CT) imaging, however it has limited role in imaging of prostate cancer due to limited FDG uptake by tumor cells. Prostate-specific membrane antigen (PSMA) is a transmembrane glycoprotein that is overexpressed in prostate cancer thereby providing superior sensitivity and specificity of 68Ga-PSMA PET -CT with frequent identification of subcentimeter prostate cancer lesions as well as occult metastatic disease.

Imaging Findings: 68Ga-PSMA PET –CT expression is highly sensitive and specific for detection of:

1. Localised prostate cancer
2. Locally invasive prostatic cancer
3. Regional nodal metastastases
4. Skeletal metastases
5. Occult metastases
6. Rare sites of metastases
7. Recurrent disease

Physiologic high-intensity activity is seen in the lacrimal, parotid, submandibular glands and bowel. Moderate-intensity uptake is seen in the liver and spleen with low intensity uptake in parasympathetic ganglia.

Conclusion: Prostate cancer has a high cure rate if detected in early stages. PSMA PET plays a pivotal role in detecting small volume disease, discerning loco-regional infiltration as well as distant metastases; thereby influencing the individualized multimodal treatment. It has redefined prostatic imaging and should become a one-stop-shop for staging of all prostatic cancers.

Abstract ID:1105

ABSTRACT TITLE: DUPLEX MOEITY INVOLVING LEFT KIDNEY WITH HYDROURETERONEPHROSIS IN UPPER MOEITY DUE TO URETEROCOELE IN ANTENATAL ULTRASONOGRAPHY

PRESENTING AUTHOR: ARCHANA PUSARLA

CO-AUTHOR: DR.V.BALA MURALI KRISHNA MD RD (ASST.PROFESSOR),DR.K.CHANDRASEKHAR MD RD PROFESSOR & HO

Learning Objectives: To show the imaging appearance of duplex moeity in the fetal ultrasonography and its importance in further planning and management.
Background: A19 yr old primi with 30 weeks gestational age presented for routine antenatal checkup.

Kidneys: Left kidney is enlarged in size measuring 5.2 X 2.8 Cm. Duplex collection system noted. Moderate hydroureteronephrosis noted in the upper moiety. Mild prominence of renal pelvis noted in lower moiety. Increased echogenicity noted in the renal parenchyma of upper moiety with no obvious cystic areas. Renal parenchyma in the lower pole of left kidney appears normal in echotexture (similar to right kidney). Right kidney is normal in size and echotexture.

Urinary Bladder: Cystic area seen in left vesicoureteric junction measuring 18 x 13 mm. Fetal left ureter is seen ending at this cyst-indicating ureterocele.

The above findings are suggestive of duplex moiety involving left kidney with moderate hydroureteronephrosis in upper moiety due to ureterocele. Increased echogenicity in the upper moiety could be secondary to obstructive uropathy leading to renal parenchymal changes but without cystic dysplasia. Mild prominence of renal pelvis in the lower pole of left kidney could be physiological or due to vesicoureteric reflux.

Conclusion: Early Detection in Fetal Ultrasonography can help in Planning the Management, Counselling the Parents and early intrauterine Fetal Interventions which can Prevent Irreversible Renal Damage.

Abstract ID:1108

ABSTRACT TITLE: ROLE OF SONOURETHROGRAPHY IN IDENTIFICATION OF OBSTRUCTIVE PATHOLOGY IN MALE ANTERIOR URETHRA

PRESENTING AUTHOR: MANISH MISHRA

CO-AUTHOR: (None)

Aim: To determine the sensitivity and specificity of SONOURETHROGRAPHY in the identification of pathology in the male anterior urethra with voiding or obstructive symptoms and thus to improve the postoperative outcome in these patients.

Material And Methods: A prospective study of 20 patients was carried in our Department.

Male patients from all the age groups with symptoms of lower urinary tract symptoms were included.

Both ascending urethrogram (ASU) and sonourethrogram (SU) were performed on the same patient and these findings were co-related with intraoperative findings in collaboration with Department of Urology.

Result: The findings of sonourethrogram co-related well with the ascending urethrogram and intraoperative findings. Sonourethrogram was found to be superior to ascending urethrogram in determining the length of stricture (especially in bulbar urethra) and degree of spongiofibrosis.

Conclusion: This study had demonstrated that sonourethrography is a valuable tool in the evaluation of pathology in the anterior urethra and thus improving the post-surgical outcome of the patient.

Sonourethrogram was found to be superior to ascending urethrogram in determining the length of stricture and degree of spongiofibrosis which are the most important parameters to determine the type of surgery and the postoperative outcome.
Abstract ID: 1114

**ABSTRACT TITLE**: ROLE OF ULTRASONOGRAPHY IN EVALUATION OF ACUTE SCROTAL PAIN

**PRESENTING AUTHOR**: SUKHADA MANJARE

**CO-AUTHOR**: DR ATUL TAYADE, DR SAURABH PATIL

**Introduction**: Patients presenting with acute scrotal pain is quite common in emergency department. Usually various etiologies of acute scrotal pain presents in more or less similar manner so only history and physical examination are not sufficient enough to diagnose the underlying cause. It needs thorough evaluation by ultrasonography.

**Objective**: To determine the usefulness of ultrasonography in diagnosing the exact cause of acute scrotal pain in emergency situation.

**Material and Methods**: It’s a single centre retrospective observational study. During the study period of 2 months (July and August 2018), 98 patients who presented with acute scrotal pain and undergone ultrasonography were enrolled. A 5.0 or 7.5 MHz linear array transducer with color and power Doppler capability was used to scan the scrotum. Sonographic diagnoses were verified with surgical diagnoses.

**Results**: Out of 98 patients who had ultrasonography of scrotum, 33 patients were diagnosed with hydrocele (out of which 14 were chronic hydrocele), 25 with epididymo-orchitis, 12 with testicular torsions, 8 with pyocele, 6 with varicocele, 5 with hernias, 2 with testicular malignancy and 7 patients had normal scan.

**Conclusion**: Ultrasonography can diagnose the various causes of acute scrotal pain most appropriately. It can also differentiate between surgical emergencies such as testicular torsion and other etiologies.

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Abstract ID: 1124

**ABSTRACT TITLE**: IMAGING SPECTRUM OF TESTICULAR TUMOURS ON DOPPLER SONOGRAPHY

**PRESENTING AUTHOR**: PAVAN B S

**CO-AUTHOR**: DR. R. S. SOLANKI, DR. POOJA ABBEY

**Objective**: To illustrate the Ultrasound and Doppler findings of (surgically proven) testicular tumours.

**Background**: Ultrasonography with Doppler is the first line of imaging modality for evaluation of testicular tumours.

Testicular neoplasms are classified into seminomatous and nonseminomatous tumours (yolk sac tumour, embryonal cell carcinoma, germ cell tumour, teratoma, sertoli leydig cell tumour, lymphoma).

**Imaging Findings**: The ultrasound/Doppler findings of eight patients with testicular neoplasms were studied.

Two children were diagnosed with yolk sac tumour, one with mixed Germ Cell Tumour and one with immature teratoma. Two patients had masses associated with undescended testis; one being a case of seminoma, and another a mixed Germ Cell Tumour. One elderly patient had Non hodgkins lymphoma.

Yolk sac tumour appeared as an inhomogeneous mass with echogenic foci. Lymphatic spread to retroperitoneal lymph nodes and haematogenous metastases to liver were evident.
Mixed GCT showed inhomogeneous echotexture with ill-defined margins, echogenic foci and cystic components. On Doppler, there was increased vascularity within the tumor.

Enlarged homogeneously hypoechoic testes were seen in lymphoma. Color Doppler showed increased vascularity.

Seminoma appeared as a homogeneous hypoechoic lesion with raised vascularity. Lymphatic spread to retroperitoneal lymph nodes was also seen.

A large inhomogeneous mass with cystic components and calcification was seen in teratoma.

**Conclusion:** Ultrasonography with doppler is an excellent modality for detection, characterization and delineation of extent of testicular tumors. Metastasis to the liver or abdominal lymphnodes are also reliably detected on ultrasound. MultiDetector Computed Tomography and Magnetic Resonance Imaging are helpful for staging of the tumors.

**Abstract ID:1134**

**ABSTRACT TITLE:** COLOR DOPPLER IN ERECTILE DYSFUNCTION: AN OBSERVATIONAL STUDY

**PRESENTING AUTHOR:** RAMESH KUMAR SAHU

**CO-AUTHOR:**

**Purpose:** Erectile dysfunction (ED) is an inability to achieve and maintain erectile rigidity sufficient for satisfactory sexual performance. Color Doppler is a non-invasive tool of estimation of the vascular mechanism of ED. The objective of our study was to assess the role of Color Doppler Sonography in the evaluation of erectile dysfunction.

**Materials and Methods:** An observational study was conducted at the Department of Radiology ICARE Institute of Medical Sciences and Research which included a total of 42 consecutive patients presenting with symptoms of ED and undergoing penile color Doppler evaluation with the injection of 2 ml of papaverine. The waveforms of cavernosal arteries (CAs) were obtained alternately using angle of inclination ≤60°. The spectral waveforms and peak systolic velocities (PSV) of the CA were documented at 5-min intervals, from 5 to 60 min.

**Results:** The baseline diameter of the vessels at pre-injection was statistically significant ($p< 0.001$). 42% patients with low PSV values were noted. Arteriogenic ED was found in eight patients (19%), while venogenic ED was observed in eleven patients, which constituted 26% of the entire participants. None had combined arteriogenic and venogenic ED. 55% of the patients studied where found to be functional where no cause could be ascertained.

**Conclusion:** Investigation of ED by color duplex Doppler is not time-consuming and may help establish an accurate diagnosis of vascular causes of impotence in the pathogenesis and diagnosis of ED.
Abstract ID: 1190

**ABSTRACT TITLE**: EVALUATION OF FIBROIDS AND ADENOMYOSIS USING VARIOUS SONOGRAPHIC MODALITIES

**PRESENTING AUTHOR**: HARI SINGH

**CO-AUTHOR**: DR VANDANA VERMA, DR SUNANDA SAWANT, DR RACHNA PACHAURI, DR UTKARSH YADAV

**Purpose**: To use different sonographic modalities viz 2D, 3D, SALINE INFUSION

**Material & Methods**: A total number of 85 cases were evaluated during a time period of 9 months in the Department of Radiodiagnosis, S N Medical college Agra. Sonologically, Fibroids may have variable appearances and adenomyosis especially when localised, also poses a diagnostic dilemma when using 2D ultrasonography only. Newer sonographic modalities like SIS, Doppler and 3D increase the sensitivity of USG as a diagnostic tool.

**Results**: The use of varied sonographic modalities increased the sensitivity of diagnosis and differentiation to as high as 98%.

**Conclusion**: Various ultrasonographic modalities have high sensitivity in diagnosis and differentiation of fibroids and adenomyosis and nearly eliminate the need of higher imaging modalities like MRI.

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Abstract ID: 1196

**ABSTRACT TITLE**: SIGNIFICANCE OF ENDOMETRIAL THICKNESS AS MEASURED BY ULTRASONOGRAPHY IN DETECTION OF ENDOMETRIAL CARCINOMA IN WOMEN PRESENTING WITH POST MENOPAUSAL BLEEDING

**PRESENTING AUTHOR**: MEGHA MITTAL

**CO-AUTHOR**: (None)

**Purpose**: Aim of the study is to evaluate the significance of endometrial thickness as measured by ultrasound in prediction of endometrial carcinoma in postmenopausal women presenting with bleeding

**Materials and Methods**: We collected clinical data from patients with endometrial carcinoma who underwent surgical treatment at BIMR oncology centre, Gwalior, from 2012 to 2018. Only the postmenopausal women were included in our study. We excluded cases with insignificant clinical data. It is a retrospective study in which postoperative histopathological findings were correlated with endometrial thickness as measured on preoperative Transvaginal ultrasound

**Results & Conclusion**: Preoperative measurement of the endometrium by Transvaginal sonography revealed that endometrium thickness was greater than 4 mm in 24 of 30 cases of endometrial carcinoma.

Endometrial thickness less than 4 mm as measured by Transvaginal sonography in women presenting with postmenopausal bleeding can exclude endometrial carcinoma.
Abstract ID:1208

ABSTRACT TITLE : ROLE OF MRI IN CARCINOMA OF CERVIX AND ITS CLINICAL CORRELATION: A PROSPECTIVE STUDY

PRESENTING AUTHOR : SIDHARTH SHARMA
CO-AUTHOR : DR CHETANA RATNAPARKHI

Purpose: Carcinoma Cervix is the most common genital cancer in India. It also occurs in women in the childbearing age group. The choice of treatment for Carcinoma of Cervix depends completely on its staging and therefore an accurate pretreatment staging of Carcinoma of Cervix is very important. Moreover, Clinical staging shows an error of 20-25% depending on the stage of the disease.

Aim: To study the role of MRI in carcinoma of cervix with its clinical correlation and determine the role of MRI in evaluation of primary invasive carcinoma with respect to location, size, local extent and staging.

Materials and Methods: The present prospective study includes 30 patients referred to the department of Radio-diagnosis which includes Newly detected cases of Carcinoma Cervix confirmed by HPE and Suspected cases of Carcinoma of Cervix. MRI was performed on GE 1.5 HD-XT 16 channel MRI machine.

Results: MRI shows a high Sensitive (92%) and specific (100%) value in diagnosing Carcinoma of cervix. Moreover the Positive Predictive value and Negative Predictive Value of MRI were 100% and 60% respectively.

Conclusion: MRI is immensely accurate in diagnosing carcinoma of Cervix and is superior to Clinical examination in Staging of Carcinoma of cervix.

Abstract ID:1253

ABSTRACT TITLE : PICTORIAL ASSAY OF UNCOMMON NEPHROLOGY CASES ENCOUNTERED IN OUR INSTITUTE.

PRESENTING AUTHOR : KRISHNA CHIDRAWAR
CO-AUTHOR : DR SANJAY SAHU

Learning Objectives:
- To look for the incidence of uncommon cases of the renal system.
- To let know the clinical presentation and imaging features of these cases.

Background: The estimated incidence of crossed fused renal ectopia is at around 1 out of 1,000 births. More than 90% of crossed renal ectopia results in fusion.

Imaging Findings:

CASE 1 - Crossed Fused Renal Ectopia

CT Urography revealed
- Crossed fused ectopic kidney on right side.
- The left ureter is dilated and is crossing midline at the level of L5 vertebra, extending inferiorly and shows outpouching at the left vesicoureteric junction resulting in ureterocele formation.
CASE 2 - Spontaneous Pelvis Ruture

- CECT abdomen revealed dilated right pelvicalyceal system and ureter upto the crossing of iliac vessels.
- There is leakage of contrast seen in the renal sinus. The contrast is tracking along the right psoas muscle and outlining the ureter in proximal and mid part. There is a filling defect in the proximal ureter ? clot or proteinaceous debris.

The approximate location of the leak is in the pelviureteric

CASE 3 - Ectopic duplex ureter with associated sacral agenesis

CT Abdomen revealed left duplicated kidney with dilated dysplastic upper pole segment.

Conclusion: An awareness of constellation of findings may be helpful in diagnosing these uncommon conditions and further management.

Abstract ID: 1257

Abstract Title: ROLE OF COMPUTED TOMOGRAPHY IN PREDICTING OUTCOME OF PERCUTANEOUS NEPHROLITHOTOMY USING GUY’S STONE SCORE AND S.T.O.N.E NEPHROLITHOMETRY SCORE.

Presenting Author: KARTHIK B R
Co-Author: DR. VINAY M. D. PRABHU

Purpose of The Study:
1. To compare Guy’s Stone Score & S.T.O.N.E. Nephrolithometry Score in the prediction of stone free status post percutaneous nephrolithotomy.
2. To look for a correlation between Guy’s Stone Score & S.T.O.N.E. nephrolithometry Score values and severity of post-procedural complications.

Materials and Methods: This is retrospective study done on 40 patients undergoing percutaneous nephrolithotomy referred to the department of radiodiagnosis, for pre-procedural computed tomography of kidney, ureter and bladder (KUB) and post-procedural KUB radiograph. The study period is from November 2017 to September 2018 in M S Ramaiah hospitals, Bengaluru. The relationship between the Guy’s & S.T.O.N.E. Nephrolithometry Scores, and their postoperative stone free status, complications based in modified clavien-dindo system, period of hospitalization was compared

Results: Out of 40 patients 30 patients were males and 10 patients were females. Mean age of the patients were 40 years. The overall stone-free rate was 90 % with complication rate of 5%.

Conclusion: Both Guy’s & S.T.O.N.E. Nephrolithometry Scores have comparable accuracies in predicting the post-operative PCNL stone- free status and complications.
Learning Objectives:

- To briefly review the imaging anatomy of lymphatic drainage of the female pelvis
- To highlight the nodal stations and staging pattern of the major gynecologic malignancies
- To review the cross-sectional imaging of metastatic lymphnodes, including functional imaging
- To review the current concepts and controversies in the management of lymphnodes in gynecologic malignancies

Background: Metastasis to lymph nodes is an important determinant of survival in patients with gynecologic malignancies. Imaging plays a major role in the detection and differentiation of benign and malignant lymph nodes. This reflects in the staging of gynecologic cancers and management decisions

Imaging Findings:

1. Anatomy of the female pelvic lymphatic drainage
2. Nodal metastases in gynecologic malignancies: staging, risk factors and prognostic significance
   a. endometrial cancer
   b. Ovarian cancer
   c. Cervical cancer
   d. Vulvar cancer
3. Role of imaging in nodal metastasis: USG, CT, MRI, PET-CT and sentinel lymph node mapping
4. Management of nodal metastasis

Conclusion: Knowledge of the nodal anatomy is essential for optimal interpretation of cross-sectional images. Also the radiologist should be aware of lymph node staging for each type of cancers and correlation between staging and the treatment strategy so that their report is more focused and oriented towards the clinical management
Head and Neck Imaging

**Abstract ID: 10**

**ABSTRACT TITLE**: COMPARATIVE EVALUATION OF THYROID IMAGING REPORTING AND DATA SYSTEM (TIRADS) AND HISTOPATHOLOGICAL CORRELATION IN THYROID NODULES

**PRESENTING AUTHOR**: SATYENDRA RAGHUWANSHI

**CO-AUTHOR**: B A MUTHANNA

With the increasing availability of ultrasound and concern for malignancy, there has been a significant increase in the detection of thyroid lesions. Almost all the cases of thyroid lesions are referred for ultrasound. However, there is no uniformity in the reporting pattern amongst radiologists, and hence such ultrasound reports are mostly inconclusive to exclude thyroid malignancy. Therefore most of the patients have to undergo avoidable Fine needle Aspiration Cytology (FNAC) or Fine Needle Non Aspiration Cytology (FNNAC). Therefore, the need was felt for establishing uniformity in ultrasound reporting of thyroid nodules and risk stratification for malignancy with an aim of reducing unnecessary biopsies. The present gold standard for diagnosis of thyroid malignancy is histopathological examination (HPE). HPE through FNNAC or FNAC is an invasive technique and there is a felt need for alternative to invasive modalities.

**Objective**: To perform comparative evaluation of Thyroid Imaging Reporting and Data System (TIRADS) and histopathological examination (HPE) in thyroid nodules in the Indian scenario.

**Methodology**: Multicentric prospective study was conducted in the department of radio diagnosis and department of surgery at defence service hospitals of Hisar and Jaipur during the study period of 01 July 2017 to 31 March 2018. Results: TIRADS classification brings uniformity in reporting and reduces ambiguity in management of the patients. The study shows high degree of correlation between TIRADS classification and HPE diagnosis. TIRADS can be used as an effective tool for avoiding unnecessary invasive procedures.

**Abstract ID: 13**

**ABSTRACT TITLE**: A TYPICAL CASE OF COMPLETE SECOND BRANCHIAL CLEFT FISTULA

**PRESENTING AUTHOR**: ASHUTOSH PATEL

**CO-AUTHOR**: DR. HARSHAD SHAH, DR. NIRMALA CHUDASAMA, DR. RASESH VYAS

**Learning Objectives**: Case of a 15-year-old male presented with complaints of intermittent discharge from a small external cutaneous ostium in the lateral neck situated just anterior to sternocleidomastoid.

**Background**: Second branchial cleft fistulae are rare and comprise only 2% of all branchial anomalies. They are almost always present at birth, however, the small pinpoint external opening may go unnoticed. In these individuals, they commonly present in the first and second decade of life. There is a slight male predilection (M: F = 3:2).

**Imaging Findings**: Fistulography (opacifying the fistula with contrast media) delineates a smooth tract extending from the external cutaneous opening at the lateral neck passing supero-medially between the ECA and ICA to the tonsillar fossa.
CT reformatted images: CT images reveals a smoothly marginated tract of variable width following the anatomic path described above.

Conclusion: Developmental anomalies arising from the branchial apparatus includes cysts, external sinuses, internal sinuses, and complete fistulas. Cysts may exist independently or anywhere along the course of a sinus or fistula.

Differentials point of view: Branchial cleft fistula should be differentiated from thyroglossal fistula which arise from epithelial trapped during the embryonic descent of the thyroid gland as is located in the midline between base of the tongue and the thyroid. The external orifice of the thyroglossal fistula moves on tongue protrusion

Diagnosis is best demonstrated utilizing CT fistulography & 3D reformatted images.

Abstract ID: 65

ABSTRACT TITLE : GOLDENHAR SYNDROME--- A RARE ENTITY
PRESENTING AUTHOR : HIMANSHU CHOPRA
CO-AUTHOR : ABHISHEK PRASAD, RAHATDEEP BRAR

Goldenhar syndrome is a rare congenital anomaly which was first described by Goldenhar in 1952. Goldenhar syndrome is also known as oculo-auriculo-vertebral (OAV) dysplasia. This term oculo-auriculo-vertebral dysplasia was described by Gorlin, Cohen and Levine consisting of spectrum of anomalies ranging from hemifacial microsomia (HFM) to Goldenhar syndrome which also includes epibulbar dermoids and vertebral anomalies. The exact cause of Goldenhar syndrome is unknown however etiology behind this syndrome is considered to be multi-factorial pattern, i.e. combination of gene interactions and environmental factors that affects the development of the first and second pharyngeal arches during the first trimester of pregnancy. We reported a patient with this complex, rare congenital anomaly in our radiology department in which all classical findings of goldenhar syndrome were present.

Abstract ID: 87

ABSTRACT TITLE : IMAGING EVALUATION OF NECK MASSES.
PRESENTING AUTHOR : SARITA MAGU
CO-AUTHOR : LALIT K SAINI, POONAM TANWAR

Purpose: Imaging evaluation of neck masses for pre operative characterization based on location, extent, morphological characteristics and enhancement pattern.

Materials And Methods: Sixty three patients having clinically palpable neck masses were included in the study. Ultrasound was done in all the patients. Computed Tomography and Magnetic Resonance Imaging were done as and when required.

Result: Age range of patients varied from 5 days to 54 years. The maximum number of patients were in age group of 1- 10 years (47.6%) followed by 11-20 years (23.8%) , 21-30 years (14.2%) and 0-1 year (6.3%). Thirty seven (58.8%) were males and twenty six (41.2%) were females.

All 63 patients presented with clinically palpable swelling. Size of the swelling was upto 5cm in forty seven (74.6%) patients and more than 5cm in sixteen (25.4%) patients. Swelling was cystic in fifty (79.3%) patients
and solid in thirteen (20.6%) patients. Swelling was found to move with tongue protrusion in nineteen (30.1%) patients. Swelling was associated with respiratory distress in nine (14.2%) patients. Other symptoms were skin discolouration in seven (11.1%), pain in six (9.5%) and lymphadenopathy in two (3.1%) of patients.

Maximum number of patients presented with duration of symptoms 1-6 months (38.1%) followed by 6-12 months (20.6%), less than 1 month (26.9%) and more than 12 months (14.3%). US was done in all the cases. Correct diagnosis was achieved in 53 out of 63 cases. In comparison CT/MRI achieved correct diagnosis in 59 out of 63 cases.

**Conclusion:** CT/MRI was helpful in delineating the complete extent of lesions. CT/MRI are better investigations for giving soft tissue details, relation to vascular structures, intracranial and intrathoracic extension.

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**Abstract ID: 94**

**ABSTRACT TITLE**: A CASE OF CAROTICO CAVERNOUS FISTULA PRESENTING AS PAUCITY OF EYE MOVEMENTS

**PRESENTING AUTHOR**: H SURESH

**CO-AUTHOR**: DR RITHI D’ SILVA

**Learning Objective**: Varied and unique presentations of carotico cavernous fistula emphasises on need for clinical suspicion and proper imaging to obtain the right diagnosis.

**Background**: An elderly female presented with paucity of movements of her right eye and proptosis since a week. MRI, ultrasound/ Doppler of orbit and digital substraction angiography was performed.

**Imaging findings**: MRI showed bulging of cavernous sinus with flow voids and prominent right superior ophthalmic vein. Doppler imaging revealed reversal of flow as well as arterialisation of flow in dilated right superior ophthalmic vein. Angiography revealed findings of type 4 carotid cavernous fistula with opacification of right superior ophthalmic vein in arterial phase, also enlarged draining veins were seen.

**Conclusion and teaching point**: Angiography helps in detecting the type of carotico cavernous fistula and other radiologic diagnostic modalities aid in directing towards the diagnosis.

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**Abstract ID: 126**

**ABSTRACT TITLE**: NON KETOTIC HYPERGLYCEMIC HEMICHOREA AND HEMIBALLISM

**PRESENTING AUTHOR**: BODDEPALLI MANJEERA

**CO-AUTHOR**: (None)

**Learning Objectives**: In this case, our aim is to present neuroimaging CT and MR findings in an elderly male presenting as hemichorea hemiballism secondary to nonketotic hyperglycemia.

**Background**: The three important neurological complications of hyperglycemia include nonketotic hyperglycemic coma, nonketotic hyperglycemic seizures, nonketotic hemiballismus and hemichorea.

Nonketotic hyperglycemia affects patients with poorly controlled diabetes mellitus who classically present with the clinical finding of Hemichorea-Hemiballism.
While there are broad differential diagnoses for either the clinical finding of hemichorea-hemiballism or the imaging finding of lateralizing/asymmetric basal ganglia lesions, the presence of both findings is highly suggestive of nonketotic hyperglycemia. We present a case of a 58-year-old male patient who presented with hemichorea and hemiballism in the left half of the body and describe the characteristic imaging findings.

Imaging findings:

CT scan showed hyperdensity within the right corpus striatum including the caudate nucleus, globus pallidus and the lentiform nucleus.

In MRI, T1W images show hyperintensity in the corpus striatum with isointensity on T2W and FLAIR. DWI and GRE show no abnormality and are normal.

Conclusion and/or Teaching points:

Recognition of this unique clinico-radiologic manifestation with its peculiar CT and MR appearance is essential to select the correct therapy and avoid unnecessary treatments.

Radiologist may be the first to appreciate the importance of the patient’s hyperglycemia to their clinical presentation given the characteristic imaging appearance.

Remichorea and hemiballism should prompt evaluation of blood glucose level.

Abstract ID: 136

ABSTRACT TITLE: COMPUTED TOMOGRAPHY (CT) AND MAGNETIC RESONANCE IMAGING (MRI) IN EVALUATION OF ORBITAL MASSESS

PRESENTING AUTHOR: ROHTAS KANWAR YADAV

CO-AUTHOR: (None)

Aims and Objectives: To evaluate the profile of various orbital mass lesions, their extension into the surrounding structures and to differentiate between benign and malignant lesions.

Methods and Materials: 33 patients, 3 days - 70 years old (average age 56.36 years) and of either sex, with orbital mass lesions, suspected clinically and / or diagnosed on CT and / or MRI were included in the study. A detailed history was taken and a thorough clinical including ophthalmological examination was performed followed by CT and MRI of orbits.

Results: Right eye was involved in 18 patients, left eye in 14 patients and bilateral eyes were involved in one patient only. Max. Number of the masses, 11(33.34%), were seen in the extraconal region of the orbit. The spectrum of diseases comprised of lesions varying from congenital, vascular and inflammatory to benign and malignant neoplasm. The largest group was the neoplastic group; 16 (48.50%), which comprised of 3(9.1%) benign and 13(39.4%) malignant lesions, followed by lymphatic and vascular lesions (comprising of lymphangioma, hemangioma and carotico-cavernous fistula), consisting of 6(18.2%) patients and inflammatory disorders of orbit including pseudotumour, consisting of 5(15.1%) patients. There was an excellent agreement between CT and MRI in predicting bone involvement, extra orbital involvement, intracranial extension and optic nerve involvement. MRI was better in predicting extraocular muscle involvement, but CT was more sensitive in detection of calcification. Final diagnosis was made based on surgery and / or other invasive process in 23(69.7%) and by clinical follow up in 10(30.3%) patients. Correct diagnosis was made in 28/33(84.85%) and 31/33 (93.94%) patients by CT and MRI respectively.
Conclusions: MRI is the imaging modality of choice for better anatomical delineation and accurate radiological diagnosis. If MRI is not available or contraindicated, CT scan may be done as a sole modality.

Abstract ID: 139

ABSTRACT TITLE: CT EVALUATION OF NECK MASSES
PRESENTING AUTHOR: ASHUTOSH PATEL
CO-AUTHOR: DR. HARSHAD SHAH, DR. NIRMALA CHUDASAMA.

Learning Objectives: The radiological evaluation of neck masses has changed dramatically since the advent of multidetector computed tomography. CT permits precise anatomic localization, extent of the masses and allows for differentiation of solid, cystic and mixed masses.

Background: The neck is situated at the junction of head and the trunk and is crucial to the human body as organs responsible for vital functions like respiration, swallowing and circulation. Neck swelling or neck mass is a very common presentation encountered in clinical practice. Because of its highly complex anatomy and physiology, neck disease manifesting as neck swelling can be varied from etiological, pathological and prognostic points of view.

Imaging: Evaluation of neck masses with the help of multidetector computed tomography (16 slice). The most common congenital lesions of the neck are thyroglossal duct cysts, branchial cleft anomalies and cystic hygroma. Other congenital masses include hemangioma, teratoma and dermoid. Thyroglossal duct cyst are the most common non-odontogenic cysts that occur in the neck.

Conclusion: The role of CT in differentiating benign and malignant lesions, tumor staging, pre and postsurgical assessment & tumor staging and follow up are of great value for better surgical management.

Abstract ID: 142

ABSTRACT TITLE: MULTI-PARAMETRIC MEASUREMENTS OF THE EUSTACHIAN TUBE AND PERITUBAL REGION USING COMPUTED TOMOGRAPHY
PRESENTING AUTHOR: JERIN KURUVILLA VARGHESE
CO-AUTHOR: UTTAM B GEORGE, ASHVISH VARGHESE

Purpose: To perform multiparametric measurements of eustachian tube and peritubal region using computed tomography and to look for the spectrum of anatomic variations among normal subjects.

Materials and Methods: This is a Cross sectional study conducted in the Department of Radiology at CMC, Ludhiana for a period of 20 months from 1st November 2016 till 30th June 2018 including 100 normal subjects (adults of 18 to 60 years in age) as per inclusion and exclusion criteria.

Results:
1. There is statistically significant difference in the overall length of the eustachian tube on the left side, bony eustachian tube length on the right side and cartilaginous eustachian tube length on both sides between the sexes.
2. Significant variation is noted between the sexes in the craniocaudal diameter of the eustachian tube lumen.
3. There is notable variation in the transverse diameter of the medial most portion of the cartilaginous
eustachian tube among different age groups of the adult population.

4. Carotid canal dehiscence is more common among males; however, the difference was not found to be statistically significant.

Conclusion:
1. Variability in morphometry and anatomical variations were noted between males and females as well as age groups, which may have implications in future for therapeutic interventions such as eustachian tuboplasty.
2. There is good agreement between radiological morphometry and measurement data obtained from cadaveric studies.

Abstract ID: 178

ABSTRACT TITLE : CONGENITAL SENSORINEURAL HEARING LOSS IN CONSANGUINEOUS MARRIAGES - DOES THE COCHLEAR LENGTH VARY

PRESENTING AUTHOR : ROHIT AGGARWAL
CO-AUTHOR : DR JOISH UPENDRA, DR KAVITHA JOISH

Purpose: There is an increased prevalence of congenital sensorineural hearing loss (SNHL) among children born out of consanguineous wedlocks and congenital deafness is associated with increased prevalence of structural inner ear malformations. This study is done to evaluate whether consanguinity affects the cochlear length, which in turn will influence the type of cochlear implant and depth of electrode insertion during surgery in these patients.

Methods: Children presenting with congenital SNHL and born out of consanguineous marriages (Group A) were compared with children presenting with SNHL and born out of non consanguinous marriages (Group B). Patients in both groups were evaluated with Magnetic resonance imaging (MRI) as a routine pre treatment work up. A high resolution 3 dimensional T2 weighted sampling perfection with application optimized contrasts using different flip angle evolution (SPACE) imaging of the inner ears was performed. Curved multiplanar reconstruction (MPR) module was used to deconvolute the membranous cochlea and measure its length. The cochlear lengths among both the groups were compared using analysis of variance (ANOVA )test.

Results: A total of seven patients were included in both groups A and B each. The mean length of membranous cochlea in group A was 22.6 mm and group B was 22.5 mm. There was no statistically significant variation in the cochlear lengths of both the groups.

Conclusion: Consanguinity is unlikely to produce any significant variation in the length of the cochlea.
Abstract ID: 206

ABSTRACT TITLE: ROLE OF MRI IN THE EVALUATION OF ORAL CAVITY MALIGNANCIES

PRESENTING AUTHOR: SWATHI BOBBALI

CO-AUTHOR: DR. ANIL MADHURWAR, PROFESSOR AND HOD OF DEPARTMENT OF RADIODIAGNOSIS

Aims and Objectives: To determine accuracy of MRI in evaluation of the primary lesion as well as accuracy in identifying truly malignant cervical lymph nodes and to derive imaging parameters that could predict clinically occult lymph node metastasis (LNM)

Materials and Methodology: 34 patients diagnosed with oral cavity malignancies underwent pre operative MR Imaging at Chalmeda anandrao institute of medical sciences under Department protocol between August 2017 and July 2018. 30 patients underwent surgery, 4 patients were deferred from surgery and 1 patient showed no evidence of tumour in the excised specimen. MRI findings were assessed against Histopathology which was considered the gold standard. 29 patients data were subjected to the statistical analysis.

Result: Most common subsite of oral cavity involved was the oral tongue (55.9%). Post contrast T1W fat saturated images as well as STIR proved to be most useful in identifying the lesion with 14.7% of tumours being inconspicuous on Precontrast T1 W images. Perineural invasion was identified in 20.6% of cases and osseous invasion in 8.8% respectively. MRI T staging showed excellent correlation with HPE T staging. In the analysis of cervical lymph nodes, STIR hyper intensity showed the highest sensitivity and Negative predictive value while extracapsular spread proved to be the most specific parameter to detect malignant infiltration. The combination of STIR hyper intensity and (extracapsular spread or T2 heterogeneity or rim enhancement or spiculated borders or large short axis diameter) showed highest sensitivity and negative predictive value (82% and 87% respectively) with least compromise of specificity (67%)

Conclusion: In our study MRI proved to be a highly accurate imaging modality in the T staging of all subsites of oral malignancies and is capable of accurately detecting perineural invasion and osseous involvement which upstages the disease. The combination of STIR hyperintensity and (extracapsular spread or T2 heterogeneity or rim enhancement or spiculated borders or large short axis diameter) provided the highest NPV with a reasonable Specificity which could preclude unnecessary neck dissection.

Abstract ID: 209

ABSTRACT TITLE: AN EPIDERMOID CYST OF PAROTID GLAND: A DIAGNOSTIC DILEMMA

PRESENTING AUTHOR: G DEEPAK CHANDRA REDDY

CO-AUTHOR: NARENDRA BABU

Cystic swellings are common in the craniofacial region. The majority are subcuticular in nature, they may present as nodular and fluctuant lesions and are seen most frequently in the hair bearing region of head and neck. The most common cause is the inflammation of the hair follicle and sporadically following the implantation of the epithelium, subsequent to a trauma or surgery. The presence of benign cystic lesions in the salivary glands is rare. We are reporting a rare case of a 31-year-old African male who presented with a soft swelling on the right side of the face. A diagnosis of an epidermoid cyst was given on cytology. An Excisional biopsy was performed and the histopathology confirmed the above diagnosis.

Keywords: Epidermoid cyst, Parotid gland, FNAC
Abstract ID: 241

**ABSTRACT TITLE**: EVALUATION OF OCULAR PATHOLOGY BY HIGH FREQUENCY ULTRASOUND IN PATIENTS WITH DIMINISHED VISION

**PRESENTING AUTHOR**: ADITI A. PATEL

**CO-AUTHOR**: DR. HARSHAD SHAH, DR. NIRMALA CHUDASAMA, DR. RASESH VYAS

**Introduction**: Ultrasonography has become an important diagnostic technique in ophthalmology, particularly during past few years.

The cystic nature of the eye, its superficial location, and high-frequency transducers make it possible to clearly show normal anatomy and pathology of eye and orbits.

Detailed cross-sectional anatomy of the entire globe is possible with conventional sonographic equipment, Doppler and B-mode sonography are reported to be useful in characterizing masses.

**Aims and Objectives**:
- To evaluate the role of B-scan ultrasound in diminished vision.
- To evaluate the pathological lesions in the presence of opaque ocular media where direct vision by ophthalmoscopy is impossible.
- To evaluate orbital trauma
- To evaluate various detachments based on their sonographic appearance.
- To assess tumor location, configuration, extent and relationship to adjacent structure.

**Materials and Methods**:
- The study included 50 patients between 5-80 years of age presenting with diminished vision.
- They were evaluated using a standard USG machine (LOGIQ P5 USG machine) equipped with a 7.5–12.0 MHz real-time high-frequency linear probe.

**Results and Conclusion**:
- 27 males and 23 females were included in the study.
- There were 12 cases of retinal detachment, 9 vitreous detachment, 7 choroidal detachment, 7 vitreous haemorrhage, 6 cataract, 2 choroidal melanoma, 3 intraocular foreign body, 2 vitreous floaters, 1 phthisis bulbi, 1 dislocated IOL.
- High-frequency transducers make it possible to clearly show normal anatomy and pathology such as tumors, retinal detachment, vitreous hemorrhage, foreign bodies, and vascular malformations.


**Abstract ID: 249**

**ABSTRACT TITLE**: ULTRASOUND SCORING SYSTEM TIRADS & ITS DIAGNOSTIC ACCURACY IN DETERMINING RISK FOR MALIGNANCY IN THYROID NODULES.

**PRESENTING AUTHOR**: JOEL MACHADO

**CO-AUTHOR**: DR.ARUN GEORGE, DR.BELINDA GEORGE, DR.BABU PHILIP

**Introduction**: The incidence rate of thyroid cancer has shown a steady rise in the recent decades globally, the causes of this increase are still controversial. Ultrasonography is the best diagnostic tool in the initial assessment of thyroid nodule and FNAC is the initial investigation of choice. Early detection and treatment of thyroid nodules are necessary to manage thyroid malignancies.

**Aim**:

a) To assess the concordance between TIRADS and BETHESDA Classification systems.

b) To evaluate the diagnostic performance of TIRADS in predicting malignancy outcome in the thyroid nodules.

A prospective study was carried out in the Department of Radiodiagnosis with a sample size of 90 nodules.

- For the current study BETHESDA I and II were considered BENIGN.
- To determine Malignant status only HPE Diagnosis was considered.
- In TIRADS-2 and 3 on follow up when FNA/HPE was warranted, then those were considered.

TIRADS was compared against BETHESDA classification and the kappa was derived as a measure of agreement between the two scores. The diagnostic value of TIRADS in predicting malignancy outcome was determined with sensitivity, specificity, NPV, and PPV.

**Result**: The frequency of BETHESDA II was >70% of the nodules.

>70% of the nodules belonged to TIRADS 2 and 3 category. A high sensitivity & specificity was demonstrated with the observed agreement being >80% [with a linear weighted kappa at 95% CI and 80% power with 5% margin of error].

TIRADS is a practical and simple method for diagnosing and categorizing thyroid nodules with a good diagnostic predictive value in determining malignancy. TIRADS criteria also have a good concordance with the Bethesda system which reduces the need for unnecessary invasive procedures.

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**Abstract ID: 253**

**ABSTRACT TITLE**: ARTERIOVENOUS FISTULA AND PSEUDOANEURYSM: A RARE COMPLICATION OF CENTRAL VENOUS CATHETERIZATION

**PRESENTING AUTHOR**: RAJUL RASTOGI

**CO-AUTHOR**: SHOURYA SHARMA, YUKTIKA GUPTA, PAWAN JOON, ASIF MAJID WANI, VIJAI PRATAP

Central venous catheterization (CVC) is a commonly performed invasive procedure in pre-operative period and for long-term intravenous access. Image-guided CVC has gained importance as it not only helps in reducing number of attempts but also prevents wrong internal jugular vein (IJV) punctures leading to reduced incidence & severity of CVC complications. Lack of availability of image-guidance related infrastructure and
competence are responsible for non-image-guided CVC-related complications in developing countries. This article emphasizes the importance of image-guided CVC by discussing a case of arteriovenous fistula (AVF) between a small branch of external carotid artery and internal jugular vein detected in immediate postoperative period following CVC which was performed without image-guidance.

**Conclusion:** While central venous access is routine in the critically-ill patients, it is not without risk. Physicians should be aware of the immediate and delayed complications related to CVC as early detection and management significantly reduces morbidity and mortality. In CVC, HRUS has an important role as it reduces failure rates & number of unsuccessful attempts and reduces the risk of complications including associated arterial injuries.

**Abstract ID: 277**

**ABSTRACT TITLE:** ORBITAL LYMPHANGIOMA - A CASE REPORT

**PRESENTING AUTHOR:** LAVANYA M

**CO-AUTHOR:** DR.K VENKAT RAM REDDY, DR.(BRIG) R. SATYA NARAYANA MOORTHY, DR. G. RAMA KRISHNA REDDY.

**Introduction:** Orbital Lymphangioma is an uncommon benign cystic lesion representing only 1 to 3% of all orbital masses. About 20% of these tumours involve orbit and ocular adnexa. Lymphangiomas are usually diagnosed in early childhood.

**Case Presentation:** A 14 year old boy presented to ophthalmology OPD with chief complaint of pain and proptosis in the left eye since 15 days.

**Imaging Findings:**

**On USG:** A well defined cystic lesion with multiple septations and thick echogenic collection noted in left retrobulbar region. On valsalva maneuver, there was no flow on colour Doppler.

**On CECT:** A non enhancing hypodense retrobulbar cystic lesion in left orbit causing mass effect on optic nerve and pushing the optic nerve medially.

**ON MRI:** T1WI/ Heterogenously hypointense, T2WI/FLAIR hyperintense multicystic mass lesion in left retroorbital space with minute fluid fluid levels.

**Teaching Points:** Orbital lymphangiomas are hamartomatous malformations due to vascular dysgenesis. They present with sudden proptosis caused by spontaneous haemorrhage.

USG shows irregular cystic areas with no change on valsalva maneuver and no vascular connection.

CT and MRI demonstrate, non enhancing cluster of cystic lesions with septations and shows the extension of lesion, these malformations frequently cross anatomic boundaries.

CECT is important in detecting vascular enhancing component with in tumour as it has propensity for hemorrhage.

MRI shows fluid fluid levels that represent layering of blood from recent intralesional bleed.
References:


Abstract ID: 284

ABSTRACT TITLE: MDCT IN EXTERNAL AUDITORY CANAL (EAC) OSTEOCHONDROMAS – FIVE CASES.

PRESENTING AUTHOR: JESHIL R. SHAH

CO-AUTHOR: IRIA LIFE MEMBER: 297LM / 197L. REGISTRATION ID NUMBER FOR 72ND IRIA CONFERENCE 2019 – 170

Purpose/Aim: To know role of MDCT scan in EAC osteochondromas and associated complications.

Materials and Methods: Five cases with EAC osteochondromas were included in the study (3 males and 2 females, age range – 35 years to 58 years). They were asked history. Previous examination and investigative findings, including that of previous CT (wherever available) were noted. They were subjected to MDCT HRCT scanning of the temporal bones on Brilliance 64 (Phillips) scanner. Images were evaluated. Special attention was paid to identify abnormal findings and thereby complications.

Results: All patients were middle aged. Pedunculated osseous mass like lesions were seen arising from the walls of EAC in all cases. 3 lesions were left sided and 2 were right sided. All cases were associated with abnormal soft tissue, seen medial to the lesions. There was history of previous ipsilateral surgery in 2 cases.

Conclusions:

1. Osteochondromas of the EAC are uncommon lesions, which can be differentiated from other osseous and soft tissue lesions of the EAC by presence of narrow pedicle and origin from wall of EAC.
2. They are frequently associated with keratosis obturance, soft tissue due to obstruction, medial to the lesions and infections.
3. Pathogenesis is related to cold winds and water exposures, though none of our series patients gave such history.
Abstract ID: 291

**ABSTRACT TITLE**: ULTRASOUND, CT AND MRI APPEARANCE OF A RARE LARYNGEAL CHONDROMETAPLASIA.

**PRESENTING AUTHOR**: RISHIKANT SINHA

**CO-AUTHOR**: DR PRANAV KUMAR SANTHALIA DR PREM KUMAR

**Background**: A 21 year-old male presented with hoarseness of voice. Laryngoscopy revealed a small bulge on the right false vocal cord level with immobility of the right vocal cord.

**Imaging Findings**: CT showed a small well marginated hypodense lesion at inferior portion of thyroid lamina, causing its splaying. No calcification was noted. Right aryepiglottic fold was thickened with dilated right vallecula and ipsilateral pyriform sinus with features of right vocal cord paresis/?paralysis. MRI revealed a T1-weighted isointense and T2-weighted hyperintense lesion within the lamina of the right thyroid cartilage with features of right vocal cord paresis/?paralysis. There was no suspicious regional or cervical lymph node. Supplementary ultrasound was performed. The lesion was well-circumscribed without chondroid type calcification or any ossification, appeared hypoechoic with internal vascularity. Differential diagnosis was made of lesion with neoplastic activity including chondrosarcoma/?chondroma. FNAC of this nodule showed chondrometaplasia. The patient was planned for surgical excision of the entire lesion.

**Conclusion**: It is difficult to differentiate laryngeal chondrometaplasia from the chondroid tumor such as chondroma or low grade chondrosarcoma either clinically, histologically or radiologically. The clinical presentation of laryngeal chondrometaplasia is similar to the other laryngeal tumors and includes hoarseness, dyspnea, dysphagia or vocal fold palsy. The non-contrast CT showed no chondroid calcification which is typically present in chondroma and chondrosarcoma. Although both chondroid tumor and chondrometaplasia can be well-defined and hypodense, chondroma and chondrosarcoma may demonstrate invasion while chondrometaplasia usually displaces rather than invasion to adjacent structures. However, the above features are not absolute in differentiating between chondrometaplasia and chondroid tumors. Biopsy is thus essential. In our case, US and MRI revealed no specific or characteristic features of chondrometaplasia to differentiate from other laryngeal tumors. In comparison, MRI has better soft tissue resolution than CT and it is the imaging of choice in the assessment of the extent of chondrometaplasia.

Abstract ID: 292

**ABSTRACT TITLE**: CT EVALUATION OF SEPTAL ANGLE WITH ITS EFFECT ON LATERAL NASAL WALL IN NASAL OBSTRUCTION

**PRESENTING AUTHOR**: KAVIRAJAN K

**CO-AUTHOR**: RANJAN CHANDRA, NEHA HOODA BAGRI

**Purpose**: To evaluate the extent of nasal septal deviation by measuring the angle of septal deviation (ASD) on coronal CT scan and to study the influence of septal angle on the lateral nasal wall, paranasal sinuses and pattern of sinusitis in patients with nasal obstruction.

**Materials and Methods**: Prospective cross sectional observational study conducted on 130 patients with clinical symptoms of nasal obstruction for greater than 12 weeks duration. Patients were classified into three groups according to the Angle of Septal Deviation- Group I (0-7 degree), Group 2 (7-11 degree) and Group 3 (> 11 degree). 43 patients were in the Group I, 46 in the Group II and 41 in the Group III. Statistical analysis was done using Statistical Package for Social Sciences (SPSS) version 21.0.
Results: There is increased incidence of left sided nasal septal deviation and septal spur. 25 patients in Group II and 28 patients in Group III showed inferior turbinate hypertrophy on the contralateral side (P value < 0.0001). 3 patients in Group II and 7 in Group III also showed contralateral middle turbinate hypertrophy (P value-0.018). The incidence of frontal, maxillary, ethmoid and sphenoid sinusitis as well as osteomeatal complex obstruction is higher in Group II compared to Group I and Group III. Maxillary sinus is the most commonly involved paranasal sinus. Sinonasal polyposis pattern is the most common pattern observed followed by osteomeatal unit pattern and sphenoethmoidal recess pattern is the least common pattern.

Conclusion: Increasing angle of septal deviation is associated with increase in the incidence of lateral nasal wall abnormalities in the form of contralateral middle and inferior turbinate hypertrophy, but not associated with increase in the incidence of ipsilateral or contralateral osteomeatal complex obstruction and paranasal sinus mucosal disease.

Abstract ID: 295

ABSTRACT TITLE : GRAY SCALE AND DUALPLEX DOPPLER ULTRASONOGRAPHIC EVALUATION OF THYROID DISEASES

PRESENTING AUTHO R : I PRATYUSHA
CO-AUTHOR : DR JOJI REDDY, DR ABDUL GAFOOR , DR BHAVANA

Aim: To assess the role of gray scale and duplex ultrasonography in evaluation in thyroid diseases.

Methods: A prospective study on 50 patients , who attended ENT or Surgery outpatient department and were referred to the Department of Radio-Diagnosis for high resolution USG of neck to Kurnool medical college and Government general hospital, Kurnool.

USG was performed with an esaote (My Lab Class C) using 12MHz linear transducer.

Results: Our present study consists of 50 cases which were clinically suspected suffering from thyroid dysfunction. Thyroid ultrasound was very efficient in picking up lesions in all 50 cases in our study. Out of 50 cases, majority of patients were between 21-50 years of age, most of the malignant cases were in 41-50 years of age group.Most commonly identified lesion is colloid goitre in 39 out of 50 ,5 are multinodular goitre , 3 are Hashimoto’s thyroiditis 3 of papillary carcinoma and 1 of squamous cell carcinoma. Higher resistive index (RI) value and lower peak systolic velocity (PSV) were found in malignant lesion as compared to benign lesion. All cases diagnosed on USG were proved on fine needle aspiration cytology (FNAC).

Conclusion: High-resolution real-time ultrasonography is currently accepted world-wide as a reliable method in the morphological evaluation of thyroid disease. An excellent correlation was seen in diagnosis of thyroid lesions between sonography (Gray scale, duplex doppler and histopathology. Sonography (Gray scale and Doppler together) was 98% sensitive in diagnosis of thyroid lesions.
ABSTRACT TITLE: ASSESSMENT OF ATHEROSCLEROSIS IN CAROTID ARTERIES BY USING HIGH RESOLUTION ULTRASOUND AND COLOUR DOPPLER.

PRESENTING AUTHOR: PAYAL SOJITRA

CO-AUTHOR: DR. NIRMALA CHUDASAMA, DR. HARSHAD SHAH, DR. RASHESH VYAS

Aims:
1) To evaluate association between carotid atherosclerosis and coronary heart disease in diagnosed cases of acute ischaemic stroke.
2) To evaluate prevalence of atherosclerosis in diagnosed cases of acute ischaemic stroke.
3) To correlate various risk factors associated with development of atherosclerosis.

Methods: The present study was carried out on 100 patients in department of radiodiagnosis in C.U. Shah medical college and hospital using standard usg machine logic book xp amongst which 50 were cases and 50 were controls.

Inclusion Criteria: Diagnosed patients of acute stroke by CT or MRI

Exclusion Criteria: Patients with Intracranial Haemmorhage.

Controls: Patients Hospitalised for Reasons other than Cerebrovascular Disease.

Results: Majority of carotid plaques were found in old age males associated with hypertension and smoking. The plaques were mostly unilateral with moderate echogenecity on usg along with increased intimomedial thickness.

Conclusions: It was shown that carotid and coronary atherosclerosis were correlated with stroke and increased intimomedial thickness was concluded as a major criteria.

Discussion:
- Atherosclerosis is a progressive inflammatory disorder of arterial wall with deposition of atheroma. It results in impairment of arterial perfusion and may lead to myocardial infarction, stroke, transient ischemic attack, intermittent claudication or gangrene.
- Usg is a non invasive method which plays vital role in detection of atherosclerotic plaque which can be revealed by an increase in imt and subsequent echogenic material that encroaches the vessel lumen.
- On colour flow imaging a stenosis is suggested by occurrence of aliasing and an occlusion by absence of colour filling in the lumen.
Abstract ID: 315

**ABSTRACT TITLE**: MADELUNG–LAUNOIS–BENSAUDE SYNDROME: A RARE CASE

**PRESENTING AUTHOR**: PALLAVI A.LOKHANDE

**CO-AUTHOR**: DR. SUSHIL KACHEWAR, DR.D.L.LAKHKAR, DR.RITIKA CHAMADIA, DR.MARATHE

**Case report**: 40/M, came with 1-year history of a painless, soft, and slow-growing swelling of the neck, upper trunk, upper back, and shoulders. The patient had a history of heavy alcohol consumption and was a nonsmoker. Imaging showed diffuse isoechoic strands in the neck with no vascularity. CT confirmed the fatty infiltration. Histopathological diagnosis was considered confirmatory.

**Discussion**: Madelung’s disease (also known as benign symmetric lipomatosis, the Launois-Bensaude syndrome, and multiple symmetric lipomatosis) Rare disorder of unknown cause and strong male predominance.

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Abstract ID: 326

**ABSTRACT TITLE**: EVALUATION OF SALIVARY GLAND PATHOLOGIES WITH ULTRASOUND

**PRESENTING AUTHOR**: PALLAVI A.LOKHANDE

**CO-AUTHOR**: DR. SUSHIL KACHEWAR, DR.D.L.LAKHKAR, DR.MARATHE

**Aims & Objectives**: To study the use of ultrasound as diagnostic tool for salivary gland lesions.

**Materials & Methods**: All the patients referred to the department of Radio-Diagnosis for evaluation of salivary glangs. A standard protocol was used for Ultrasonographic evaluation of these patients using superficial linear probe, LOGIQ F ultrasound machine.

Histopathological & clinical diagnosis of the same pathologies were correlated with the imaging findings and results were drawn.

A total of 50 patients with salivary gland pathologies were included in the study.

**Results**: Nonneoplastic conditions included infective or noninfective sialo adenitis (42%), sialolithiasis (20%), neoplastic lesions of benign type (36%) and malignancy (2%). Ultrasound showed 88% sensitivity and 82% specificity in diagnosing salivary gland lesions.

**Conclusion**: Ultrasound is a dependable modality for initial diagnosis as well as is relatively reliable in distinguishing the salivary gland lesions.
Abstract ID: 369

ABSTRACT TITLE: PICTORIAL ESSAY: B-SCAN OF ORBITAL LESIONS
PRESENTING AUTHOR: PHILIP MATHEW
CO-AUTHOR: (none)

Normal B-Scan
Case 1: Persistant Hyperplastic Primary Vitreous
Case 2: Pseudotumor
Case 3: Optic Drusen
Case 4: Optic Meningioma
Case 5: Orbital Abcess
Case 6: Eyelid Carcinoma
Case 7: Dermoid Cyst
Case 8: Synchisis Scintillans
Case 9,10: Retinoblastoma
Case 11: Choroidal Melanoma
Case 12: Retinal Detachment
Case 13: Choroidal Detachment
Case 14: Vitreous Hemorrhage
Case 15: Foreign Body
Case 16: Iol Dislocation
Case 17: Dislocated Lens
Case 18: Subluxated Lens
Case 19: Posterior Staphyloma
Case 20: Carotid-Cavernous Fistula

Abstract ID: 399

ABSTRACT TITLE: EVALUATION OF OCULAR TRAUMA BY ULTRASONOGRAPHY
PRESENTING AUTHOR: ANIKET M ZOPE
CO-AUTHOR: SUHAS S GHULE, SUSHIL G KACHEWAR, DILIP L LAKHKAR, VINOD M MARATHE

Purpose: To evaluate the efficacy of ultrasonography in detection of traumatic ocular injuries as a diagnostic effective modality.

Materials and Methods: The study is prospective type and was conducted on 50 patients with history of ocular trauma. They were evaluated with ultrasonography (B scan and colour doppler) on 8 MHz high frequency linear probe and the findings were recorded.

Results: The spectrum of ultrasonographic findings included from vitreous haemorrhage, vitreous detachment, retinal detachment, choroid detachment, lens dislocation and globe disruption.
In our study, vitreous hemorrhage was the most common finding. B scan helps to detect the volume, extension and degree of organisation.

Retinal detachment appears as echogenic freely movable membrane with insertion of retina in optic nerve at front of ora serrata forming a funnel shape.

Vitreous detachment presents as thin, movable membrane with no attachment at optic nerve.

Choroidal detachment present as smooth, thick dome shaped membrane at periphery with little after movement on kinetic evaluation.

**Conclusion:** B scan is safe, cost effective and a rapid investigation in emergency setting of ocular trauma.

It is reliable and helps in screening intra and extra ocular structures and gives information about lens, retina, vitreous, choroid and sclera.

It also helps in evaluating posterior segment and helps in preoperative planning.

**Abstract ID: 411**

**ABSTRACT TITLE:** EVALUATION OF EUSTACHIAN TUBE ANGLE ON HIGH RESOLUTION CT TEMPORAL BONE IN PATIENTS WITH CHRONIC OTITIS MEDIA.

**PRESENTING AUTHOR:** NEERAJA AKKI

**CO-AUTHOR:** DR. T. ARUL DASAN; M.D.(RD), PROFESSOR AND HOD RADIODIAGNOSIS

**Purpose:** The abnormal angle of the Eustachian tube is a predisposing factor for Eustachian tube dysfunction. The aim of this study was to compare the mean angle of a Eustachian tube of chronic suppurative otitis media (CSOM) ears and normal ears.

**Materials and Methods:** This is a tertiary care center retrospective study expanding over a period of 1 year. Data was collected by HRCT temporal bone scans performed by 128 slice multi detector CT. Study group was divided as group A consisting of 33 patients of CSOM without cholesteatoma, Group B - 27 patients of CSOM with cholesteatoma and Group C- 15 normal individuals served as controls. Reid plane-eustachian tube angle was measured to analyze the eustachian tube orientation by multiplanar reconstruction method. Data was analyzed by appropriate statistical tests.

**Results:** The mean angle of Eustachian tube in group A was 32.62°, in group B was 28.14° and in normal ears was 33.40°. There was a significant difference between the mean angle of the Eustachian tube in CSOM with cholesteatoma ears and normal ears.

**Conclusion:** These results suggest that decrease in the eustachian angle in adults may play a significant role in etiology of CSOM with cholesteatoma. Although cholesteatoma is a multifactorial disorder, this angle may be used as a predictive factor for cholesteatoma.
Abstract ID: 422

**ABSTRACT TITLE**: ROLE OF ULTRASOUND IN THE EVALUATION OF PEDIATRIC NECK MASSES AND A REVIEW OF ITS SPECTRUM AS SEEN IN A TERTIARY CENTER IN MAHARASHTRA

**PRESENTING AUTHOR**: AVINASH KUMAR

**CO-AUTHOR**: DR. HIMANGINI THAKKAR

**Purpose**: A neck mass in a pediatric patient is a frequently encountered entity in clinical practice. Ultrasound is a safe, convenient, radiation free and accessible modality which has a high diagnostic accuracy. It also plays an important role in invasive diagnostics like FNAC and in therapeutic procedures like guided aspiration. Purpose of this study was to check the diagnostic accuracy and spectrum of pediatric neck masses in our hospital

**Materials and Methods**: The study was conducted in the Department of Radiodiagnosis at Seth. G. S. Medical college and KEM hospital. A total of 30 pediatric patients presenting with neck masses in the age group 2 months to 14 years were included in our study. Gray scale Ultrasound was done to characterize the masses and Doppler Ultrasound done to check the vascular characteristics

**Results**: Infectious masses in the form of lymphadenitis and neck abscesses were most commonly encountered, followed by congenital, neoplastic, vascular malformations and miscellaneous masses at a rate of 68%, 20%, 3%, 6% and 3% respectively. Tuberculous lymphadenitis constituted 73% of all the infectious masses, Thyroglossal and Brachial cleft cysts constituted 68% of the congenital masses and Hodgkin lymphoma constituted 45% of the neoplastic masses. 74% of all the masses were solid, and the lateral levels of the neck were most affected 52%. Anatomically the lesions were characterized as anterior and posterior triangle masses

**Conclusions**: Duplex/Color Doppler ultrasound is the imaging modality of choice for the evaluation of soft tissue masses of the pediatric neck. Information regarding the characteristics of the mass, and its relationship to the major neck vessels may be rapidly obtained. When indicated, ultrasound-guided interventional procedures can be performed for diagnosis and/or treatment.

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Abstract ID: 456

**ABSTRACT TITLE**: PAEDIATRIC ORBITAL BURKITT’S LYMPHOMA: CASE REPORT IN AN AGGRESSIVE PRESENTATION

**PRESENTING AUTHOR**: AMEE PANCHAL

**CO-AUTHOR**: (None)

**Objectives**: To present case of endemic paediatric orbital Burkitt’s lymphoma and discuss its radiological differentials.

**Background**: We present a case of a 7 years old boy of Indian roots, living in Africa who came to hospital with complain of a small swelling noted over right eye since one month, which rapidly increased in size in last 15 days. Given the limited access to health care in his country, the patient was brought to our setup for seeking medical attention. On presentation, he had a large friable exophytic mass protruding from his right orbit. An MRI was requested for characterization of the mass and to assess its extensions.

**Imaging findings and differentials**: MRI revealed large poorly marginated low T2 signal soft tissue mass lesion involving extra ocular (intra-conal and extra-conal) compartment of the right orbit, with involvement of right inferior rectus muscle. No intra-cranial/paranasal sinus extension.
MRI differentials of Lymphoma, Rhabdomyosarcoma, Eosinophilic granuloma were given.

As lymphoma was one of the differentials given on the basis of primary imaging, surgical biopsy was performed as a first treatment rather than direct excision biopsy. The surgical biopsy revealed it to be Burkitt’s lymphoma and subsequent chemotherapy was started after excluding any other systemic involvement. However, the patient expired shortly after due to complications from chemotherapy.

Conclusion: There are a few distinct radiological features which help in characterizing and diagnosing orbital lymphoma and its differentials. Distinct radiological clues help surgeons determine further lines of treatment.

Abstract ID: 525

ABSTRACT TITLE: IMAGING IN A RARE CASE OF CIRCOID ANEURYSM OF SCALP ON 256 SLICE MDCT

PRESENTING AUTHOR: SANJEEV CHHABRA

CO-AUTHOR: DR. S.K PURI

Learning Objectives:

- To evaluate the case on MDCT angiography reconstructed images for the detail of feeders, draining veins and their soft tissue relations.
- To know the clinical presentations.
- To know the radiological features.

Background: Cirsoid aneurysm of scalp is a rare arteriovenous malformation of external carotid branches and scalp veins. This AVM can be congenital or acquired; a congenital form will be present at birth, however, becomes overt only after puberty. Acquired malformation is the result of previous trauma, which is often trivial, taking months to years for development of malformation after the traumatic episode.

Case Description: A 15 year old male presented with a progressively increasing pulsatile subcutaneous scalp swelling with linear tortuous structures in the frontoparietal region. A loud bruit was heard on auscultation. General examination and haematological investigations were unremarkable. In suspicion of arteriovenous malformation a CT angiography (CTA) was performed which showed a large vascular mass formed of bunch of dilated and tortuous vessels in the scalp.

Conclusion: Role of imaging is to narrow the differential diagnosis and to provide details about anatomy and physiology of the lesions helpful for surgery. CT angiography gives detail about the arterial feeders and draining vessels. Volume rendered images and maximum intensity projection images on multidetector CT give excellent detail about the blood supply helping the surgeon for preoperative planning to achieve minimal blood loss during surgery.
Abstract ID: 531

**ABSTRACT TITLE**: DIAGNOSTIC ACCURACY OF TIRADS (THYROID IMAGING REPORTING AND DATA SYSTEM) IN EVALUATION OF THYROID NODULES

**PRESENTING AUTHOR**: MINU MOHANDAS

**CO-AUTHOR**: DR. SARA AMMU CHACKO, DR. NITA HUBERT

**Purpose**: TIRADS is a reporting data system for thyroid lesions, proposed to standardize the reporting of results of thyroid ultrasound that can be understood by clinicians and also stratify the risk of malignancy of a lesion based on ultrasound features.

The purpose of this study is to determine the diagnostic test properties of TIRADS in differentiating benign from malignant nodules taking cyto/histopathological diagnosis as gold standard.

**Materials and Methods**:

**Study design**: Cross sectional study- diagnostic test evaluation

**Study subjects**: 104 patients with focal thyroid nodules on ultrasonography in the Department of Radiodiagnosis at Dr.SMCSI Medical College during December 2015- November 2017. Ultrasound scan of thyroid gland was performed with 5-12 MHz linear-array transducer of Voluson pro 730. A nodule was classified according to Russ modified TIRADS based on ultrasound features like echogenicity, shape, margin and presence of micro calcification and the findings were correlated with cyto/histopathological diagnosis. Data was collected using a semi-structured proforma. Variables were plotted and analyzed using chi square test. A P-value less than 0.05 was considered statistically significant. Percentage of malignancy in each TIRADS category, Sensitivity, Specificity, Positive predictive value and Negative predictive value were found.

**Results**: Out of the 104 cases, 97 were benign and 7 were malignant. The percentage of malignancy in each TIRADS category were as follows: TIRADS 2 (0%), TIRADS 3 (2.1% ), TIRADS 4A (91.7%), TIRADS 4B (80%), TIRADS 5 (66.7%). Sensitivity was 85.7%, specificity was 68% and diagnostic accuracy was 69%. Statistically significant association was noted with the following ultrasound features: echogenicity, shape, margin, presence of micro calcification and lymphnode without fatty hilum.

**Conclusion**: We established that Russ modified TIRADS is a useful criteria to predict risk of malignancy of thyroid nodules based on ultrasound features and to guide management decisions.

Abstract ID: 554

**ABSTRACT TITLE**: MATERNAL ORBITAL VESSELS DOPPLER VELOCIMETRY IN NON HYPERTENSIVE GESTATIONAL DIABETES MELLITUS

**PRESENTING AUTHOR**: JYOTI.G. DULLI

**CO-AUTHOR**: DR.SRINIVAS M R, DR. ARUL DASAN

**Aim**: To measure the changes in blood flow velocity by colour doppler imaging in ophthalmic artery, central retinal artery and short posterior ciliary artery in non hypertensive pregnancies with gestational diabetes mellitus and to compare with normal pregnant women.

**Materials and Method**: This is a cross sectional study involving a group of 25 normotensive pregnant women with gestational diabetes mellitus and 25 control healthy pregnant women between 24-32 weeks of gestation. Right and left eye were evaluated for peak systolic velocity(PSV in cm/s), end diastolic volume(EDV...
in cm/s), peak ratio (PR), pulsatility index (PI) and resistive index (RI) for ophthalmic, central retinal and short posterior ciliary artery. Students t test was performed to evaluate the significance of difference.

**Results:** There was a statistically significant increase in the peak ratio, pulsatality index, resistive index of central retinal artery and short posterior ciliary artery in normotensive pregnant women with gestational diabetes mellitus compared with healthy pregnant women. However there was no statistical difference in ophthalmic artery parameters between the two study groups.

**Conclusion:** Normotensive gestational diabetes mellitus patients show decreased blood flow in central retinal artery and short posterior ciliary artery compared to normal healthy pregnant women. This observation indicates that there is a functional change in the microcirculation of orbital vessels in spite of no changes detected on ophthalmic examination in normotensive gestational diabetes mellitus patients. Deterioration in sharpness of vision in normotensive gestational diabetes mellitus show no significant changes on ocular fundus, but orbital doppler velocimetry could show changes. Since diabetes causes vasculopathy, orbital vessels doppler plays an important role in detecting the early functional changes in microcirculation of orbital vessels proceeding the onset of anatomical changes that can be detected on ophthalmic examination.

**Abstract ID: 561**

**ABSTRACT TITLE:** EVALUATION OF TEMPORAL BONE PATHOLOGIES USING HIGH RESOLUTION COMPUTED TOMOGRAPHY

**PRESENTING AUTHOR:** MANIK MAHAJAN

**CO-AUTHOR:** (None)

**Background:** Conventional techniques like X-ray of mastoids have limited ability to determine the temporal bone and cochlear-vestibular anatomy. HRCT is a modified CT technique which is extremely helpful in evaluating the anatomy, pathology and extent of disease and thereby helps in preoperative planning.

**Objective:** To evaluate role of HRCT in detecting and diagnosing the pathologies of the temporal bone.

**Materials and Methods:** Sixty patients with suspected temporal bone pathologies formed the material of study. Detailed history and findings of clinical examination were recorded. The patients were subjected to HRCT of temporal bone using standard protocols. Imaging findings were recorded and results were tabulated. Imaging findings were correlated with surgical and histopathological findings wherever possible.

**Results:** Maximum cases were seen in 3rd decade with male preponderance (2:1). Most common temporal bone pathologies were infections (57%) followed by trauma (17%). Tumors and congenital anomalies were seen in 13% cases each. HRCT evidence of cholestetoma was seen in 56% cases (19/34) of infections while ossicular erosions and scutum and/or tegmen erosion were seen in 47% and 41% cases respectively. Acoustic Neuroma was the commonest tumour seen in 3% cases. On basis of surgical and histopathological correlation, Sensitivity of HRCT in diagnosing cholesteatoma was 89 % and for diagnosing ossicular chain erosion was 87.5%.

**Conclusion:** HRCT is an important pre-operative imaging tool in evaluating the pathologies affecting temporal bone. It helps in evaluating the distribution, features, localization and extent of pathologies and lays down an anatomical roadmap for the surgeon preoperatively.
Abstract ID: 563

**ABSTRACT TITLE**: 128 MDCT STUDY OF OSTEOMEATAL COMPLEX VARIATIONS AND THEIR CORRELATION IN CHRONIC RHINOSINUSITIS PATIENTS.

**PRESENTING AUTHOR**: RAMANJANEYALU N

**CO-AUTHOR**: DR VIJAYKUMAR KR, DR NAVEEN J, DR LOHITH YADAV

**Aims and Objectives**: To evaluate the occurrence of anatomical variations of osteomeatal complex (OMC) and to assess its relation in causation of chronic rhinosinusitis in the study population using CT.

**Methods**: A prospective study in which 100 patients diagnosed with CRS in the outdoor of Dept. Of ENT in BANGALORE MEDICAL COLLEGE AND RESEARCH INSTITUTE were subjected to CT Imaging and the frequency of anatomical variations and involvement of paranasal sinuses were evaluated.

**Results and Discussion**: Deviated nasal septum was the most common variant seen in 62% patients. Other variants seen were: uncinate process variations in 52%, concha bullosa in 28%, enlarged bulla ethmoidalis in 28%, agger nasi cells in 25%, paradoxical middle turbinate in 19%, haller’s cells in 5% and accessory maxillary ostia in 2%.

**Conclusions**: The importance of CT PNS is emphasized in patients with persistent symptoms to identify the anatomical variations that may contribute to the development of chronic sinus mucosal disease.

Abstract ID: 569

**ABSTRACT TITLE**: RADIOLOGICAL ASSESSMENT OF THE HOLY TRINITY: THE SPHENOID SINUS, VIDIAN CANAL AND FORAMEN ROTUNDUM

**PRESENTING AUTHOR**: SAMARTH S GOWDA

**CO-AUTHOR**: DR. T. ARUL. DASAN, DR. CHANDANA UDAYAKUMAR

**Purpose**: Ventral skull based surgeries require a radio-anatomical understanding of the sphenoid sinus and its adjacent structures. The foramen rotundum (FR) and the vidian canal (VC) serve as gateways to important neurovascular structures. Their close proximity to the sphenoid sinus, make it quintessential for the operating surgeon to have a better understanding of this ‘Holy trinity’. With the advent of modern multi slice CT scanners, it has become imperative to study this relationship, and help guide operating surgeons.

**Materials and Methods**: We retrospectively reviewed CT- Paranasal sinus images of 100 consecutive patients obtained for any reason at our hospital. Patients with pathologies distorting the normal anatomy were excluded. We classified FR and VC types, and assessed positions of the FR to the base of lateral pterygoid plate.

**Results**: Of the 100 cases that were reviewed, 32 cases had type I VC, 40 had type II and 28 had type III. 6 patients had type I FR, 32 had type IIa, 44 had type IIb, and 18 had type III FR. Position of the FR with respect to the base of the lateral pterygoid plate was online in 51, medially placed in 39 and laterally placed in 10 cases.

**Conclusion**: The unique anatomical relationship that exists between the sphenoid sinus, foramen rotundum and the vidian canal needs to be addressed in every radiological report. By shedding light on the same through the course of this study, we hope to be of better assistance to operating surgeons to obtain a clear perspective of this ‘Holy trinity’.
Abstract ID: 593

**ABSTRACT TITLE**: EVALUATION OF SONOELASTOGRAPHIC FINDINGS IN TUBERCULAR CERVICAL LYMPHADENOPATHY

**PRESENTING AUTHOR**: RENU YADAV

**CO-AUTHOR**: DR AMITA MALIK

**Purpose**: To evaluate the role of sonography including Doppler and sonoelastography in tubercular cervical lymphadenopathy which comprises of approximately one third of causes of cervical lymphadenopathy in our country.

**Materials and Methods**: Cross-sectional study was undertaken with 100 study subjects after informed consent and with defined inclusion and exclusion criteria as per imaging limitations. Various US features like location, size, S/L ratio, presence or absence of echogenic hilum, intra-nodal necrosis, intra-nodal calcification, associated soft tissue features like periadenitis or collection and pattern of vascularity were evaluated. With USE color coded elastograms and strain ratio were evaluated. Then accuracy of individual sonographic and sonoelastographic parameters as well as combined were evaluated against HPE diagnosis. Cut-off for all the combined evaluation were determined from ROC curve.

**Results**: Tubercular nodes are large in size, have S/L ratio >0.5, intra-nodal necrosis and show peripheral vascularity pattern. 91% tuberculous lymph nodes had color coded elastograms >2 pattern which is similar to malignant lymph nodes whereas strain ratio helped in differentiation as all tuberculous lymph nodes except one had strain ratio < 1.99.

**Conclusion**: Strain ratio being semi-quantitative is more objective criteria of assessment compared to color coded elastograms. Hence adding semi-quantitative elastographic evaluation with US may help in differentiation between tubercular and metastatic nodes.

Abstract ID: 600

**ABSTRACT TITLE**: IMAGING REVIEW OF INNER EAR ABNORMALITIES

**PRESENTING AUTHOR**: AMMAR S MODI

**CO-AUTHOR**: DR.GAGANDEEP SINGH SALUJA, DR. AKASH RAMTEKE

**Learning Objectives**:

- To know the precise anatomy of inner ear.
- As a preoperative diagnosis of important surgical landmarks, surgically important anatomical variations and entire spectrum of congenital/acquired anomalies.

**Background**: High Resolution Computed Tomography and MRI provides a direct visual window in the inner ear providing minute structural details.

Congenital malformations of the inner ear may be considered in two broad categories:

(a) malformations with pathologic changes that involve only the membranous labyrinth (b) malformations that involve both the osseous and the membranous labyrinth (malformed otic capsules).

Recognising the congenital abnormalities of the inner ear help the surgeon in counselling the parent and
future management of condition. This study illustrates the congenital abnormalities of the inner ear on high resolution CT temporal bone and MR images.

**Imaging findings:**

A. Classification of congenital malformations of the inner ear
   I. Malformations limited to the membranous labyrinth
      A. Complete membranous labyrinthine dysplasia (Siebenmann-Bing)
   II. Malformations of the osseous and membranous labyrinth
      A. Complete labyrinthine aplasia (Michel)

B. Cochlear anomalies

C. Labyrinthine anomalies

D. Aqueductal anomalies
   1. Large Vestibular aqueduct syndrome 2. Enlargement of the cochlear aqueduct

E. Internal auditory canal abnormalities
   1. Cochlear nerve aplasia

**Conclusion:** Congenital inner ear malformations are major causes of sensory-neural hearing loss in children. Accurate description of anomalies in anatomic terms provide better idea to surgeon regarding management. So it is very important for radiologist to understand the imaging findings of these conditions and classification of inner ear anomalies.

**Abstract ID: 616**

**ABSTRACT TITLE**: ROLE OF DOPPLER ULTRASOUND IN DIFFERENTIATING BETWEEN BENIGN AND MALIGNANT CERVICAL LYMPHADENOPATHY

**PRESENTING AUTHOR**: NIHARIKA GHORIWALA

**CO-AUTHOR**: DR. H. V. RAMPRAKASH [PROFESSOR]

**Purpose**: To evaluate the role of Doppler ultrasound in differentiating between benign and malignant cervical lymphadenopathy, with Fine Needle Aspiration Cytology (FNAC) correlation.

**Materials and Methods**: Ethical permission was given by the VIMS & RC ethics committee. Informed written consent was obtained from all patients.

Data was collected from 31 cases referred for ultrasonography of neck within a period of 6 months. Cervical lymph nodes were assessed by grey scale ultrasound by their size, shape, echogenic hilus, necrosis and matting. Doppler ultrasound was then used to characterize their vascular pattern [central, peripheral or mixed], Resistivity Index (RI) and Pulsatility Index (PI). Finally, the findings were confirmed with FNAC study.
The results were analysed using sensitivity, specificity and predictive values.

**Results:** The grey scale ultrasound findings helped in arriving at a diagnosis, which matched with the FNAC findings in 90% of cases [28 out of 31 cases]. Colour Doppler showed a differential vascular pattern between the malignant and benign nodes.

At the point of maximum flow, the pulse wave doppler was obtained, from which, the RI and PI values were calculated, which were then correlated with FNAC. Mean values and range of intranodal vascular resistance showed a significant difference between malignant and benign lymph nodes, with the RI values in benign nodes ranging from 0.32 to 0.98 [mean RI being 0.68] and that in malignant nodes ranging from 0.77 to 1.00 [mean RI being 0.93]. Similarly, PI values in benign nodes ranged from 0.53 to 2.4 [mean PI being 1.2] and those in malignant nodes ranged from 1.08 to 4.29 [mean PI being 2.65].

**Conclusion:** Ultrasound with doppler study helps in differentiating between benign and malignant cervical lymphadenopathy, and characterising the type of disease. Therefore, Doppler ultrasound can be a good, safe, cost-effective and non-invasive method, giving all the information required for further management of the condition.

**Abstract ID: 617**

**ABSTRACT TITLE:** “IN AND OUT OF ORBITAL PATHOLOGIES ON CROSS SECTIONAL IMAGING- A PICTORIAL REVIEW”

**PRESENTING AUTHOR:** PRASHANTH K S

**CO-AUTHOR:** DR. RAVI.N, DR. ARUL T DASAN

**Aims & Objectives:**

- To review spectrum of cross sectional imaging findings of various benign, malignant, infective, inflammatory and vascular pathologies involving the orbit.
- To elaborate multimodality diagnostic approach in different orbital pathologies.

**Background with Imaging Findings:** Orbit is an anatomically complex region enclosing the globe, extraocular muscles, retro orbital fat, neurovascular structures, lacrimal gland and connective tissue. It is a small anatomical area with little free space and therefore mass lesions usually result in proptosis of the globe and can adversely affect visual acuity by causing pressure over the optic nerve or extra ocular muscles.

128 slice multidetector Phillips CT scanner was used to perform the CT scan. Additional 3D images and multiplanar reconstruction were acquired.

MRI was performed on Siemens Magneton Avanto model B5 1.5 Tesla MRI.

Cases were followed till the histopathology results were obtained.

**Conclusion:** A radiologist may encounter a wide variety of orbital pathologies with a long list of differentials. Good understanding of the detailed anatomy of the orbit and its contents is essential to evaluate these pathologies. Furthermore, a thorough knowledge of the most common lesions, their typical clinical presentations, radiological appearances and key imaging features help distinguish similar looking lesions and aids in reaching a confident radiological diagnosis.
Abstract ID: 653

ABSTRACT TITLE: A RARE CASE OF BRONCHIAL CLEFT CYST CARCINOMA
PRESENTING AUTHOR: KARTHIK B R
CO-AUTHOR: DR. PRANEETHI K.

Learning Objectives: Branchial cleft cyst carcinoma (BCCC) is an extremely rare malignancy originating from cells within the branchial cleft cyst wall. The objective of this abstract is to help increase awareness of the BCCC, which should be included in the differential diagnosis of a cystic neck mass.

Background: A 65-year-old male patient presented with rapidly developing swelling in the left side of the neck for 1 year. History of pain and difficulty in breathing in the last 3 months. On local examination, a large swelling measuring 12 x 10 cms in left posterior triangle of neck, not fixed to the skin, non-pulsatile, fluctuation is present, no local rise of temperature, no tenderness and no presence of scars or sinuses. Systemic examinations with normal limits.

Imaging Finding:
- X-ray Neck: A large well-defined soft tissue opacity in the left side of the neck, causing tracheal shift to right.
- Ultrasound Neck: A large well-defined cystic lesion measuring 12 x 11 cms in the left side of the neck with eccentric solid component. The solid component measuring 3 x 2.8 cms with calcifications and shows internal vascularity.
- CECT Neck: A large well-defined multiloculated predominantly cystic lesion in posterior triangle of the left side of the neck measuring 12 x 11 x 9 cms with irregular heterogeneously enhancing eccentric solid component measuring 3.3 x 3.7 cms with few areas of calcifications.

Conclusion: Patient underwent excision of the cyst. On histopathology, left branchial cyst - papillary carcinoma.

Abstract ID: 672

Title: Role of Multidetector Computed Tomography in Evaluation of Paranasal Sinus Pathologies with Histopathological Correlation
Topic: Head and Neck Imaging

Purpose: CT imaging of paranasal sinus provides the surgeon with a detailed road map for guiding the functional endoscopic sinus surgery procedure. The purpose of this study is to assess Sensitivity, Specificity and Accuracy of the findings and diagnosis obtained after MDCT in the diagnosis of PNS pathologies with histopathology correlation. Secondary objective is to study association between anatomical variations of Paranasal Sinuses with Chronic Rhinosinusitis

Materials & Methods: Study Design: Diagnostic test evaluation

80 patients who underwent CT PNS and subsequently FESS during the time period December 2016 to October 2018 were followed up and the imaging findings were correlated with histopathology. The collected data was statistically analyzed using SPSS software (Version 16.0)
**Results:** Most of the pathologies was found to be involving the maxillary sinus. Chronic sinusitis was the most common diagnosis obtained on CT and deviated nasal septum followed by middle turbinate variants (mostly concha bullosa) were the common anatomical variants.

**Conclusion:** This study proved that CT is an excellent imaging modality for evaluating the normal anatomy, variants, and pathologies of the PNS and to guide the surgeon for FESS or other surgical procedures.

**Abstract ID: 702**

**ABSTRACT TITLE:** MR IMAGING OF TEMPOROMANDIBULAR JOINT DYSFUNCTION - A PICTORIAL REVIEW

**PRESENTING AUTHOR:** PARTHASARATHY E A

**CO-AUTHOR:** DR. SOWMIYA

**Learning Objectives:** To demonstrate the normal disc anatomy of temporomandibular joint (TMJ) and MR imaging features of disc displacement and arthralgia.

**Background:** Temporomandibular joint disc dysfunction is best evaluated with MRI. The articular disk is a biconcave fibro cartilaginous structure that divides the synovial joint into superior and inferior compartments. Disc location is of prime importance because displaced disc is a critical sign of TMJ dysfunction.

**Imaging Findings:** The disk is hypointense on all sequences. The center of the posterior band may be slightly hyperintense due to presence of loose areolar tissue. The bilaminar zone shows intermediate signal intensity.

In closed mouth position, the junction of the posterior band and bilaminar zone lies within 10° of the 12 o’clock position above the condyle.

In open mouth position, the intermediate zone lies between the condyle and the articular eminence and the posterior band is against the posterior surface of the condyle.

Abnormal disc displacement in open-mouth position can be reducible or non-reducible.

**Types:**
- Anterior type - frequently observed.
- Posterior displacement.
- Lateral or medial displacement.
- Stuck disk.
- Osteoarthritic changes tend to appear in advanced-stage and may be interpreted as signs of disease progression.

**Conclusion:** Disc pathologies involving temporomandibular joint are best demonstrated in MRI. It is important for the radiologist to detect early MR imaging signs of dysfunction, thereby avoiding the evolution of this condition to its final stage.
Abstract ID:743

**ABSTRACT TITLE:** MR IMAGING OF MAPLE SYRUP URINE DISEASE

**PRESENTING AUTHOR:** SONIA PAVANAI MUKKAMALA

**CO-AUTHOR:** (None)

**Learning Objectives:** In this case our aim is to present MR neuroimaging findings and role of diffusion weighted MR imaging in a rare case of maple syrup urine disease in a one year old male child who presented with foul smelling of urine and global developmental delay.

**Background:** Maple syrup urine disease/leucine encephalopathy is an inborn error of amino acid metabolism causing neurotransmitter depletion and disrupted brain growth and development.

It is an autosomal recessive condition occurs due to deficiency of branched chain alpha keto acid decarboxylase complex.

Accumulation of branched chain ketoacids causes disruption of kerb’s cycle, displaces other essential aminoacids, neurotransmitter depletion and disrupted brain growth and development.

We present a case of child presented with complaints of unable to hold the neck, foul smelling of urine, cannot sit, stand or walk even with support, absent speech, feeding difficulties especially to solid and semisolid food, pooling of oral secretions and global developmental delay with hypotonia of four limbs.

**Imaging features:** Restriction on DWI with reversal on ADC noted in bilateral peri Rolandic white matter, thalami, internal capsule, brain stem and cerebellar dentate nuclei.

Diffuse T2 & FLAIR hyperintense signal noted in bilateral fronto parieto occipital white matter, thalami, internal capsule, brain stem and cerebellar dentate nuclei.

MR spectroscopy shows abnormal branched chain alpha ketoacid peak at 0.9ppm and elevated lactate.

Based on clinical features and imaging findings possible differentials include maple syrup urine disease and hypoxic ischemic encephalopathy.

**Conclusion:** Clinico laboratory and radiological investigations with peculiar MR appearance and MR Spectroscopy helps in identification of maple syrup urine disease and improves clinical outcome.

Abstract ID:783

**ABSTRACT TITLE:** A RARE CASE OF NASOPHARYNGEAL MASS IN NEONATE - BRAIN HETEROTOPIA

**PRESENTING AUTHOR:** SRIKALYAN DUDUKURI

**CO-AUTHOR:** DR VISHAL NIMBAL DR CHANDALINGAPPA KURI DR S R MALIPATIL

**Learning Objectives:** Heterotopic neuroglial tissue is a rare disorder composed of differentiated neuroectodermal tissue. The most common location for heterotopic neuroglial tissue is the nasal cavity. Less commonly, they have been reported in the scalp, tongue, pharynx, palate, orbit, middle ear and neck.
We report a case of heterotopic brain tissue involving the nasopharynx and the oropharynx with no connection to the central nervous system (CNS). We emphasize on the need for cross sectional imaging (Contrast MRI) in detecting the location and extent of heterotopic brain tissue.

Background: A preterm twin-2 male baby, born at 35 weeks gestation presented with history of respiratory distress with stridor and difficulty in feeding since birth. Fibre optic bronchoscopy was done which revealed soft tissue mass occupying the choanae. Later computed tomography and Magnetic resonance imaging plain & contrast was done for further evaluation.

Results: CT showed well defined soft tissue mass noted in right side of nasopharynx causing obstruction of right nasal cavity. No evidence of calcification / bony erosion.

Magnetic resonance imaging(MRI) Plain & contrast study showed evidence of heterogenously enhancing soft tissue mass lesion in the nasopharyngeal region predominantly on right side likely arising from parapharyngeal space which is crossing midline and present in nasopharynx bilaterally. There is no evidence of intracranial extension noted.

The mass was excised completely and sent for histopathology which confirmed the diagnosis.

Conclusion: Cross sectional imaging is better modality in pre-operative planning to determine the extent and location of the heterotopic brain tissue and to exclude intracranial connection.

Abstract ID:818

ABSTRACT TITLE: A CASE PRESENTATION OF LINGUAL VENOUS MALFORMATION
PRESENTING AUTHOR: NIRAV PATEL
CO-AUTHOR: DR. ASUTOSH N DAVE

Learning Objectives: To describe the plain and enhanced MRI findings of lingual venous malformations and to discuss the importance of contrast medium in the differential diagnosis of high intensity lesions of the tongue on T2 weighted images

Background: Vascular malformations arise as a result of abnormal embryonic development. These malformations are generally subdivided into slow-flow lesions (capillary malformation, lymphatic malformation and venous malformation) and fast-flow lesions (arterial malformations as aneurysm and arteriovenous malformation).

A 17-year-old male patient reported to outpatient department with complaints of swelling on the tongue for past five years. There was no previous history of trauma and any other systemic illness.

Imaging findings:
T1: The lesion is hypo intense.
T2 and STIR: High signal intensity tends to dominate on T2 and STIR images.
Post contrast: The lesion is mildly enhanced.

Conclusion: Knowledge of MRI findings of lingual venous malformations is useful for differential diagnosis with other high intensity lingual lesions on T2 weighted images. This discrimination is achievable using IV gadolinium contrast medium.
**Abstract ID:823**

**ABSTRACT TITLE**: EVALUATION OF SHEAR WAVE ELASTOGRAPHY IN DISTINGUISHING BENIGN FROM MALIGNANT THYROID NODULE

**PRESENTING AUTHOR**: SUBRATA PAUL

**CO-AUTHOR**: DR PRABHAT DEBBARMA

**Aim**: To evaluate the role of shear wave elastography in distinguishing benign from malignant thyroid nodules.

**Methods**: A hospital based cross-sectional study on ultrasound shear wave elastography was done in Agartala Govt. Medical college on 88 pathologically proven thyroid nodules in 86 patients of 25 to 77 years age group on SIEMENS ACUSON S 2000 machine. Elasticity Imaging (EI) scores and Shear wave velocity (ARFI-VTTQ) values were assessed and the findings were correlated with FNAC or Biopsy results.

**Results**: Out of 88 nodules, 15 (17%) were malignant &73 nodules (83%) were benign on FNAC or Biopsy. On EI, 5 nodules had score of 1 (5 benign, 0 malignant), 58 nodules had score of 2 (57 benign, 1 malignant), 13 nodules had score of 3 (10 benign, 3 malignant), 10 nodules had score of 4 (9 malignant, 1 benign) and 2 nodules had score of 5 (2 malignant, 0 benign). The optimal cut-off point for Shear Wave Velocity (SWV) values in differential diagnosis was 2.87 m/s. The mean SWVs were 2.17 ± 0.84 m/s (Range: 0.76-6.55 m/s) for benign and 6.17 ± 2.72 m/s (Range: 1.04-9.00 m/s) for malignant nodules. The sensitivity, specificity, PPV, NPV, accuracy, LR+ and LR- were 93.3%, 84.9%, 56.0%, 98.4%, 86.4%, 6.19 and 0.08 respectively for EI scores and 86.7%, 94.5%, 76.5%, 97.2%, 93.2%, 15.76 and 0.14 respectively for SWV values.

**Conclusion**: Ultrasound Shear Wave Elastography has high potential to differentiate benign from malignant thyroid nodules and can reduce unnecessary FNAC procedures. It could be used as non-invasive pre-FNAC triage tool in screening benign nodules with high level of confidence.

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**Abstract ID:826**

**Title**: Transcervical Sonographic Evaluation of the Tonsillitis and Peritonsillar Infections in Pediatric Population

**Topic**: Head and Neck Imaging

**Purpose**: Ultrasonography (US) has high sensitivity and specificity for diagnosing peritonsillar abscesses and can diagnose tonsillitis by enlargement of the gland. Tonsillar enlargement is clinically assessed based on its transverse extension towards the midline. However this method fails to assess depth in the oral aspect and medial boundary extending toward the pharynx. Also distinction of peritonsillar cellulitis from peritonsillar abscess is important for clinical management. This study was primarily done to evaluate tonsillar volumetry and sonographic appearances of tonsils so that it can be differentiated from other pathological states.

**Aim**:  
1. To describe the Sonographic appearance of tonsil and its pertinent anatomy.  
2. Illustration of spectrum of Sonographic findings in tonsillar and peritonsillar infections in pediatric population.

**Methods**: In our cross sectional study, 45 pediatric patients with clinical suspicion of tonsils were evaluated by Transcervical ultrasonography using high frequency linear probe. Transverse, craniocaudal...
and anteroposterior diameters and volume were measured. Approximate volume was calculated using the ellipsoid formula.

**Results:** Statistical analysis was performed using Mann-Whitney test. The mean volumetric value of the enlarged tonsils was 4.17 + 1.36 mL.

**Conclusions:** The tonsils and peritonsillar infections can be optimally evaluated by ultrasound. Transcervical sonography is a novel technique to evaluate tonsils in tonsillitis and peritonsillar infections in pediatric population.

**Abstract ID:** 873

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<tr>
<th>ABSTRACT TITLE</th>
<th>IMAGING REVIEW OF HEAD AND NECK SCHWANNOMAS</th>
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<tr>
<td>PRESENTING AUTHOR</td>
<td>SUMAT SHARMA</td>
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<td>CO-AUTHOR</td>
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**Learning Objectives:**

1. To describe the occurrence of head and neck schwannomas in head and neck region namely the skull base, orbits and extracranial head and neck.
2. To review the imaging features of head and neck schwannomas.
3. To discuss role of various imaging modalities in evaluating these lesions.
4. To discuss the imaging pearls and evaluate the associated diagnostic pitfalls.

**Background:** Schwannomas are slow growing tumours that can arise from any nerve with a sheath composed of schwann cells. Aetiology of schwannomas is unclear however links have been made with aberrations of chromosome 22.

25-45% of all schwannomas occur in the head and neck region which can be benign or malignant in nature. Due to complex anatomy of the head and neck, schwannomas can mimic other conditions or tumours clinically. Imaging plays an important role to increase diagnostic accuracy and allow for surgical planning.

**Imaging Findings:** MRI is the modality of choice in evaluating schwannomas. MRI usually demonstrates a well-defined mass that is hypo or isointense on T1 weighted images and heterogeneously hyperintense on T2 weighted images relative to brain parenchyma. Schwannomas enhance avidly on post gadolinium sequences.

High resolution CT using a bone algorithm can also help in localising schwannomas as they pass through bony structures. CT signs include expansion of neural foramina or scalloping of adjacent bone.

On ultrasound, the neck schwannomas typically appear as well defined ovoid/round hypoechoic lesions.

**Conclusion:** Schwannomas of the head and neck can present in various ways and can involve any of the cranial nerves. Imaging is useful in reaching the diagnosis as clinically, these lesions can mimic various other pathologies. Gadolinium enhanced MRI is the imaging modality of choice.

High resolution CT using a bone algorithm can supplement where bony structures are involved. The imaging findings along with histopathology are important for establishing the diagnosis.
**Abstract ID:901**

**ABSTRACT TITLE**: COMPARATIVE EVALUATION OF ROLE OF MAGNATIC RESONANCE IMAGING AND COMPUTED TOMOGRAPHY IMAGING IN ORAL CANCERS AND ITS HISTOPATHOLOGICAL CORRELATION

**PRESENTING AUTHOR**: ABHISHEK GUPTA

**CO-AUTHOR**: (None)

**Aims And Objective:**

1. Pattern of tumor spread and contribution of CT and MRI in staging of oral cavity malignancy.
2. To determine which imaging modality CT or MRI is adjunct to clinical examination in proper staging and therapeutic implication.
3. Histopathological correlation of above radiological findings.

**Material & Methods**: All clinically diagnosed oral cavity tumours will be subjected to CT and MR imaging. Sample size – 26 cases are considered for study.

**Equipment**:

- CT is performed with multi-slice CT scanner GE Bright Speed 16 and Siemen Somatom 40.
- MR imaging is done on 1.5 T MRI scanner.

**Result**: Tumor staging

- The MRI gave an accurate staging in 22 cases (84.6%). Three cases were over staged that bony invasions (T4) were suspected by MR studies, but no definite evidence of bony invasion were detected by pathology.

**Tumor**: border delineation

- The MRI delineated tumoral border extension superior or equal to computed tomography. In 13 out of 24 cases (54.2%), the MRI was superior to CT scan in the tumoral delineation and provided more information. In the other 11 cases (45.8%), the MRI was equal to CT scan examination in the tumoral border delineation.

**Conclusion**: Squamous cell carcinoma (SCC) is the most common malignancy to affect juxta-oral region, accounting for 90% of cases. CT examination demonstrated to be useful in evaluating the juxta-oral tumors with T2stage or larger, and for assessing bony cortex invasion. However, it lacks the superior soft tissue contrast and multiplanar capabilities of MRI. The MRI can provide a good anatomic delineation of primary tumors of the oral cavity and can supplement the information when screening for cervical lymphadenopathy. The extent of infiltration is well appreciated and invasion to adjacent structures can be identified. CT is being rapidly replaced by MRI as the technique of choice for majority of lesions in the larynx, tongue, paranasal sinus, and parapharyngeal space.
Pictorial Assay of Imaging of Normal Measurements of Temporal Bone in Precochlear Implant Patients

Geetha M J

Aim: Imaging plays an important role in the evaluation of both inner and middle ear components before cochlear implantation.

Objective: Knowledge of proper interpretation and radiological measurement of normal temporal bone by CT and MRI is essential for radiologists.

Materials and Method: Pictorial depiction of normal anatomy and measurements of both inner and middle ear components such as mastoid pneumatisation, integrity of ossicular chain, anatomy of round window, interscalar septum, number of turns in cochlea, cochlear duct length, height and modiolus, IAC, cochlear aperture, cochlear aqueduct, facial nerve canal, jugular bulb, etc., is done for ease of reporting and interpretation.

Results: Adequate CT knowledge of bony anatomy of the temporal bone and MR anatomy for evaluation of the cranial nerves and neuroparenchyma, etc., is essential for the radiologist to help the surgeon in deciding for surgery and type of implant.

Conclusion: CT and MRI are complimentary to each other in presurgical evaluation of the temporal bone.

Leigh's Disease and Its Varied Presentations

Geda Anusha

Objective: Leigh syndrome is a rare progressive neurodegenerative, mitochondrial disorder of childhood with only few cases documented from India. The clinical presentation is highly variable, however, in most cases it presents as a progressive neurological disease with motor and intellectual developmental delay and signs and symptoms of brainstem and or basal ganglia involvement like ataxia, ophthalmoplegia, dystonia, respiratory rhythm disturbance and cranial nerve palsies. Raised lactate levels in blood and or CSF is noted. It is neuroimaging mainly MRI showing characteristic symmetrical necrotic lesions in basal ganglia and or brainstem that leads to diagnosis.

Imaging: Neuroimaging mainly MRI shows symmetrical high signal intensities in brainstem, basal ganglia, periaqueductal grey matter, medulla, and midbrain. Elevated lactate on MR spectroscopy.

Summary: Leigh syndrome is a rare progressive neurodegenerative, mitochondrial disorder of childhood which has poor prognosis and leads to death, so all children who present with motor and intellectual developmental delay and signs and symptoms of brainstem and or basal ganglia involvement like ataxia, ophthalmoplegia, dystonia, respiratory rhythm disturbance and cranial nerve palsies should undergo MRI on which it can be diagnosed as symmetrical high signal intensities in brainstem, basal ganglia, periaqueductal grey matter, medulla, and midbrain. Elevated lactate on MR spectroscopy.
Abstract ID:974

**ABSTRACT TITLE**: ASSOCIATION OF PATTERN OF MANDIBULAR INVASION IN MDCT WITH RECURRENCE IN ORAL CANCERS

**PRESENTING AUTHOR**: VISHAL THAKKER

**CO-AUTHOR**: DR.MANALI ARORA, DR.PRASHANT MODI, DR.MANSA PITTA

**Background**: Mandibular Invasion has been a long debated criteria for predicting prognosis in Oral Cancers. Though AJCC marks cortical erosion in oral lesions as T4 disease, it is often challenged that mere superficial bony erosion should not be used to demark T4 disease.

**Aim**: This study aims to evaluate the association of pattern of mandibular erosion in pre-operative Multi Detector CT (MDCT) of oral cancers with presence of recurrent malignant disease.

**Methods**: A retrospective analytical study was done in the Department of Radio-Diagnosis of a tertiary centre in Anand, Gujarat. MDCT Neck findings in 56 consecutive post-operative patients for oral carcinoma presenting between September 2017 and August 2018 were assessed. Pre-operative MDCT of all patients was retrieved and evaluated for presence and pattern of mandibular involvement by primary malignancy. These patterns were compared with the presence of recurrent disease in the post-operative scan. Association between two findings was tested by Fischer’s exact test.

**Results**: 48 patients showed features of recurrent malignancy on MDCT confirmed by biopsy. 10 such patients had shown no bony invasion in pre-operative scan, 14 had shown cortical erosion and 24 showed medullary invasion. P value for association of recurrence and bony invasion pattern was found to be 0.6705 (insignificant) for cortical erosive lesions and 0.0469 (significant) for medullary infiltrative lesions.

**Conclusions**: Only medullary infiltrative lesions of mandible have a statistically significant association with recurrent disease and may be used as a prognostic factor. Cortical erosions are statistically insignificant in predicting recurrence similar to no bone invasions.

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Abstract ID:978

**ABSTRACT TITLE**: THE HUMMINGBIRD LADY(PROGRESSIVE SUPRANUCLEAR PALSY)

**PRESENTING AUTHOR**: GEDA ANUSHA

**CO-AUTHOR**: DR.V.N NARVEKAR, DR.RAMAKRISHNA RAO BARU, DR.MAJ.SAI KRISHNA.

**Objective**: Progressive supranuclear palsy is a rare neurodegenerative disease which tends to be progressive causing weakness of structures in brainstem that controls eye movements, postural instability, decreased cognition and falls as well as parkinsonian features and speech disturbances.

Progressive supranuclear palsy falls under rubric of parkinsonism plus syndromes that are a group of heterogenous degenerative neurological disorders that differ from classical idiopathic parkinsons disease. It is often under-reported, making it important for clinicians to be aware of this disorder.

**Imaging**: MRI features include: Midbrain atrophy, hummingbird sign, mickey mouse appearance and morning glory sign and T2 high signal lesions in pontine tegmentum, tectum of midbrain and inferior olivary nucleus.

**Summary**: Progressive supranuclear palsy is a rare neurodegenerative disease which tends to be progressive causing weakness of structures in brainstem that controls eye movements, postural instability, decreased cognition and falls as well as parkinsonian features and speech disturbances and the patients become clinically
apparent in 6th decade of life and progresses to death within 2 to 17 yrs, and should be differentiated from parkinsonism, it can be diagnosed by MRI by specific signs.

**Abstract ID:992**

**ABSTRACT TITLE**: MRI FINDINGS OF TUBEROUS SCLEROSIS IN BRAIN.

**PRESENTING AUTHOR**: GEDA ANUSHA

**CO-AUTHOR**: DR. SUNEETHA, DR. VENKATESH

**Purpose**: Triangular fibrocartilage complex (TFCC) tear is a commonly encountered non-osseous etiology of ulnar wrist pain and disability. The currently available conservative and surgical treatment options have variable outcomes. The purpose of our ongoing study is to evaluate efficacy of ultrasound guided targeted injection of platelet rich plasma (PRP) around TFCC tear using patient related wrist evaluation (PRWE) score.

**Materials and Methods**: The current preliminary report of this Institutional review board approved prospective interventional study comprises of 12 patients with TFCC tear diagnosed on MRI and providing informed consent. Under ultrasonographic guidance, 3-4 ml of PRP was injected at three defined targeted points around TFCC. The patients were subsequently evaluated using PRWE score at 4 and 8 weeks. Data analysis was done using SPSS version 21.0 using Wilcoxon Test for comparing quantitative variables and McNamer test for correlating qualitative variables, p <0.05 was considered statistically significant.

**Results**: PRWE score has shown significantly decreasing trend in present sample size having Mean ± SD at 4 weeks is 55.83 ± 9.96 with interquartile range of 50-60 and p value 0.003. Mean ± SD PRWE score at 8 weeks is 26.67 ± 7.78 with interquartile range of 20-30 and p value 0.003.

**Conclusion**: The clinical response of US guided targeted PRP injection around TFCC tear has shown extremely encouraging results in this preliminary study and has the potential to become an effective nonsurgical management for TFCC tear. Our ongoing study will widen the database to further substantiate our preliminary results.

**Abstract ID:1026**

**ABSTRACT TITLE**: DIAGNOSTIC ROLE OF ULTRASOUND COMBINED WITH STRAIN ELASTOGRAPHY IN DIFFERENTIATION OF BENIGN AND MALIGNANT CERVICAL LYMPH NODES WITH CYTOLOGICAL CORRELATION.

**PRESENTING AUTHOR**: PARMINDER SINGH

**CO-AUTHOR**: DR. PREM KUMAR CHIDAMBRAM, DR. A SENTHIL KUMAR

**Purpose**: To categorize benign and malignant cervical lymph nodes based on Strain elastography and to evaluate the diagnostic accuracy and efficiency of Ultrasound based strain ratio, in differentiating between benign and malignant cervical lymph nodes.

**Materials and Methods**: The study was conducted in Radiology Department, SRM Medical College from September 2017 to August 2018. 41 patients with enlarged cervical lymph nodes were selected and ultrasound and strain elastography was performed using PHILIPS Affinity 30 ultrasound machine with a 7–12-broadband linear array transducer. The elastographic box contain the lymph node and adjacent sternocleidomastoid muscle for each patient. The average strain ratio was calculated as the mean strain of the adjacent sternocleidomastoid muscle divided by the mean strain of the target lymph node. The strain
cut off value for differentiation of benign and malignant lymph nodes was taken as 1.5[1]. The results of strain elastography were correlated with FNAC/biopsy findings.

**Results**: Out of 41 lymph nodes, 31(75.61%) were cytologically diagnosed as benign and 10 (24.39%) as malignant. Based on the strain ratio 30(73.17%) were diagnosed as benign and 11 (26.82%) as malignant. The sensitivity, specificity, accuracy, positive predictive value and negative predictive value of strain ratio were 93.55%, 90.00%, 92.68%, 96.67% and 81.82% respectively.

**Conclusion**: Ultrasound elastography based strain ratio is a non invasive method to diagnose benign and malignant enlarged cervical lymph nodes and has high potential to differentiate between the two with high sensitivity and specificity, and also help in localizing the FNAC sites for accurate cytology results.

**References**:


**Abstract ID:1070**

**ABSTRACT TITLE**: ROLE OF HIGH RESOLUTION ULTRASONOGRAM AND ELASTOGRAPHY IN CERVICAL LYMPHADENOPATHY

**PRESENTING AUTHOR**: MONUSHREE RAMAN

**CO-AUTHOR**: DR.C.AMARNATH DR.G.SATHYAN

**Aim**: To evaluate the role and diagnostic utility of Ultrasonogram and Elastography to differentiate benign and malignant causes of cervical lymphadenopathy.

**Methods**: It is a prospective study of 85 patients with cervical lymphadenopathy done in the Department of Radiodiagnosis, Stanley Medical College for 1year.

Conventional B-Mode Ultrasonogram and Doppler study of cervical lymph nodes was done for all patients using SAMSUNGACCUVIX XG A VXGE30/IN Ultrasonogram machine equipped with Elastoscan. Radiological diagnosis was given on the basis of size, shape, short/long axis ratio, echogenicity, fatty hilum and hilar or peripheral vascularity. Strain elastography was done using the same machine and the scores of elastography was given from 1 to 5. Results were correlated with USG findings and final diagnosis given. Biopsy/FNAC was done for all cases and the results were compared. Statistical analysis were done using ROC curve.

**Results**: Among 85 nodes in our study, 26 nodes were benign, 37 nodes were malignant and 22 nodes were reactive constituting 30.6%, 43.5% and 25.9% respectively. The sensitivity and specificity were 88.9% and 89.8% respectively and the positive predictive value was 86.5% and negative predictive value was 91.7%.

**Conclusion**: The real time strain elastography can distinguish benign and malignant cervical lymph nodes with high sensitivity and specificity. On combining elastography with B-mode ultrasonogram, the sensitivity to differentiate benign and malignant nodes will increase to 100% and specificity will also be very high.

**Discussion**: Strain elastography cannot be used alone for assessing malignancy of lymph nodes, but can be used along with the ultrasound and Doppler criteria.
Abstract ID:1117

ABSTRACT TITLE: HIGH RESOLUTION COMPUTED TOMOGRAPHY IMAGING SPECTRUM OF SQUAMOSAL CHRONIC OTITIS MEDIA AND ITS COMPLICATIONS- A PICTORIAL ESSAY

PRESENTING AUTHOR: AASHITA MITTAL
CO-AUTHOR: DR. RAMA ANAND, DR. RAJPAL, DR. A. CHAKRAVARTI

Learning Objective: To illustrate the HRCT imaging spectrum of Squamosal chronic otitis media and its complications

Background: In developing nations, middle ear cleft infections and cholesteatoma are common health problems leading to otorrhoea and hearing loss. Chronic otitis media can be associated with cholesteatoma where keratinizing squamous epithelium accumulates in the middle ear cleft. Complications arise due to bone erosion by the expanding sac of cholesteatoma. HRCT helps in providing minute structural details of temporal bone, evaluation of the extent of the disease and its complications.

Imaging findings: HRCT allows continuous rotation of gantry and continuous acquisition of thin sections of temporal bone. It helps in evaluation of the extent of disease and sites of involvement by the cholesteatoma. It has got high sensitivity and specificity in detecting ossicular chain erosion, scutum erosion, mastoid pneumatisation, low lying dura, cholesteatoma extension into sinus tympani, facial recess, vestibule, cochlea, internal or external auditory canal and the presence of complications like mastoiditis, sigmoid sinus plate erosion, facial canal dehiscence, labyrinthine fistula and intracranial complications like cerebral and cerebellar abscess. Prior knowledge of extension and complications of cholesteatoma is pivotal for deciding the surgical approach and treatment.

Conclusion: HRCT is the best imaging modality for early detection and evaluation of squamosal otitis media and its complications. It is excellent for depicting anatomy of temporal bone, various anatomical variations, extent of disease and its complications, thereby providing a roadmap to the otolaryngologist before the surgery.

Abstract ID:1125

ABSTRACT TITLE: HYDATID CYST OF SKULL: A RARE OCCURRENCE

PRESENTING AUTHOR: DARISALAN KYNJING
CO-AUTHOR: DR.SUSHIL KUMAR KALE, DR.SAURABH PATIL, DR.ATUL DHOK

Learning Objective: Neuroimaging in bony hydatid cyst of skull.

Background: Hydatid disease is a worldwide parasitic infection caused by Echinococcus granulosis and is endemic in various parts of Asia. Liver and lung are the most common sites affected. Bone involvement is rare (0.5%-2%). Most commonly involved bone structures are spine (35%) and pelvis (21%). Reports of skull involvement are very rare (4%). Intracranial extracerebral hydatid disease may occur in three forms: cranial, cranial-extradural, and combined, with extradural hydatid disease being an extremely rare occurrence. The problem in diagnosis is that they can have extraosseous or intraosseous involvement, thus causing diagnostic dilemma.

CASE: 50 year old male patient, presented with complaints of headache and vomiting since 1 month, and disorientation since 1 week.
**Imaging Findings**: On skull radiography, large well defined lytic lesion was noted in right fronto-temporal region of the skull.

On CT and MR imaging, well defined extraaxial non-enhancing multiloculated lesion with variable sized cystic lesions and wall calcification arising from inner table of right frontal and temporal bones, causing compression of adjacent cerebral parenchyma, leftward sufcialine herniation, scalloping right frontal and temporal bones without perilesional edema and extension into paranasal sinuses. The primary diagnosis given was hydatid cyst. The lesion was excised by neurosurgeon and confirmed to be hydatid cyst of skull on histopathology.

**Conclusion**: Hydatid disease should be included in the differential diagnosis of cystic disease in the head and neck region. CT and MRI are the best means to diagnose hydatid disease preoperatively.

**Abstract ID:1138**

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<tr>
<th>ABSTRACT TITLE</th>
<th>3D CT IN THE PRE-OPERATIVE EVALUATION OF COCHLEAR IMPLANT PATIENTS: GOING BEYOND THE ROUTINE</th>
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<td>PRESENTING AUTHOR</td>
<td>SMITA MANCHANDA</td>
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<td>CO-AUTHOR</td>
<td>SMITA MANCHANDA, POONAM SHERWANI, ASHU SEITH BHALLA, RAKESH KUMAR</td>
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**Learning Objectives:**

- To describe the normal anatomy of cochlea and measurements of cochlea on 3D CT in preoperative evaluation of cochlear implant.
- To highlight the novel application of double oblique reformatted images in MinIP (minimum intensity projection) mode for evaluation of the same.

**Background:**

- Entire cochlea cannot be evaluated by 2D images hence 3D reconstruction with CT using multiplanar reconstructions (MPR) and Volume rendering Techniques (VRT) is done.
- MinIP is a simple form of volume rendering (sliding thin slab or multiplanar volume reformation technique) based on projection of pixels with the lowest attenuation value and has long been used in the chest for demonstration of the tracheobronchial tree.
- Double oblique reformatted CT images reconstructed through the basal turn of cochlea can be viewed in the minimum intensity projection mode (MinIP) with thickness varying from 1.3- 1.5 mm to visualize the cochlear turns.

**Imaging Findings:**

- Technique of image acquisition and reconstruction including MinIP and VRT images
- Measurement of cochlea duct length, cochlear height and basal turn of cochlear diameter in MPR and MinIP projections
- Demonstration of the cochlear anatomy on these images and their role in differentiation of Incomplete partition anomalies (IP Type I and IP Type II)

**Conclusions and results**: Use of 3D images can provide accurate preoperative measurements and aid in the assessment of inner ear malformations.
Learning Objective: To evaluate variations of optic nerve using DELANO’S classification and variations in depth of olfactory fossa using KERO’S classification and to know their frequency.

Background: Optic nerve has been categorized into four DELANO’S types on the basis of relationships between the optic nerve and posterior paranasal sinuses. Also, the olfactory fossa depth is determined by the height of the lateral lamella of the cribriform plate. Lateral lamella is a part of ethmoid bone. The depth is different amongst different individuals which is divided into three KERO’S types.

Imaging Findings:
- 100 cases, with clinical features of chronic rhinosinusitis, who underwent NCCT PNS were studied. In our study, overall, the most common type of Delano observed was type I, followed by type II, III and IV.
- Overall most common KERO’S type was type II followed by type I and type III. KERO’S type was asymmetric on both sides in 6% cases.

Conclusion:
- As the optic nerve is lies more close to the posterior paranasal sinuses, it becomes more vulnerable to injury during FESS, so DELANO’S III and IV are more vulnerable.
- Olfactory fossa anatomy is important because of risk of it getting iatrogenically injured during FESS. KERO’S type III is most vulnerable of getting injured.
- So, it becomes important to identify these types, specially before FESS.

Aims and Objectives:
1) To set up a normal reference range for normal thyroid elasticity score for our data set in the age group of 20-50 yrs using Ultrasound Strain Elastography Technique.
2) To compare the elasticity score of normal thyroid with diffuse thyroid swelling.
Methods and Materials: Institutional review board approval was obtained and informed consent taken prior to the study. Over a 13 months duration, we measured Elasticity Contrast Index (ECI) in a region of interest within the normal thyroid gland as well as in patients with diffuse thyroid swelling. The required compression/strain of thyroid was given using adjacent internal carotid artery. The score obtained was recorded, analysed and compared.

Results: A statistically significant difference was noted in elasticity scores (Elasticity Contrast Index) among euthyroid, hypothyroid and hyperthyroid patients. The elasticity score of Hypothyroid patient was found significantly higher compared to euthyroid patients. The elasticity score of Hyperthyroid patient was found significantly lower compared to euthyroid patients.

Conclusion: It is possible to differentiate the patients of hyperthyroid and hypothyroid from euthyroid based on elasticity (ECI) scores.

Abstract ID: 1219

ABSTRACT TITLE: LUMPS AND BUMPS OF SCALP: IMAGING SPECTRUM OF SCALP SWELLINGS
PRESENTING AUTHOR: NAVNI GARG
CO-AUTHOR: DR VIKAS CHAUDHARY DR RAMA ANAND DR SAMRIN HAQ

Learning Objective: To discuss the imaging features of various skull and scalp swellings presenting as lumps on the head.

Background: The scalp is a soft-tissue envelope that surrounds the cranial vault. Anatomically it is divided into five layers, however radiologically three layers are distinguishable (skin layer, subcutaneous layer, and galeasubgaleal-periosteum complex). Various benign and malignant lesions may present as scalp swelling.

Imaging Findings: Scalp swellings can be

- Well-delineated masses (trichilemmal cyst, dermoid cyst, epidermoid cyst, lipoma, encephaloceles, skull tuberculosis, slow-flow vascular malformation, and sinus pericranii)
- Diffuse/poorly delineated masses (hematomas, cellulitis, plexiform neurofibroma, basal cell carcinoma, squamous cell carcinoma, langerhans cell histiocytosis, intraosseous hemangioma, and metastases).

Trichilemmal cysts are usually multiple, subcutaneous, solid-cystic masses with areas of mineralisation. Dermoid and epidermoid cysts most commonly occur in the midline with fat attenuation in dermoid cysts and fluid in epidermoid cysts. Encephaloceles appear cystic with underlying bony defect and intracranial communication. Sinus pericranii appear as enhancing soft tissue mass having communication with underlying dural venous sinus. Skull tuberculosis manifests as lytic, permeative bony erosions with associated collection/abscess. Slow flow vascular malformations may show phleboliths within.

Plexiform neurofibromas are enhancing, diffuse infiltrative subcutaneous lesions. Primary malignant lesions appear as ill defined, enhancing soft tissue masses with underlying bony involvement. Neuroblastoma metastases appear as multiple, lytic bony defects and may show hair on end periosteal reaction.

Conclusion: Knowledge about imaging features is essential for topographic characterisation of scalp lesions. Imaging helps in determination of extent of lesion, involvement of underlying bone and guiding the clinician towards appropriate medical/surgical management.
Objectives: Objective of this study was to
1. Evaluate stroke and TIA patients with carotid ultrasound for Intima Media thickness and percentage of stenosis.
2. To find out the prevalence of carotid artery stenosis in stroke patients.
3. Observation/Correlation between percentage stenosis and infarct size on CT. 4.Risk factors for the development of carotid stenosis.

Materials and Methods: A prospective study was carried out in stroke patients attending our hospital and were compared with USG -carotid Doppler for IMT and stenosis

Results: 75 patients underwent Doppler study. The prevalence of the carotid stenosis in this study was 38.7% .In this study 90.5% of patients with <50 % stenosis had small infarct on CT head, while only 9.5% of these patients had large infarct.62.5% of patients with >50% stenosis had large infarct on CT scan head, just 37.5% of these patients had small infarct.

Conclusion: 38% of ischemic stroke patients had carotid stenosis in our study. The prevalence of carotid stenosis increases with increase in age, diabetes mellitus and Hypertension. A simple, non-invasive screening procedure like Doppler sonography of the carotid arteries in high risk individuals could therefore have profound diagnostic and therapeutic implications in predicting and preventing a stroke. It can be used for screening in high risk asymptomatic patients, patients with history of cerebrovascular events and for determining treatment protocol.
### Abstract ID: 66

**ABSTRACT TITLE**: MDCT IN CHARACTERIZING GALL BLADDER CARCINOMA: EXPERIENCE FROM AN ENDEMIC REGION  

**PRESENTING AUTHOR**: NIHARIKA PRASAD  

**CO-AUTHOR**: SANJAY PURUSHOTHAMA, AMIT GOYAL

**Purpose**: With the technical advancements in detection and treatment of gall bladder malignancy, it is essential that detailed pre-operative imaging should be available to guide the surgeon. Although its incidence is high in certain Indian states, the utility of triple-phase MDCT has infrequently been described in literature.

**Material & Methods**: Fifty patients with suspected gall bladder carcinoma on routine sonography were subjected to multiphasic MDCT in AllIMS Patna within six month duration. All three planes were assessed for evaluation of the vascular invasion and anatomy. Tumour enhancement & washout characteristics, loco regional and distant metastasis were documented. Attempts to differentiate carcinoma from benign mimickers like polyps, cholecystitis and adenomyomatosis were made.

**Results**: The sensitivity and specificity of MDCT in detection of carcinoma of gall bladder was 92.8 % and 96.7% respectively. It is superior to ultrasonography in detecting early stage carcinoma as well as vascular and bile duct infiltration.

**Conclusion**: Triple-phase MDCT with 3D reconstruction is a comprehensive imaging technique for staging gallbladder carcinoma and determining the vascular road map before surgery.

### Abstract ID: 95

**ABSTRACT TITLE**: CT AND MR IMAGING IN DIAGNOSIS AND STAGING OF HEPATOCELLULAR CARCINOMA  

**PRESENTING AUTHOR**: KHUSHALI SHAH  

**CO-AUTHOR**: DR ANJANA TRIVEDI

**Introduction**: Hepatocellular carcinoma is an epithelial tumor. It is the fifth most common tumor in the world. In comparison with other cancers for which the affecting tissue and the specificity of imaging characteristics may be sufficient to establish diagnosis.

**Purpose**: The prognosis of HCC depends largely on the stage at which the tumor is detected. HCC usually does not produce symptoms beyond those of the underlying liver disease until it has become incurable; in such patients, median survival is < 1 year and the 5-year survival is <10% .patients in whom HCC is detected at early stage may benefit from life-prolonging, potentially curative treatment. Once a surveillance test is positive -an abnormality is detected that may represent HCC, a more definitive imaging examination is recommended for noninvasive diagnosis and staging of HCC. Currently, all guidelines endorse multiphasic CT and MR imaging with extracellular agents as first-line modalities for this purpose.

**Materials And Method**: Study was done on 50 patients of HCC using 1.5 tesla MRI and CT at sahyog imaging, pdumc, rajkot.
Result: 60% Patients presented with vague complaints of anorexia, weight loss, abdominal pain, icterus etc. Around 40% of cases were found to have extra hepatic metastases, with 60% regional LNs and around 54% with lung mets. Peritoneal mets were seen in 10%.

Conclusion: This presentation reviews the role of CT and MRI in staging HCC and its sensitivity and specificity for diagnosis of HCC without mandating the need for tissue diagnosis in all cases.

Abstract ID: 100

Abstract Title: CHANGES IN LIVER MORPHOLOGY IN PATIENTS WITH EXTRAHEPATIC PORTAL VENOUS OBSTRUCTION ON MAGNETIC RESONANCE IMAGING

Presenting Author: PANKAJ GUPTA

Co-Author: NAVEEN KALRA, AJAY GULATI, AJAY DUSEJA, SAROJ SINHA, KARAMVEER CHANDEL, PRASHANT PRIYARANJAN, PRAJWAL DAHAN, RADHA K DHIMAN, NIRANJAN KHANDELWAL

Learning Objectives:

a) Refreshing normal anatomy of the patellofemoral joint including the passive and dynamic stabilizers of the knee.
b) Objective and subjective assessment of the passive and static stabilizers of the knee.
c) Evaluating injuries to the dynamic stabilizers to the patellofemoral joints.
d) Institutional experience

Background: Patellar injuries are one of the common injuries and cause of pain and discomfort especially in young and active adults. The incidence of the patellar dislocation is about 6-70/1,00,000. However, it is more in certain subgroups which includes recruits and young soldiers.

We scanned patients presented with complaints of recurrent dislocation of patella using 1.5 T MRI and the salient understanding and the results of the institution are discussed below.

Imaging findings: We discuss the procedure to ascertain trochlear dysplasia, sulcal angle, lateral trochlear inclination, trochlear facet asymmetry, patella alta.

Findings of kissing contusion, Vastus medialis oblique (VMO) and medial patello femoral ligament (MPFL)/retinaculum injury and ilio tibial band (ITB) are also illustrated and discussed.

Surgical intervention for correction was briefly discussed.

Conclusion and/or Teaching points: Correct evaluation and assessment is essential for prognosis of recurrence and management of abnormality especially in highly active individuals.
ABSTRACT TITLE: EFFECT OF SISTOCHOLEDOCHAL ANGLE IN THE FORMATION OF CHOLELITHIASIS
PRESENTING AUTHOR: HARSHA U
CO-AUTHOR: DR PARTHASARATHI A, DR ASHWINI B M

Learning Objectives:
• Variation of sistocholedochal angle (SCA)
• Effect of SCA in the formation of cholelithiasis.

Background:
• Cholelithiasis is a common health problem worldwide with prevalence in India around 6.2% causing considerable morbidity and mortality.
• Various factors like supersaturation of cholesterol in bile, biliary stasis, accelerated nucleation of cholesterol crystals, mucus hypersecretion of the gallbladder, bacterial or parasitic degradation products of bile, increased levels of unconjugated or conjugated bilirubin have been implicated in its etiopathogenesis.
• While many of the above factors have been implicated and proved by various studies, anatomical variations of pathway of biliary passage are rarely studied in relation to pathogenesis of cholelithiasis.
• In our study we intend to assess if the angle between the cystic duct and common bile duct junction (sistocholedochal angle: SCA) affects the cholelithiasis formation.

Imaging findings:
• All MRI examinations were performed on a whole-body 1.5 unit.
• Gall bladder was assessed for the presence or absence of cholelithiasis.
• The cystic duct and common bile duct were identified.
• The angle between the two crossing lines extending into cystic canal and common bile duct was considered as SCA.

Conclusion and/or Teaching points:
• According to our results as the SCA increases, the incidence of gallstone formation increases accordingly.
• We postulate that the increase in SCA causes resistance to flow of bile and lead to longer duration of residue saturated bile in the gallbladder with decreased bile drainage from cystic canal through the common bile duct and these factors effects the cholelithiasis formation.
Utility of Triphasic CT in Evaluation of Various Non-Infective, Non-Traumatic and Non-Metabolic Hepatic Lesions Using Triple Phase CT as Diagnostic Modality

Presenting Author: LOHITH YADAV R
Co-Author: DR. RAMANNA H. C., DR. ARUL DASAN T., DR. KAMESH G.

Learning Objectives:
- To study the utility of Triphasic CT in evaluation of various non-infective, non-traumatic and non-metabolic hepatic lesions.
- To study the enhancement patterns of various liver lesions on triphasic CT scan.

Materials & Methods: A prospective correlation study was conducted on 55 patients referred to the department of Radio-Diagnosis, Bangalore Medical College and Research Institute, with suspected focal or diffuse liver disease and were subjected for triphasic CECT examination with a 128 slice CT machine. The images acquired in different phases was evaluated on the basis of the enhancement pattern that they exhibit in each phase (arterial phase, portal phase and equilibrium phase). The appearance of each lesion in each phase was described on the basis of attenuation and homogeneity of lesion in comparison to surrounding parenchyma in that phase. Further the findings correlated with histopathological findings.

Results: Among the 55 patients, 26(47.3%) cases were benign and 29(52.7%) cases were malignant. 17(30.9%) cases were hemangiomas, 6(10.9%) cases were simple cysts, 2(3.6%) cases were focal nodular hyperplasias, 1(3.6%) case of hepatic adenoma, 11(20%) cases were hepatocellular carcinoma, 15(27.3%) cases were metastases, 2(3.6%) cases were cholangiocarcinoma and 1(1.8%) case of lymphoma. The most common primary benign and malignant hepatic lesions were hemangioma and hepatocellular carcinoma respectively.

Conclusion: Triphasic CECT almost correctly differentiated benign and malignant hepatic lesions and is helpful in confident diagnosis of hepatic lesions. It has an important role in characterizing, evaluating and differentiating various hepatic lesions and thus helps in guiding appropriate further management plan.

Acute Pancreatitis and its complication

Topic: Hepato-pancreatico-biliary Imaging

Learning Objective: Discuss the revised Atlanta classification system for acute pancreatitis.

Discuss the imaging findings of acute pancreatitis and its complication.

Background: The 2012 revised Atlanta classification is an update of the original 1992 Atlanta classification. It divides acute pancreatitis into two distinct subtypes, necrotizing pancreatitis and interstitial edematous pancreatitis (IEP). Various collections encountered are Acute pancreatic fluid collection (APFC), pseudocyst, acute necrotic collection (ANC) and walled off necrosis (WON). Important distinction for above mentioned collection are time, course (≤4 weeks or >4 weeks from onset of pain) and the presence or absence of necrosis at imaging.
This review we presents a image rich guide to revised Atlanta classification and complication of acute pancreatitis.

**Imaging findings:** IEP is more common and represents nonnecrotizing inflammation of the pancreas. The entire pancreas will enhance at contrast-enhanced CT or MR imaging, with no unenhanced (necrotic) areas. In necrotizing pancreatitis there will be necrosis of pancreatic or peripancreatic tissue.

Imaging features of the collections are described below:

**APFC**- Homogeneous fluid attenuation with no wall and confronts to retroperitoneal structure.

**Pseudocyst**- Homogeneous fluid filled, circumscribed, encapsulated with wall.

**ANC**- Inhomogeneous, nonliquified component with no wall.

**WON**- Inhomogeneous, nonliquified component, encapsulated with wall.

Acute pancreatitis can complicate into chronic pancreatitis.

Vascular complication of acute pancreatitis will include portal vein thrombosis, splenic vein thrombosis, pseudo aneurysm mainly involving gastroduodenal and splenic artery. Cholecystitis, peritonitis are remote complication of acute pancreatitis.

**Conclusion:** In general, imaging findings combined with the time course of the disease allow clear differentiation between the collections and enable stratification among different treatment plans, facilitating the radiologist’s seamless integration into a multidisciplinary team of gastroenterologists, intensivists, interventionalists, and surgeons.

**Abstract ID: 173**

**ABSTRACT TITLE**: PANCREATIC VOLUME AND FAT CONTENT AS A SURROGATE INDICATOR OF TYPE 2 DIABETES MELLITUS

**PRESENTING AUTHOR**: ASHISH DUA

**CO-AUTHOR**: DR. SUMAN KOCHHAR (PROFESSOR AND HEAD)

**Purpose**: India is diabetic capital of the world. However, diabetes is still underdiagnosed in India, with diagnosed population representing tip of the iceberg. Our case series aimed at detecting changes in pancreas on CT, which could help in early diagnosis of diabetes mellitus in previously undiagnosed population.

**Materials and Methods**: We did a prospective case control study with 15 known cases of type 2 diabetes mellitus having adequate control of blood sugar and 15 controls who neither had diabetes nor any other systemic co-morbidity. Axial CT images of the abdomen were obtained on an unenhanced phase. Subsequently, following parameters were noted:

1. Pancreatic volume
2. Pancreatic fat indirectly as:
   a. Difference between pancreatic attenuation and splenic attenuation (HU P-S)
   b. Ratio of pancreatic attenuation to splenic attenuation (HU P/S)

Student’s t-test was used for statistical analysis.

**Results**: CT showed that pancreatic volume was low in patients with type 2 diabetes mellitus (41.3±11.8) as compared to non-diabetic patients (55.6±14.9). Further, fat content was high in diabetic patients (HU
P-S of -11.1±9.7 and HU P/S of 0.77±0.18) as compared to non-diabetic patients (HU P-S of -3.8±3.2 and HU P/S of 0.91±0.06). Thus, changes in pancreatic volume and fat act as a surrogate marker for type 2 diabetes mellitus.

Conclusion: Changes in pancreatic volume and fat thus, if found in a high-risk individual incidentally, could help in early diagnosis of diabetes mellitus as they would prompt a complete biochemical work-up.

Abstract ID: 221

ABSTRACT TITLE: 3 D RECONSTRUCTION IN LOCALLY ADVANCED GALL BLADDER CA: FOREWARNED IS FOREARMED

PRESENTING AUTHOR: A GULATI

CO-AUTHOR: N KALRA

Learning Objectives:

1. Dual-phase MDCT is comprehensive imaging technique for staging and determining the resectability of gallbladder carcinoma
2. Combined interpretation of MPR / Volume rendered (VR) images to axial images increases the diagnostic confidence and accuracy of staging

Background: Gall bladder malignancy is the most frequent malignant tumor of the biliary tract. In spite of growing awareness and improved diagnostic techniques, prognosis is generally dismal as majority of cases present with advanced disease. Presently, surgery is regarded as the only definitive treatment for cure and radical resection is performed even for advanced stages. Accurate staging and preoperative vascular mapping is essential for surgical planning and remains the key factor for successful surgery

Imaging technique/ findings: Sonography is usually the first and most common imaging test to evaluate symptoms of biliary tract disease including suspected gallbladder malignancy. Its role is however limited in the staging of the disease. MDCT is most common technique for precise preoperative evaluation and is performed as biphasic examination, from which multiplanar and 3D volume rendered images are generated to provide complete anatomic information. The preoperative road map of hepatic arterial and venous anatomy helps the surgeon plan the strategy before surgery. MDCT has a reported precision of upto 84% in determining the T stage of malignancy and 85% in foreseeing resectability. MR may yield a sensitivity of upto 100% with regard to biliary and vascular invasion, however has limitations for accuracy of hepatic involvement (67%) and nodal metastases(56%) PET/CT also has promising role as it may detect unsuspected metastases, which might change staging and treatment.

Conclusion/ Teaching points: Biphasic CT with 3-D reconstruction is a comprehensive imaging technique for accurate staging of gall bladder malignancy. Adding MPR images to axial CT data definitely increases the accuracy of local extent thereby aiding the surgeon in determining the optimal therapeutic strategy.
Abstract ID: 274

**ABSTRACT TITLE**: PREVALENCE AND CHARACTERISATION OF VASCULAR COMPLICATIONS IN ACUTE PANCREATITIS

**PRESENTING AUTHOR**: SANYA VERMANI

**CO-AUTHOR**: PROF. SUMAN KOCHHAR, DR REKHA GUPTA, PROF. ATUL SACHDEV, DR PRITAM SINGH

**Author Details**: Dr Sanya Vermani (PGJR)1, Prof. Suman Kochhar (Professor and Head)1, Dr Rekha Gupta (Assistant Professor)1, Prof. Atul Sachdev (Professor and Head)2, Dr Pritam Singh (Assistant Professor)2

1. Department of Radiodiagnosis, Government Medical College and Hospital, Sector 32, Chandigarh.
2. Department of Medicine, Government Medical College and Hospital, Sector 32, Chandigarh.

**Purpose**: To determine the prevalence of vascular changes in patients with acute pancreatitis on CT angiography (CTA).

**Materials and Methods**: 50 consecutive patients with acute pancreatitis underwent contrast enhanced CT (CECT) scan and CT angiography (CTA) of abdomen. The CECT was evaluated for pancreatic and extrapancreatic necrosis and fluid collection(s). On CTA both splanchnic venous and arterial structures were assessed for any abnormalities. These were classified as compression, inflammatory changes, thrombosis, aneurysm and haemorrhage. Association between vascular changes, necrosis, etiology and presence of fluid collections was done.

**Results**: In the study group of 50 patients, vascular complications were seen in 24 patients (48 %). These included venous changes in 21 patients (42 %), including splanchnic vein thrombosis and compression and arterial changes in 14 patients (28 %). Of these, only venous changes were seen in 10 patients, only arterial in 3 and both in 11. Vascular changes were exclusively seen in acute necrotic pancreatitis (ANP). They were seen more in alcoholic ANP compared to gall stone ANP (p value < 0.05) and more in patients having fluid collections. Thus vascular abnormalities are relatively common in patients of acute pancreatitis, splanchnic vein thrombosis being most common.

**Conclusion**: Vascular changes on CTA are frequently seen in patients of acute pancreatitis having Acute Necrotic Pancreatitis. A significant association was seen between vascular changes and acute necrotic pancreatitis due to alcohol etiology compared to ANP due to gall stones. The vascular changes were also observed more in the presence of fluid collections.

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Abstract ID: 285

**Title**: MDCT in pericardial pseudocyst formation.

**Topic**: Hepato-pancreatico-biliary Imaging

**Learning Objectives**: To know MDCT appearances in case of pericardial pseudocyst formation.

**Background**: Pancreatitis is frequent painful condition of abdomen. It is frequently complicated by pancreatic necrosis and pseudocyst formations with accumulation of pancreatic fluids and inflammatory tissue. Extension of pancreatic pseudocyst in thoracic cavity is rare. Pseudocyst formations in mediastinum reported but extension of pseudocyst of pancreas into pericardial cavity is rare.
Imaging findings: We report a case of pancreatic pseudocyst formation in a 26-year-old man with pancreatitis. A multi-loculated hypoattenuated collection was seen arising from the pancreatic body and tail and passing superiorly in the upper abdomen. It then passed through the diaphragmatic hiatus into the posterior mediastinum and then to the pericardial cavity. Signs of pancreatitis and splenic vein thrombosis with splenic hilar region multiple collateral vessel formation were also seen.

Sonography guided catheter drainage of the pericardial cyst was done. Other anti-inflammatory drugs and antibiotics were given.

Post-treatment 1-month follow-up CT scan showed complete resolution of the pericardial and abdominal cyst. Minimal peripancreatic inflammatory changes were persistent. Peri-splenic varices were persistent. Pancreas body and tail showed reduced contrast uptake.

Conclusions: Pericardial pseudocyst formation is a very rare complication of pancreatitis. Hardly less than 20 cases are reported in English literature, though incidence of pancreatitis is very high. Trauma and dialysis are other unusual causes of pericardial pseudocyst formations. Treatment is usually by percutaneous or endoscopic drainage with other supportive treatment. Cardiac tamponade is reported in some cases as a complication.

Disclosures: Nothing to disclose for author.
• Infected necrosis

Vascular Complications:
• Splenic vein thrombosis
• Mesentric thrombosis
• Pseudoaneurysm of splenic artery

Others:
• Pleural effusion
• Ascites

Conclusion: Imaging plays a central role in the confirmation of clinical diagnosis of acute pancreatitis, when clinical signs and lab investigations are uncertain and also helps in establishing a cause, grading the severity and the extent of involvement of pancreas and surrounding tissues. It also helps in early detection of complications facilitating their prompt management and hence decreasing morbidity and mortality.

Abstract ID: 351

ABSTRACT TITLE: A CASE OF CONGENITAL HEPATIC FIBROSIS
PRESENTING AUTHOR: ANISH N
CO-AUTHOR: DR. SANJIVANEE INGOLE

Learning Objectives:
* Imaging findings in congenital hepatic fibrosis
* To evaluate a 28 year old female, with H/o abdominal pain and vomiting for 3 months, past h/o jaundice at 5 yrs of age and hepatomegaly on examination.

Background: Congenital hepatic fibrosis (CHF) is a rare autosomal recessive disorder that belongs to fibropolycystic group of diseases. It occurs due to ductal plate malformations of interlobular bile ducts. Adult presentation is quite rare.

Materials and method: Ultrasound abdomen was done initially followed by CT and MR abdomen with MRCP.

Findings: On USG Liver appeared heterogenous with multiple echogenic foci representing numerous tiny cysts along the intrahepatic biliary radicles.

On CT AND MR liver morphologic changes, associated ductal plate abnormalities, bilateral enlarged kidneys, splenomegaly, portal vein thrombosis with recanalized umbilical vein

Conclusion: The clinical manifestation of congenital hepatic fibrosis is nonspecific, which makes the diagnosis of this disorder extremely difficult. No specific imaging feature is known for the diagnosis of congenital hepatic fibrosis.

Our case findings—liver morphologic changes, associated ductal plate abnormalities, bilateral enlarged kidneys, splenomegaly, portal vein thrombosis with recanalized umbilical vein favours CHF. Only a few hundred patients with congenital hepatic fibrosis have been reported.
Imaging studies could play a crucial role in the diagnosis of this disorder

References:

Abstract ID: 357

ABSTRACT TITLE: THINK VASCULAR”: INTRAHEPATIC PORTOSYSTEMIC SHUNTS PRESENTING AS HEPATIC LESIONS

PRESENTING AUTHOR: A GULATI

CO-AUTHOR: N KALRA

Learning Objectives: To describe the salient imaging findings of incidentally discovered intrahepatic port systemic shunts

Background: Spontaneous intrahepatic portosystemic venous shunts within the hepatic parenchyma are rare disorders that describe abnormal connections between branches of the portal vein and systemic veins. Recognized predisposing factors including cirrhosis and trauma are present only in minority of patients and majority appear to be congenital. These may be seen incidentally on imaging studies performed for other unrelated reasons.

Many patients are clinically asymptomatic, but some develop hepatic encephalopathy. Although the presence of portosystemic shunt is considered abnormal in all cases, it has been demonstrated that shunt ratios of less than 24%–30% do not cause liver encephalopathy. In symptomatic patients, these may be treated surgically or by interventional procedures

Imaging findings: We report two cases of intra hepatic veno-venous shunts, both of which were clinically asymptomatic and presented with nonspecific complaints.

In one patient, MRI showed tubular structures (flow voids) on axial and coronal GRE sequence, with communication of these abnormal bunch of vessels with the hepatic vein and branch portal vein. The findings were confirmed on axial post contrast T1 weighted sequence which showed enhancement of these vessels in the late arterial phase persisting in the venous phase.

Another patient on sonography revealed focal anechoic lesion in liver which showed color filling on Doppler and communication with rt hepatic vein. MRI was also performed which confirmed communication of this lesion with branches of the portal vein and right hepatic vein

Conclusion and/or Teaching points: Intrahepatic portal venous shunts are uncommon hepatic vascular anomalies that are often not associated with manifestations of liver disease or symptoms.
Radiologists should be familiar with the imaging features of this vascular anomaly and aid in making an accurate diagnosis and guide subsequent management.

**Abstract ID: 372**

**ABSTRACT TITLE**: ROLE OF MAGNETIC RESONANCE IMAGING IN DIAGNOSIS AND DIFFERENTIATION OF VARIOUS CYSTIC LESIONS OF PANCREAS.

**PRESENTING AUTHOR**: NISHANT PATEL

**CO-AUTHOR**: DR. ASUTOSH DAVE, DR. NIKUNJ DESAI.

**Introduction**: Cystic pancreatic lesions are currently discovered at higher rate, hence adequate characterization of these lesions by the radiologist is important in guiding management.

**Aim of the work**: Is to identify the role of MRI in characterization of cystic pancreatic lesions.

**Patients and Methods**: Thirty patients with suspected cystic lesions of the pancreas were examined by MRI using 1.5 T machines including conventional MRI sequences, dynamic contrast enhanced imaging, DWI sequence.

**Results**: The study included 30 patients (12 males and 18 females) with their age ranging from 16 to 88 years (mean age 55 years), MRI analysis of the cyst contents and communication with ductal system were used to characterize different cyst types, amongst these patients we found serous cystadenoma in five patients, mucinous cystadenoma in seven patients, mucinous cystadenocarcinoma in one patient, branch type Intraductal papillary mucinous neoplasms (IPMN) in seven patients, Mixed IPMN in two patients. Cystic neuroendocrine tumors (CNET) in three patients. Solid cystic pancreatic neoplasm (SPN) in two patients. Pseudocyst in one patient and walled off necrosis (WON) in two patients. Pathological assessment of the lesions was done whenever indicated.

**Conclusions**: MRI with its superior soft tissue resolution is of value in characterization of different cystic pancreatic lesions helping to reach the correct diagnosis.

**Abstract ID: 432**

**ABSTRACT TITLE**: PANCREATIC LIPOMATOSIS AND DIABETES MELLITUS – MDCT EVALUATION AND CORRELATION

**PRESENTING AUTHOR**: PUNEET GUPTA

**CO-AUTHOR**: DR. RAJESH SHARMA, DR. MANIK MAHAJAN

**Purpose**: Fatty replacement is a common condition involving the pancreas. Small focal fatty deposits in pancreas are relatively insignificant; however, excessive fat has a pathologic significance and is commonly associated with marked reduction in exocrine function of pancreas. The objective of this study was to evaluate the incidence of pancreatic lipomatosis and its association with diabetes mellitus.

**Methods and Materials**: Multi-Detector Computed Tomography (MDCT) scans of 270 consecutive patients who underwent abdominal examination during a period of 1 year at a tertiary care centre were retrospectively reviewed. Pancreatic lipomatosis was evaluated in all the patients and their association with Type 2 diabetes mellitus was analyzed.
Results: Among 270 patients, 155 were males & 115 were females. Pancreatic lipomatosis was seen in 8 patients with incidence of 2.96%. Among the two types, even type of pancreatic lipomatosis was seen in 2 cases and uneven type in 6 cases. In 4 out of 6 (66.7%) patients, the uneven fatty infiltration was of type 1 while in 2 out of 6 (33.3%) patients, type 2 pancreatic lipomatosis was seen. Diabetes mellitus was seen in 14 patients out of 270. Pancreatic lipomatosis was seen in 6 out of 14 diabetic patients (42.8%). Significant correlation was established between pancreatic lipomatosis and Type 2 diabetes mellitus (p<0.0001).

Conclusion: Pancreatic lipomatosis is often an asymptomatic and incidental finding in MDCT with incidence of 2.96 % and significant correlation exists between pancreatic lipomatosis and Type 2 diabetes mellitus.

Abstract ID: 450

ABSTRACT TITLE : INTRABILIARY RUPTURE OF HYDATID CYST: A RARE CAUSE OF OBSTRUCTIVE JAUNDICE

PRESENTING AUTHOR : JOEL MACHADO
CO-AUTHOR : DR. KARTHIK SHYAM, DR.BABU PHILIP

Learning Objectives:
• To review the clinical features and classical imaging findings associated with black bone disease
• To review the atypical presentation of the disease
• To review the radiological staging of black bone disease

Background: Alkaptonuria (black bone disease), a rare inborn metabolic disorder first described by Sir Archibald Garrod in 1901, occurs due to mutation in the HGO gene on chromosome 3q, leading to defective metabolism of homogentisic acid. [1] It is the first disease in humans to confirm the principles of Mendelian autosomal recessive inheritance. The worldwide prevalence is 1 among 1 million births [2]. As homogentisic acid oxidase enzyme is deficient in alkaptonuria patients, there is an accumulation of homogentisic acid in the blood and an excessive accumulation of homogentisic acid in urine that turns dark on standing. As oxidized polymer of homogentisic acid gets deposited in the soft tissues, tendons, cartilages, large joints and intervertebral discs space, the affected tissues turn black with severe spondyloarthropathy and osteoarthritis.[2]

Imaging findings: Characteristic radiological findings include vertebral disc calcification, vacuum phenomenon, chondrocalcinosis, subchondral cysts and osteoarthritis of multiple joints in young adults.

Plain radiographs have a limited role in diagnosing early tendonitis, but ultrasound examination can detect early tendonitis features like calcification and tendon thickening [9]. Ochronosis usually affects the dorsolumbar spine and typically spares the cervical spine, unlike in atypical presentation. Large posterior disc extrusions causing significant canal stenosis and cauda equina compression is also unusual in ochronosis.

Conclusion: It is important to be aware of these atypical presentations of ochronosis in addition to the classical imaging of black bone disease.
Abstract ID: 468

**ABSTRACT TITLE**: TRANSARTERIAL CHEMOEMBOLIZATION (TACE) FOR HEPATOCELLULAR CARCINOMA

**PRESENTING AUTHOR**: SATHAGURUNATH P A

**CO-AUTHOR**: (None)

Hepatocellular carcinoma (HCC) is the most common malignant tumor of the liver. Although several therapeutic options have been advocated, transcatheter arterial chemoembolization (TACE) in particular has been widely performed in the treatment of HCC. Still, hepatic arteriography and portography are mandatory for evaluation of (a) the resectability and multiplicity of HCCs and (b) the hemodynamic status of the portal vein. Thereafter, TACE can be considered as the initial therapeutic modality. The possibility of nontarget organ complications during TACE (eg, ischemic cholecystitis, splenic infarction, gastrointestinal mucosal lesions, pulmonary embolism and infarction, spinal cord injury, ischemic skin lesions) should be taken seriously. A thorough understanding of the anatomic variants and hemodynamic features of the hepatic artery and portal vein is the first step in performing effective and safe TACE for HCC. TACE was shown to improve median survival from 16 to 20 months. TACE clearly has a critical role in the treatment of HCC as a stand-alone or combination therapy in each stage of HCC. Diverse treatment modalities should be used for patients with HCC and a better patient stratification system should be developed to select the best candidates for TACE.

Abstract ID: 475

**ABSTRACT TITLE**: TRIPHASIC CECT EVALUATION OF LIVER LESIONS: THE ART OF GETTING IT RIGHT AND IMPLICATIONS

**PRESENTING AUTHOR**: MANISH KUMAR

**CO-AUTHOR**: VISHAL JINDAL, JUNIOR RESIDENT

**Background**: Focal liver lesions are one of the common presentation to radiologists and their exact etiologic diagnosis is often challenging. The liver lesions can be detected incidentally or they may be evaluated for hepato-biliary symptoms. The main diagnostic dilemma is the differentiation of sinister lesions from benign ones as their clinical picture and CT appearances are often misleading. Triphasic CECT is one of the diagnostic modalities in evaluation of liver lesions which often suggests the exact etiologic diagnosis based on specific enhancement patterns in different phases.

**Aims & Objectives**:
1) To device a protocol for evaluation of liver lesions on 16 slice scanner.
2) To develop a pattern recognition approach for identification of specific liver lesions.

**Material and Methods**: A prospective study done in Radiodiagnosis department, Rohilkhand medical and hospital, Bareilly from August 2017 to August 2018. Patients with focal hepatic lesions diagnosed on ultrasound referred to the radiology department for a triphasic CECT of the liver were included. Some of the patients who had incidental liver lesions on CT performed for some other indications were also included in the study.

**Results & Conclusions**: Based on our experience with a 16 slice scanner, we devised protocols using the bolus tracking as well as “timed technique” for evaluation of the focal hepatic lesions using a bolus tracking technique. Most of the focal liver lesions, both benign and malignant, were adequately characterized using
the approach which we devised. Also, Specific imaging appearances for diagnosis of particular liver lesions were noted. Results were compared to histopathology, wherever it was possible.

References:

Abstract ID: 482

ABSTRACT TITLE: MRCP EVALUATION OF PANCREATICOBILIARY DISEASES
PRESENTING AUTHOR: ASHRAF NADAF
CO-AUTHOR: DR. C P NANJARAJ, DR. N L RAJENDRA KUMAR, DR. M R SHASHIKUMAR

Purpose:
1. To describe the features of pancreatico-biliary diseases on MRCP.
2. Outlining the extent of pancreatico-biliary diseases in terms of involvement of adjacent structures, vessels and soft tissues.
3. To help in deciding the further course of management.
4. To identify the anatomical variants.

Materials and Methods:
Source of data - Patients presenting with features suggestive of pancreatico-biliary diseases
Duration - From January 2017 to August 2018.
Sample Size: 50
Type of Study: Descriptive study.

Results:
1) Majority of patients in study population were males (58%) while 42% were females.
2) Majority of pathologies observed were benign 38 (76%). Most common benign disorder observed was cholelithiasis with choledocholithiasis (20%) followed by acute pancreatitis (12%).
3) Majority of CBD strictures were benign and commonly seen in females (8%).
4) Choledochal cyst was commonly detected in 1st and 2nd decade of life.
5) Malignant pathologies were observed in 24% patients. Most common malignant pathology seen was Cholangiocarcinoma (12%).

Conclusion:
1. MRCP is non-invasive, non-ionizing imaging method for detection and characterization of pancreatico-biliary pathologies.
2. MRCP is able to detect exact location and cause of biliary obstruction.
3. Malignant strictures are differentiated from benign strictures by specific MR imaging findings. 4. Very useful tool in case of obese patients and children.
4. MRCP with additional sequences (pre- and post-contrast T1W) proved to be a sensitive, non-invasive imaging modality that helps in detection, characterization, evaluation of the pancreatico-biliary diseases.

**Abstract ID: 495**

**ABSTRACT TITLE:** CROSS SECTIONAL STUDY ON CHARACTERISATION OF FOCAL HEPATIC LESIONS WITH MRI USING MULTIPLE SEQUENCES

**PRESENTING AUTHOR:** SRIHARI RAAVI

**CO-AUTHOR:** DR.FRANCIS.G DMRD,DNB., DR.MADAN.R MD. DR.MURALI.K MD,PDCC.

MRI provides comprehensive and highly accurate diagnostic information, with the additional advantage of lack of harmful ionizing radiation. Extracellular MR contrast agent (gadodiamide) is used in this study to characterise the focal liver lesions. Combination of axial T2, coronal T2, axial FIESTA, DWI, precontrast LAVA, post contrast LAVA (dynamic) is used as a series of sequences.

**Objective:** To characterise the focal hepatic lesions with multiple sequences including DWI. To study the enhancement pattern of various lesions on dynamic contrast sequences and the role of T2 weighted imaging in the characterisation of focal hepatic lesions. Laboratory, clinical and histopathological data was taken as standard of reference.

**Materials and Methods:** Study was performed on 1.5T MRI. Images were analysed for ADC maps and ADC values were obtained for each case, ADC Mean and Standard deviation for each variety of lesions was calculated. Quantification of signal intensities of various lesions was done in the precontrast, arterial, portal and equilibrium phases for which mean and standard deviation was calculated. Lesions were also characterised based on T2 signal intensity.

**Results:** Most were 61-70 years with male predominance. Majority were HCCs (32%), metastases (27%). Remaining were haemangiomas (12%), simple hepatic cysts (14%), FNH (7%), IHC (3%), Abscess (4%), NHL (1%). Mean ADC value of HCC was $1.10467 \pm 0.100077$, statistically significant. Quantification of signal intensities were significant for HCC & haemangiomas. Histopathology was done in 15 cases correlating with our diagnosis except one case which proved to be NHL.

**Conclusion:** There is overlap in the ADC values of various malignant lesions like HCC & IHC, but it is possible to differentiate benign and malignant lesions by using cut-off of $1.70 \times 10^{-3}$ mm$^2$/sec excluding abscess. The quantitative evaluations of MR signal intensity can improve differential diagnosis of focal liver lesions. With combination of multiple sequences liver lesions can be characterised accurately. Enhancement pattern of lesions such as HCC, haemangiomas is characteristic and can be diagnosed with confidence on MRI.
Abstract ID: 521

ABSTRACT TITLE: AN INTERESTING CASE OF SOLID PSEUDOPAPILLARY EPITHELIAL NEOPLASM OF PANCREAS (SPEN) IN A PREGNANT WOMAN.

PRESENTING AUTHOR: ATHIRA P M
CO-AUTHOR: DR. GAURAV YADAV, DR. RACHEGOWDA N

Learning Objectives: To study the imaging features of SPEN on ultrasonography, CT and MRI.

Background:
- 19 Y/F came for routine antenatal scan; incidental note of pancreatic lesion was made. Underwent spontaneous abortion at 5 months and further work up of the lesion was done.
- Philips Epiq 5G ultrasonography machine, 1.5 Tesla MRI scanner (SIEMENS® MAGNETOM AVANTO) and 16 slice Multidetector CT (SIEMENS® SOMATOM EMOTION 16) were used for diagnosis.

Imaging Findings:

USG: Well defined, solid-cystic lesion with papillary projections in the head of the pancreas with vascularity along the solid components abutting gall bladder, liver, right kidney, portal vein and IVC. Prominent MPD.

CT: Well-defined, heterogeneously enhancing solid-cystic mass with few enhancing thin intrinsic septations in the head of pancreas. No infiltration into the surrounding structures, no filling defect in portal vein or IVC.

MRI: T1 and T2 heterogenous solid-cystic lesion in the head of the pancreas with restricted diffusion of solid components. Rest of the findings consistent with CT.

Features consistent with neoplastic etiology, likely SPEN.

Conclusion: Imaging features in USG, CT and MRI can all help in pointing to the diagnosis of SPEN when correlated with the age of presentation. Case was histologically confirmed.

Abstract ID: 550

ABSTRACT TITLE: IMAGING REVIEW OF CONGENITAL PANCREATICO-BILIARY PATHOLOGIES

PRESENTING AUTHOR: AMMAR S MODI
CO-AUTHOR: DR.GAGANDEEP SINGH SALUJA, DR.SACHIN KHATAKALLE, DR.AKASH RAMTEKE

Learning objectives: Congenital pancreatic and biliary ductal anomalies are frequently encountered at routine imaging. These conditions are generally asymptomatic but may present themselves with associated conditions ranging from benign abdominal pain to carcinomas. Recent developments in imaging techniques in CT/MRI have improved the clinical diagnosis and management of congenital pancreatico-biliary ductal anomalies and the associated complications. The purpose of this educational exhibit is to illustrate the spectrum of congenital pancretico-biliary ductal anomalies using cross sectional imaging.

Background: Congenital anomalies and normal variants involving the biliary tract include choledochal cysts, aberrant cystic duct insertion, aberrant or accessory biliary ducts, anomalous junction of the common bile duct with the pancreatic duct and choledochal web. Congenital anomalies of pancreatic duct include pancreas divisum, annular pancreas and variations of pancreatic ducts. Recognition of these anomalies and normal variants may avoid diagnostic errors, aid in surgical planning, and prevent inadvertent ductal injury.
**Imaging findings:** Choledochal cyst presents as cystic dilatation or focal outpunching of extra/intra hepatic ducts.

Drainage of the RPD into the LHD before its confluence with the RAD is the most common anatomic variant of the biliary system.

In pancreatic divisum the dorsal and the ventral pancreatic duct fail to unite which on MRCP shows classic crossing over of CBD and PD.

Annular pancreas is a congenital anomaly in which the head of the pancreas completely encircles the duodenum in its second part which can cause its obstruction.

Choledochal web is a thin mucosal membrane causing obstructive jaundice.

**Conclusion:** Congenital anomalies of the pancreatico-biliary system is associated with increased prevalence of cholangitis, gallstones, cholangio-carcinoma, and pancreatitis. Symptomatic patients may undergo extensive diagnostic evaluation or inappropriate treatment before the correct diagnosis is made. So an awareness of the common congenital anomalies and their Imaging appearance is crucial in patient management.

**Abstract ID: 570**

**ABSTRACT TITLE:** DECODING OF A CRITICAL AREA - MAGNETIC RESONANCE CHOLANGIOPANCREATOGRAPHIC EVALUATION OF COMMON AND RARE VARIANTS OF THE BILIARY TREE

**PRESENTING AUTHOR:** CHANDANA UDAYAKUMAR

**CO-AUTHOR:** DR VEDARAJU K S, DR ARUL T DASAN

**Learning Objectives:**

- To recognize the various common and uncommon anatomic variations of the biliary tree on magnetic resonance cholangiopancreatography.
- To highlight the clinical significance of anatomic variations of intrahepatic and extrahepatic biliary tree.

**Background:** Magnetic resonance cholangiopancreatography is a reliable and non invasive imaging method for evaluating the biliary anatomy and its variations. Common hepatic duct variations have been classified by Yoshida into seven groups. Knowledge of these variations is important before performing any hepatobiliary procedures and surgeries like liver resection and laparoscopic cholecystectomy.

**Imaging Findings:**

Union of the right anterior segmental duct and the right posterior segmental duct to form a right intrahepatic duct.

Union of the right anterior segmental duct, right posterior segmental duct and left intrahepatic duct to form a trifurcation.

Right anterior segmental duct draining directly into the left intrahepatic duct.

Right posterior segmental duct draining into common hepatic duct.

Union of the right posterior segmental duct, left superior segmental duct and left inferior segmental duct to form a trifurcation.
The left inferior segmental duct draining into the common hepatic duct.

Aberrant and accessory bile ducts.

Cystic duct variations.

**Conclusion**: Preoperative imaging of the biliary branching pattern remains the only method to diagnose and treat problems posed by variations in biliary anatomy. Inadequate characterization of the biliary anatomy can cause peri and postoperative complications that can adversely affect the prognosis.

**Abstract ID: 602**

**ABSTRACT TITLE**: CHARACTERIZING FOCAL LIVER LESIONS BY CONTRAST ENHANCED ULTRASOUND USING LIVER IMAGING REPORTING AND DATA SYSTEM

**PRESENTING AUTHOR**: SHASHI BALA PAUL

**CO-AUTHOR**: EKTA DHAMIJA, DIXIT CHAUHAN

**Learning objective**: Use of contrast enhanced ultrasound (CEUS) based Liver imaging reporting and data system (LI-RADS) for characterizing focal liver lesions (FLL)

**Background**: CEUS LI-RADS is a unique diagnostic algorithm introduced for standardized reporting of FLL in patients of cirrhosis. We present the various CEUS LI-RADS categories of FLL based on their different diagnostic features exhibited on CEUS.

**CEUS Findings**: FLL visible on pre-contrast ultrasound in cirrhosis patients were evaluated in three vascular phases by CEUS using SonoVue contrast. Major and ancillary features were noted and LI-RADS categories were allotted based on different enhancement patterns of FLL. CEUS LR-NC (non-categorizable) was a poor quality study/technical failure. CEUS LR-1 (definitely benign), was FLL hyperenhancing in delayed phase (DP) or nonenhancing in all phases, like hemangiomas, hepatic cysts or focal fat deposition. CEUS LR-2 (probably benign), isoenhancing nodule of any size/≤10mm, like regenerative nodule or focal fat sparing/deposition. CEUS LR-3 (intermediate probability malignancy), FLL not meeting criteria of CEUS LR-1/2/3 or higher.

CEUS LR-M, (probably or definitely malignant, not necessarily HCC), showing early arterial phase (APHE) and early washout, like Intrahepatic cholangiocarcinoma or combined hepato-cholangiocarcinoma. CEUS LR-4 (probably HCC), size ≤10 mm, depicting APHE, no/mild washout or>20mm with late washout. CEUS LR-5 (definitely HCC), showing APHE with late, mild washout, size ≥10 mm. Tumor within the portal vein lumen showing APHE and washout was CEUS LR-TIV.

**Conclusion**: CEUS LI-RADS is useful for standardized reporting of FLL in patients of cirrhosis. Its use would facilitate integration of CEUS into the multimodality approach for managing these patients.
Abstract ID: 606

ABSTRACT TITLE: CLINICO-RADIOLOGICAL PROFILE OF NON-ALCOHOLIC FATTY LIVER DISEASE RELATED HEPATOCELLULAR CARCINOMA

PRESENTING AUTHOR: SHASHI BALA PAUL

CO-AUTHOR: NEETI NADDA, EKTA DHAMIJA,, VISHNU PRASAD, AKHIL BABY, SHIVANAND GAMANAGATTI,, SHALIMAR, ,SUBRAT K ACHARYA

Learning objective: To describe the clinico-radiological profile of Non-alcoholic fatty liver disease (NAFLD) related Hepatocellular carcinoma (HCC)

Background: Hepatitis B or C have been the major risk factors for developing hepatocellular carcinoma (HCC), Last few decades have witnessed the emergence of non-viral causes of HCC, the most important being non-alcoholic fatty liver disease (NAFLD), which is increasing alarmingly in South Asia due to the epidemic of obesity and metabolic syndrome. The spectrum ranges from NAFLD to nonalcoholic steatohepatitis (NASH), cirrhosis, and hepatocellular carcinoma (HCC). Familiarity with the entity of NAFLD related HCC is therefore much needed.

Aim: To illustrate the clinical and imaging profile of NAFLD related HCC

Clinical and imaging profile: We describe findings of 48 NAFLD-HCC patients (58 HCCs) diagnosed at our hospital. Mean age of these patients was 62.3 years, 91.7% were males, Child’s A 71% and BCLC B stage HCC 45.8% with elevated AFP in 62.5%. Diabetes and Hypertension was present in 81.3% & 58.3% respectively, body mass index (BMI) was >25 in 60% and 83.3% had cirrhosis. On multiphasic CT, HCC mean size was 6.3+3.9cm, 71% well defined, 46.6% capsulated, 29.3% located peripherally. Arterial enhancement, venous washout (typical pattern) was present in 94% (similar to viral).

Abstract ID: 613

ABSTRACT TITLE: EVALUATION OF CT PERFUSION PARAMETERS IN RELATION TO SEVERITY OF CHRONIC LIVER DISEASE

PRESENTING AUTHOR: SUHAS BASAVAIAH

CO-AUTHOR: RG SOOD, AK TOMAR, BALRAJ SINGH, BRIJ SHARMA

Purpose: Quantify CT hepatic perfusion parameters in patients with chronic liver disease (CLD) to evaluate the correlation with the severity of chronic liver disease.

Materials And Methods: Whole liver contrast enhanced perfusion CT imaging were acquired from 51 clinically proven cases of chronic liver disease using low dose protocol. Controls (n=51) were age and sex matched individuals without liver parenchymal disease. Quantified perfusion parameters included blood flow (BF, ml/min/100g), blood volume (BV, ml/100 g), mean transit time (MTT, sec), time to peak for arterial and portal perfusion (TTP, sec), permeability surface area product (PSA, ml/min/100g), hepatic arterial fraction (HAF, %) and porto-venous fraction (PVF, %). Means of stratified perfusion parameters were correlated with clinical and biochemical grades of CLD severity (on an ordinal scale) and the Pearson’s/Spearman’s correlation coefficients were calculated depending on the distribution of data (normal/non-normal).

Results: Whole liver CT perfusion imaging revealed significantly reduced blood volume, blood flow and portal vein perfusion percentage in all the patients. Mean transit time, time to peak enhancement and hepatic arterial fraction were significantly increased in all the patients with CLD (p = < 0.001). Mean BF,
BV and PVP were significantly decreased in decompensated cirrhotics, whereas mean MTT, PSA and HAF were increased in the same group of patients \((p < 0.001)\). The stratified means of CT hepatic perfusion parameters among ascending classes of Child -Pugh score and increasing grades of MELD score showed strong correlation \((p < 0.001)\).

**Conclusion:** CT perfusion imaging can accurately depict and quantify microvascular changes in the liver which makes it a very valuable tool in the diagnosis and management of the patients with CLD. It can be utilized to detect smaller hepatoma and dysplastic nodules and thereby has the potential to significantly alter the course of patient’s management.

**Abstract ID: 631**

**ABSTRACT TITLE:** RADIOLOGICAL EVALUATION BY MODIFIED CT SEVERITY INDEX WITH CLINICAL AND BIOCHEMICAL CORRELATION IN CASES OF ACUTE PANCREATITIS – A PROSPECTIVE STUDY

**PRESENTING AUTHOR:** SURAJ GOWDA

**CO-AUTHOR:** DR. KUMAR V., DR. SHRUTHY, DR. N. KUDVA.

**Purpose:** Evaluation of clinically suspected cases of acute pancreatitis by computed tomography with grading according to Modified CT Severity Index and correlation with clinical parameters.

**Materials and Methods:** 50 clinically suspected cases with positive serum biochemistry who were further evaluated with contrast study of the abdomen and proven as acute pancreatitis were included. The severity was scored using the Modified CTSI and was correlated with clinical outcome.

Results: Higher scores on Modified CTSI were associated with presence of abscess formation \((p=0.179)\), pseudocyst formation \((p=0.143)\), local complications \((p=0.143)\) and systemic complications \((p=0.028)\). The sensitivity of Modified CTSI was 100% in the prediction of local and systemic complications with specificity of 43% and 91.8% respectively. The positive predictive value for necessity of ICU admissions was 52.6% with a sensitivity of 76.9%. The severity score also correlated with the duration of ICU stay and total duration of hospital stay.

**Conclusion:** Modified CTSI is an indispensable tool for classifying the patients based on severity and to predict the clinical outcome and has a significant correlation with necessity of ICU admission, duration of ICU stay and total duration of hospital stay. It correlates directly with the development of local and systemic complications and predicts the need for interventions. Therefore evaluation of acute pancreatitis with a contrast study of the abdomen provides a lot more information than mere diagnosis of the condition.

**Abstract ID: 635**

**ABSTRACT TITLE:** RADIOLOGIC SPECTRUM OF CHOLANGIOCARCINOMA

**PRESENTING AUTHOR:** SHWETA R POOJARY

**CO-AUTHOR:** DR VEDARAJU KS, DR ARUL DASAN

**Purpose:** To describe the radiologic findings of intra-and extra-hepatic cholangiocarcinoma

**Materials and Methods:** In this retrospective study, between January and August 2018, the imaging features of 30 patients were reviewed using USG, CT, MRI and MRCP. Statistics were expressed in terms of percentiles.
Results: Of the 30 patients, 21 patients were diagnosed with extrahepatic and 9 with the intrahepatic form. The cases were further categorized into mass forming (20), periductal (7) and infiltrating (3). The intrahepatic mass forming types were presented on USG, CT and MRI as a well-defined large homogeneous mass with irregular borders with frequent satellite nodules. On CECT, thin or thick, rim-like enhancement was frequently seen around the periphery of the tumor on arterial phase and gradual centripetal enhancement on delayed phase images. The extrahepatic form presented with a small nodule on CT and MRI. The intrahepatic periductal infiltrating cases were of the hilar type, displaying non-union of left and right hepatic ducts without a visible thickened wall. The extrahepatic variety on CECT showed the thickened bile ducts as an enhancing spot. On cholangiography, the lumen was severely narrowed. The intraductal variety presented as a sessile cast-like intraductal mass with clear outer margin on CT and USG and irregularity of the ductal wall on MRCP. In all the cases, proximal bile duct dilatation was noted.

Conclusion: Radiologic manifestations of cholangiocarcinoma are complex and diverse in growth patterns and locations. Hence, a sound radiologic knowledge is essential in the correct diagnosis, differentiation and planning of appropriate treatment.

Abstract ID: 644
ABSTRACT TITLE: MODIFIED CT SEVERITY INDEX AND ITS RELEVANCE IN CLINICAL OUTCOME
PRESENTING AUTHOR: RAHUL KARTHIK L
CO-AUTHOR: DR. ASHVINI KUMAR, DR. NISHITH SHETTY

Purpose: To assess the prognostic value of modified CT severity index in evaluating acute pancreatitis.

Materials and Methods: This is a retrospective study of 51 patients referred to the department of radiodiagnosis with clinical diagnosis of acute pancreatitis. MDCT was done using 16 slice GE BRIVO MDCT scanner. The severity of pancreatitis was scored using modified CT severity index and the clinical outcome in each case was assessed by the following parameters: duration of hospital stay, requiring critical care, evidence of infection, need for intervention, evidence of organ failure and death. Statistical analysis was done using SPSS version 22 and MS excel. Chi-square test was used as test of significance for qualitative data and ANOVA (Analysis of Variance) to identify the mean difference between more than two groups for quantitative data. Continuous data was represented as mean and standard deviation.

Results: Out of 51 patients, 42 were male and 9 were female. Mean age was 45.05 years. On the basis of modified CTSI, 8 (15.7%) of the 51 patients were characterized as mild, 25 (49%) as moderate and 18 (35.3%) as severe pancreatitis. The mean hospital stay was 2.8 days in mild, 8.4 days in moderate and 17.8 days in severe cases. Out of the 18 severe cases, 16 (88.9%) required critical care, 7 (38.9%) had infection, 16 (88.9%) needed intervention, 11 (61.1%) had organ failure and death occurred in 3 (16.7%) patients.

Conclusion: Modified CT severity index is a simple and accurate scoring tool to assess the severity of acute pancreatitis and has high statistical correlation with prognostic outcome of the patient with respect to duration of hospital stay, requiring critical care, development of infection.
Abstract ID: 652

**ABSTRACT TITLE**: ROLE OF INTERVENTIONAL RADIOLOGY IN PORTAL HYPERTENSION

**PRESENTING AUTHOR**: SATYAPRAVEEN SAMANTULA

**CO-AUTHOR**: DR. G S KEJRIWAL, DR. K ANIL KUMAR, DR. SANGRAM PANDA

**Learning Objectives:**

1. To learn about imaging features of portal hypertension.
2. To discuss the indications and technique of embolisation and TIPS.

**Background**: Portal hypertension is the hemodynamic abnormality characterized by high pressure in the hepatic portal venous circulation associated with the most severe complications of cirrhosis, including ascites, bleeding from gastroesophageal varices, and hepatic encephalopathy. It may be caused by hepatic, pre-hepatic or post-hepatic aetiologies. IR procedures include transjugular intrahepatic portosystemic shunt (TIPS), variceal embolization, splenic artery embolization and balloon-occluded retrograde transvenous obliteration (BRTO).

**Imaging findings/Procedure details**: PH is diagnosed when HVPG is higher than 5 mmHg, clinically significant when HVPG is higher than 10 mmHg and severe when HVPG is above 12 mmHg. HVPG has become a proxy marker in the assessment of treatment response and reduction of risk of liver-related mortality. Since HVPG measurement is invasive, non-invasive methods like elastography are gaining importance. Ultrasound, computed tomography and magnetic resonance imaging may enable diagnosis through identification of complications (varices, splenomegaly, ascites).

Gastric varices are difficult to treat endoscopically. IR alternatives include embolisation of varices, TIPS, BRTO and partial splenic arterial embolisation.

Embolisation of varices may be performed by percutaneous, transjugular-transhepatic, transsplenic route or direct puncture of the stomal varices. A BRTO may be applied in patients with a splenorenal shunt and secondary gastric varices. Partial splenic embolisation may decrease inflow of blood to the portal vein.

In TIPS, side-to-side shunt is created to shunt blood flow from the portal vein (PV) to HV or IVC above the liver using transjugular approach, long needle, balloon angioplasty, and stent-graft. Direct transcaval approach maybe needed in Budd Chiari Syndrome. Lifelong anticoagulation is necessary.

**Conclusion**: Diagnostic radiology plays an important role in validating the aetiology, recognising complications and in planning management. However, Interventional radiology plays a crucial role in both the diagnostic and therapeutic management.

Abstract ID: 663

**ABSTRACT TITLE**: ROLE OF DUAL PHASE MULTI DETECTOR COMPUTED TOMOGRAPHY IN EVALUATION OF FOCAL BENIGN AND MALIGNANT LESIONS OF LIVER.

**PRESENTING AUTHOR**: SNEHA KARWA

**CO-AUTHOR**: DR.DILIP LAKHKAR, DR.SUSHIL KACHEWAR

**Purpose**: To characterize focal liver lesions using contrast enhanced dual phase multi detector computed tomogram by studying the pattern of enhancement of liver lesions in arterial and portal venous phase.
Materials & Methods: Forty-two (42) patients with suspected liver lesions were evaluated with Dual phase Multi detector Computed Tomography (GE Lightspeed 16 slice) in the department of Radio-diagnosis, Dr.Vitthalrao Vikhe Patil Medical College, Ahmednagar.

Results: Out of 42 cases, 22 were metastasis, 7 were HCC, 5 were haemangioma, 3 were cholangiocarcinoma, 3 were hydatid cyst and 2 were abscess.

Conclusion: Dual phase Computed Tomography proved to be a valuable tool in the diagnosis of focal liver lesions by studying the pattern of enhancement in arterial and porto-venous phases and helped in better characterization of the lesion.

Lesions such as hepatocellular carcinoma, vascular metastasis which derive blood supply from hepatic artery are better detected in arterial phase.

Multiphase Computed tomography was very helpful in detection of hemangioma which shows characteristic peripheral globular enhancement with progressive centripetal filling in venous and delayed phases.

Dual phase scanning using MDCT is easily achievable for imaging liver which helped in characterizing focal hepatic lesions better in two phases instead of single phase.

Abstract ID: 684

ABSTRACT TITLE: “MAGNETIC RESONANCE IMAGING IN FOCAL LIVER LESIONS WITH PATHOLOGICAL CORRELATION”

PRESENTING AUTHOR: DIVYA GULLIPALLI

CO-AUTHOR: DR. V.KARUNA, ASSISTANT PROFESSOR DR. B.SESHULAKSHMI, PROFESSOR DR. D.ANKAMMA RAO, PROFESSOR

Objectives:
1. To assess the lesion characterization potential of MRI by evaluating unenhanced and dynamic gadolinium enhanced sequences.
2. Histopathological correlation of the lesions to explain the major MRI findings.
3. Assessment of the lesions by diffusion weighted imaging and investigating the role of b value in differentiating malignant and benign lesions.

Materials and methods: The study was done on 42 patients where contrast was given in 39. Focal liver lesions were analysed based on clinical findings, laboratory investigations and MR imaging. Tissue diagnosis (FNAC/ Biopsy).

Results and Conclusion: MRI features of 42 patients with focal liver lesions were studied. Of the 42 cases, 24 lesions were benign and 18 lesions were malignant. The mean age group ranged from 18 to 74 years.

The most common benign lesion encountered was liver abscess followed by haemangiomas and most common malignant lesion was metastases.

Contrast enhancement was able to better delineate the cases. Specific pattern of enhancement is typical of certain lesions as homogenous early arterial phase enhancement for HCC and ring enhancement for metastases. Haemangiomas show peripheral puddling and delayed central enhancement.
DWI can be used as an additional tool in differentiating benign and malignant lesions. ADC value using a cutoff of $1.43 \times 10^{-3}$ sec/mm² is a useful adjunct for determining benign cystic lesions from malignant lesions.

MRI was able to predict diagnosis in 38 of the 42 tumours. It could suggest the nature of all lesions in benign cysts, haemangiomas, FNH and metastases. But it was not possible to achieve a specific diagnosis in two early abscesses, one multifocal HCC and one case of regenerative nodules. This accounted for a detection rate of 90%. Pre contrast T1 GRE, T2, in phase and out phase, DWI and gadolinium enhanced T1 images provide accurate characterization of lesions. The varied appearance on these sequences is the result of the dominant histological composition of the lesions.

Learning Objectives: To describe and illustrate the ultrasonographic (USG) and colour doppler (CD) features of Budd Chiari syndrome (BCS).

Background: BCS is a not so frequent cause of post-sinusoidal liver cirrhosis and portal hypertension due to hepatic venous outflow obstruction occurring at any level from the hepatic venules to the entry of the IVC in the Right atrium.

The diagnosis of BCS cannot be made on clinical symptomatology alone. Because of inhomogeneous distribution of disease in the liver, normal biopsy findings do not exclude this entity. Hence, radiology plays an important role in its diagnostic evaluation and treatment follow-up. USG is one of the earliest and noninvasive investigations performed for evaluation of these patients.

The various direct and indirect manifestations of BCS on Gray Scale USG (GSUS) and CD can help diagnose, assess chronicity of the disease, look for its complications providing an opportunity for further management and intervention; and follow-up after treatment.

Imaging findings: GSUS and CD shows a spectrum of findings which include caudate lobe hypertrophy, prominent caudate lobe vein (>3mm), tortuous intrahepatic porto-venous collaterals, thrombosis of hepatic vein (HV), osteal narrowing of HV, thrombosis of retrohepatic IVC, IVC narrowing or membrane formation.

Complications like liver cirrhosis, signs of portal hypertension like ascites, splenomegaly, and doppler changes in portal vein are also observed in these patients.

Conclusion: This exhibit aims to illustrate the important sonographic findings of BCS as awareness of these findings will help in early diagnosis and appropriate treatment of these patients.
Stents and endoprostheses are used with increasing frequency not only to reestablish patency in malignant and refractory benign stenoses of the biliary but also to seal perforations. This minimally invasive approach, carried out radiologically allows the narrowed viscus lumen to be kept patent, decreasing the obstructive impairment of the hepatobiliary

**Purpose**: The goal of this study was to discuss and show the common complications of biliary stents in patients with benign / malignant stricture as depicted by MDCT patients coming to our set up over a period of 12 months. Major complications include stent misplacement or displacement, bleeding, obstruction, perforation, stent fracture or collapse and infection.

**Materials and Methods**: All the patients coming to the tertiary care institute were evaluated using MDCT immediately in post stent insertion phase or as early as first 30 days after stent placement or in other cases as late (> 30 days) over a span of 12 months. We at our institution, acquired two phases —arterial and venous, to assess the stent by showing the presence and extent of residual or recurring tumor tissue and to identify, at the same time, any regional and distant metastases.

Oral contrast medium was routinely administered. Water contrast medium allows better visualization of the gastrointestinal wall and the stent by providing the best contrast gradient. However, positive contrast medium (i.e., iodine based) may be useful in cases of suspected perforation or fistula because it is easier to identify extraluminal contrast material.

Multiplanar, curved images along with volume-rendering along the stent pathway are useful to show the anatomic relationships of the prosthesis which helped to analyze the position of the stent and detect any fracture or collapse.

**Results and Conclusion**: Awareness and methodical assessment of stents could allow detection of stenting complications if timely identified save the patient from associated morbidity and mortality.

**Aim**:
- To evaluate the solid focal liver lesions by Shear Wave Sonoelastography (SWE).
- To correlate Shear Wave Sonoelastography findings with that of FNAC.

**Materials and Method**: In this cross-sectional study, forty patients referred to Dept. Of Radio diagnosis, JSSMC for abdominal ultrasound with solid focal liver lesions were included. Patients with diffuse liver disease, gross ascites and cystic lesions were excluded. SWE is obtained with use of convex transducer
with qualitative color-coded mapping and quantitative value of elasticity in kilo-Pascal (KPa). Patients were subjected for guided FNAC and results were correlated.

Results: Statistical analysis were obtained with descriptive statistics, Chi-square test, and Unpaired ‘t’ test. Out of 40 cases, 18 were malignant with average elasticity score of 32 KPa whereas 22 were benign lesions with average elasticity score of 12 KPa.

Conclusion: SWE is non-invasive technique of virtual palpation of hepatic lesions with significant accuracy which can be added to the daily routine USG of hepatic lesions.

Abstract ID: 790

ABSTRACT TITLE: IMAGING IN POLYPOIDAL LESIONS OF GALLBLADDER
PRESENTING AUTHOR: KHUSHALI SHAH
CO-AUTHOR: DR ANJANA TRIVEDI

Introduction: Gallbladder polyps are defined as sessile projections of the gallbladder wall into the lumen. They are typically incidentally found at ultrasonography. Management of gallbladder polyps relies on imaging findings and various clinical factors. Potential courses of action range from no further action to open cholecystectomy and lymph node sampling.

Purpose: The differential diagnosis for a polypoid gallbladder mass is wide and includes pseudotumors, as well as benign and malignant tumors. Polyp size, shape, and other ancillary imaging findings, such as a wide base, wall thickening, and coexistent gallstones, are pertinent items to report when gallbladder polyps are discovered. These findings, as well as patient age and risk factors for gallbladder cancer, guide clinical decision making.

Materials and Method: Study was done on 50 patients at pdumc, Rajkot using various radiological investigations.

Results: A total of 50 patients with GB polyps were identified. The mean age was 51.6 years, with a range of 20–93 years. There were men 45% and women 55%. Single polyps were seen in 70% patients, and multiple polyps were seen in 30% patients. Polyp size ranged from 1 to 18 mm, with a mean size of 5.0 mm ± 2.4 (standard deviation). Cholelithiasis was present in (9%). Around 50% were cholesterol polyps, 25% adenomyomatosis, 10% inflammatory polyp, 4% adenoma and remaining were other findings.

Conclusion: Imaging plays a pivotal role in evaluation of gallbladder polyps, not only in determining lesion size but also in characterization of polypoidal lesions of gallbladder.
ABSTRACT TITLE: COMPLICATIONS OF ACUTE AND CHRONIC PANCREATITIS IN 585 PATIENTS AT A TERTIARY CARE HOSPITAL OF SOUTH INDIA

PRESENTING AUTHOR: SANJIVA N HULMANI
CO-AUTHOR: DR. RAJAGOPAL K V, DR. LAKSHMIKANTH H K

Purpose: To assess the CT imaging findings and complications of acute and chronic pancreatitis in a tertiary care hospital.

Based on large number of cases collected, we propose to enumerate the spectrum of complications and their prevalence in acute and chronic pancreatitis.

Materials and Methods: CECT images of confirmed cases of pancreatitis over the past 5 years were retrospectively retrieved from database of our tertiary care hospital and analysed for primary imaging findings and complications.

Results: 585 pancreatitis cases had undergone CECT abdomen and pelvis, out of which 303 cases had acute pancreatitis [interstitial-edematous-pancreatitis(164), acute-necrotizing-pancreatitis(136) and traumatic-pancreatitis(3)] and 282 cases had chronic-pancreatitis [chronic calcific(126), non-calcific(44) and acute on chronic pancreatitis(112) cases].

Out of 303 acute pancreatitis cases, the common complications were acute peripancreatic fluid collection (APFC-51.4%), pleural effusion (24%), pancreatic ascites (19%), acute necrotic collection (ANC-18%), pseudocyst formation (14.3%), walled off necrosis (11%), and venous thrombosis (9%). Less common complications - pseudoaneurysm (0.7%), duct disconnection syndrome (1%) & others (8%).

Out of 282 chronic pancreatitis cases, the common complications were pancreatic ascites (25%), pseudocysts (15.6%), venous thrombosis (14.2%) and CBD obstruction (6.0%). Less common complications - malignancy (3.5%), hemorrhage (2.1%), pseudoaneurysm (1.4%), bowel obstruction (1.4%), fistula formation (0.4%) and others (1.8%).

Conclusion: Pancreatitis is one of the most common cause of abdominal pain with increased rates of mortality and morbidity worldwide. Identifying the disease and its complications early would alter the course of its treatment and prognosis.

There is no study performed on the prevalence of various complications in pancreatitis in available literature. This study contributes to medical literature in reveling their prevalence taking a large population of pancreatitis into consideration.
Abstract ID: 820

**ABSTRACT TITLE**: MODIFIED CT SEVERITY INDEX FOR EVALUATION OF ACUTE PANCREATITIS AND CORRELATION WITH PATIENT OUTCOME

**PRESENTING AUTHOR**: PRASAD JAWALKAR

**CO-AUTHOR**: DR DHAWAL KAUSHAL, DR DEEPAK VARSHNEY, DR ARCHIT GUPTA

**Objectives**: This study was conducted to assess the prognostic value of MDCT in patients with acute pancreatitis and to correlate the CT Severity Indexes with clinical outcome.

**Material and Methods**: The patients diagnosed with acute pancreatitis who underwent contrast enhanced MDCT within 3 days of the onset of symptoms during the study period were included in the study. The severity of the pancreatitis was scored using both the modified CT severity indexes and CT severity indexes. Patient clinical outcome was scored using parameters such as: mean duration of hospital stay, the need for surgical intervention, occurrences of infection, end organ failure and death. For both the CT and modified CT severity indexes, correlation between the severity of the pancreatitis and patient outcome was estimated using the percentage, frequency charts and chi-square test.

**Results**: When applying the modified index, the severity of pancreatitis and the following parameters significantly correlated than the CT severity index: the length of the hospital stay (2-23 days), the occurrence of end organ failure, (modified CT severity index \( p = 0.002 \) vs CT severity index \( p = 0.012 \)). Highly significant correlation between the grading of severity of pancreatitis and the prediction of systemic infection was seen using the modified CT severity index \( p = 0.001 \), not the CT severity index \( p = 0.172 \). There was no significant correlation between grading of severity of pancreatitis based on the modified CT severity index and the need for the surgical intervention (modified index \( p = 0.117 \) vs CT severity index \( p = 0.017 \)). Mortality rate in our study was 2%.

**Conclusion**: There was highly significant correlation between the MCTSI score and the prediction of end organ failure, systemic infection and duration of hospital stay than CTSI score.

Abstract ID: 825

**ABSTRACT TITLE**: "UNDERSTANDING TRANSIENT HEPATIC ATTENUATION DIFFERENCES – ITS VARIED PRESENTATIONS”.

**PRESENTING AUTHOR**: SACHIN T

**CO-AUTHOR**: DR RUDRESH HIREMATH, MD, DNB, EDIR PROFESSOR

**Learning Objective**: The purpose of this study is to review the imaging findings of transient hepatic attenuation difference (THAD) on dual-phase liver CT and to identify the cause based on morphological pattern.

**Background**: THAD is defined as increased attenuation difference during the arterial phase which becomes isodense to liver parenchyma during the portal-venous phase. Many focal liver lesions (benign, malignant and inflammatory) may result in THAD. Other causes which results in THAD are vascular abnormalities (arterioportal shunts, vascular compressions/variations), inflammatory changes and parenchymal compression.

**Imaging Findings**: 
- Geographical areas of increased parenchymal enhancement seen during the arterial-phase becoming
isodense in the portal-venous phase.

- According to morphology, they can be organized into four groups: lobar multisegmental, sectorial, polymorphous, and diffuse.
- Various causes that can result in THAD are:
  1. Localized pathologies: Benign and malignant focal lesions, arterio-portal shunts, postal thrombosis, cholecystitis, pancreatitis, etc.
  2. Diffuse pathologies: Budd-Chiari syndrome, Cirrhosis, Biliary tree pathologies, etc.

Teaching Points: THAD is frequently encountered in everyday clinical imaging and it is important to look carefully for the real underlying cause. THAD should not be considered a radiological artefact, and its interpretation is essential to avoid misclassification of hepatic lesions that may have clinical significance. Hence, Radiologists must be familiar with this usual pitfall, in order to avoid misdiagnosis.

Abstract ID: 869

**ABSTRACT TITLE**: ACUTE NECROTISING PANCREATITIS

**PRESENTING AUTHOR**: RAVI G

**CO-AUTHOR**: 

**Learning Objectives**: The imaging manifestations of Acute necrotizing pancreatitis and related complications.

**Background**:

- Acute necrotizing pancreatitis is a severe form of acute pancreatitis characterized by necrosis in and around the pancreas. It is associated with high rates of morbidity and mortality.
- Although Acute interstitial edematous pancreatitis is diagnosed primarily on the basis of signs, symptoms and laboratory test findings, the diagnosis and severity assessment of acute necrotizing pancreatitis are based in large part on imaging findings.
- On the basis of the revised Atlanta classification system of 2012, necrotizing pancreatitis is subdivided anatomically into parenchymal, peripancreatic, combined sub-types, and temporally into clinical early (within 1 week of onset) and late (>1 week after onset) phases.
- Imaging, typically CT or Magnetic resonance (MR) imaging is performed to confirm the diagnosis of pancreatitis if:
  - symptoms are atypical / serum amylase or lipase levels are less than three times higher than normal.
  - when the cause of pancreatitis is uncertain and an underlying neoplasm is suspected as a cause and
  - To confirm the diagnosis of necrosis when the patient’s condition does not improve or deteriorates.
- I present a case of 60yr male patient with c/o severe abdominal pain, abdominal distension and jaundice.

**Imaging Findings**:

**MRI**: Shows diffuse massively enlarged pancreas with multifocal cystic collections demonstrating low T1, high T2 signal intensity and peri pancreatic fluid collection as well as peri pancreatic fat stranding.

**CT**: Confirms as multifocal cystic collections and gas densities with peri pancreatic fluid collections.

**CONCLUSION**: CT is the imaging modality of choice for the diagnosis and staging of Acute pancreatitis and its complications. Imaging studies of acute pancreatitis may be normal in mild cases.
Abstract ID: 874

**ABSTRACT TITLE**: EVALUATION OF DUAL ENERGY COMPUTERISED TOMOGRAPHY (DECT) IN THE DIAGNOSIS OF HEPATOCELLULAR CARCINOMA (HCC) IN THE BACKGROUND OF CIRRHOSIS

**PRESENTING AUTHOR**: D SREENIVASULU

**CO-AUTHOR**: A GULATI, N KALRA, S TANEJA, A DUSEJA

**Object or Purpose of Study**: Hepatocellular carcinoma (HCC) is a common primary malignancy of liver encountered in clinical practice which can be confidently diagnosed non invasively in a cirrhotic background if characteristic imaging features are present. However at times there is diagnostic dilemma with equivocal imaging findings. The primary objective of our study is to evaluate the utility of DECT in diagnosis of HCC and better characterization of indeterminate lesions detected on screening of cirrhotic patients.

**Methodology**: This prospective ongoing analytical study is approved by our institutional ethics committee in which patients of chronic liver disease with suspected HCC are evaluated with DECT. All examinations are performed on dual-source 128 section CT system (Somatom Definition, Siemens). The standard quadriphasic examination is performed with the arterial phase acquired in dual energy mode. Raw data is reconstructed to generate iodine maps and virtual unenhanced dataset. The equivocal LIRADS III / IV lesions also undergo dynamic CEMRI or biopsy wherever required to confirm the diagnosis.

**Results**: Among 29 patients enrolled in the study so far, in 4 cases 80 kVp dataset detected the hypervascularity confidently which was equivocal on the mixed energy data set. On CEMRI, all these cases showed characteristic imaging features of HCC. One case showed calcification on NCCT which was also detected on the VNC.

**Significance of the Conclusions**: The DECT in our study has shown promising results favoring its use for evaluation of suspected HCC. From our preliminary work we infer that the added benefit of iodine maps may improve the detection of subtle enhancing or smaller lesions. Also generation of VNC images from dual energy data set may obviate the need of acquiring separate NCCT, thereby reducing the radiation burden.

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Abstract ID: 938

**Title**: The challenging conundrum of Cystic lesions in liver: to treat or to observe?

**Topic**: Hepato-pancreatico-biliary Imaging

**Learning Objectives**: 1. To differentiate various focal cystic lesions form developmental, inflammatory, neoplastic lesion in the liver. 2. To introduce critical clinical features, key radiologic findings of various cystic mass correlated with pathologic findings. 3. To lay an algorithm for differentiating various cystic liver lesions.

**Background**: In practice, we daily meet various cystic mass in the liver or perihepatic location from simple cyst to cystic neoplasm. The therapeutic strategy and clinical courses are very different between each disease that presents as cystic mass in the liver. So it is important to differentiate with noninvasive diagnostic methods. In this exhibit, each disease entity is introduced with radiologic findings and correlated with pathologic findings.

**Imaging Findings**: The contents of cystic liver lesions are developmental fibrocystic liver disease (biliary hamartoma, peribiliary cyst, autosomal dominant polycystic liver disease, Caroli disease, Choledocal cyst, ciliated hepatic foregut cyst), inflammatory and infectious cystic disease (pyogenic liver abscess, Hydatid cyst, hepatic Tuberculosis, eosinophilic infiltration, inflammatory pseudotumor), and Neoplastic cystic lesions
(cystic metastasis, biliary cystadenoma, biliary cystadenocarcinoma, cystic HCC, IPMT, neuroendocrine neoplasm, epithelioid hemangioendothelioma, etc.

**Conclusion:** We will try to show all kinds of cystic lesions which can occur in the liver with pathologic correlation. We hope that this help you differentiate cystic lesions that are faced frequently in daily practice. We will also give an algorithm at the end of the exhibit so that it is easy to characterize various cystic lesions in liver.

**Abstract ID: 970**

**ABSTRACT TITLE:** MIXED HEPATOCELLULAR-CHOLANGIOCARCINOMA - A RARE CASE REPORT

**PRESENTING AUTHOR:** DISHA GUPTA

**CO-AUTHOR:** DR. JINI ABRAHAM, DR. ASHWIN M POLNAYA, DR. GANESH K

**Learning Objectives:** To understand and determine the role of imaging in detection of Mixed Hepatocellular-Cholangiocarcinoma.

**Background:** Mixed or combined hepatocellular-cholangiocarcinoma (cHCC-CC) is a rare variant of primary liver cancers that comprises elements of both hepatocellular carcinoma and cholangiocarcinoma. Correct preoperative diagnosis remains critical due to its aggressive nature. Here is a case of a 65 year old female patient, who is a known hypertensive, diabetic, asthmatic and HCV positive status, presented with breathlessness, fever with chills and pain abdomen since 15 days.

**Imaging Findings:** Contrast enhanced computed tomography of abdomen and pelvis revealed multiple conglomerate ill defined hypodense lesions in right and caudate lobes of liver, showing delayed enhancement, with capsular retraction and intrahepatic biliary radicle dilatation, thrombosis of portal vein, superior mesenteric vein and splenic vein. Possibilities of Intrahepatic Cholangiocarcinoma and Sclerosing Hepatocellular Carcinoma were given. Histopathology report confirmed the diagnosis of Mixed Hepatocellular-Cholangiocarcinoma.

**Conclusion:** Combined hepatocellular-cholangiocarcinoma (cHCC-CC) comprises 0.4 – 14.2% of primary liver malignancies. The demographic, clinical, imaging, histopathological features and preoperative diagnosis of cHCC-CC remains challenging. The cHCC-CC enhancement pattern seems to more closely resemble HCC with the degree of arterial hyperenhancement and the presence of washout being valuable in differentiating cHCC-CC from intrahepatic cholangiocarcinoma. However, the presence of washout and progression, in the same lesion or a predominantly peripheral / rim hyperenhancing mass were also seen as important features that should alert the radiologist to the possibility of a cHCC-CC. Therefore, an accurate preoperative diagnosis and aggressive treatment planning can play crucial roles in appropriate patient management.
Abstract ID: 976

ABSTRACT TITLE: PROGNOSTIC CORRELATION OF MODIFIED CT SEVERITY INDEX IN ACUTE PANCREATITIS WITH PATIENT MORBIDITY

PRESENTING AUTHOR: N NITYA

CO-AUTHOR: DR. (MAJ) T.SAI KRISHNA

Introduction: Pancreatitis is one of the most complex and challenging disorder. Ultrasonography and CT are the most commonly used diagnostic imaging modalities for the evaluation of pancreas. This study was aimed to study the prognostic correlation and clinical outcome of acute pancreatitis on the basis of Modified CT severity index (MCTSI).

Materials and Methods: A prospective study of forty cases was carried out in the Department of Radiodiagnosis with complaints suggestive of acute pancreatitis on the basis of clinical/laboratory, ultrasonography findings were subjected to contrast enhanced computed tomography abdomen. The severity of pancreatitis was assessed using the CT severity index and modified CT severity index. CT severity index and modified CT severity index were compared in their ability to predict hospital stay, development of local complications, systemic complications, need for surgical or percutaneous intervention.

Results: Both CT severity index and modified CT severity index did not show any association with the duration of hospital stay or need for surgery or intervention in a patient. Both indices (CTSI and MCTSI) showed association with development of local complications and organ failure. MCTSI showed better sensitivity than CTSI and shows good specificity, positive and negative predictive values as a predictor of local complications and organ failure.

Conclusion: MCTSI is easier to calculate and reduces the interobserver variation. MCTSI is also more accurate index to predict the development of local complications or organ failure. However both are less accurate in their ability to predict the need for surgical intervention and longer hospital stay.

Abstract ID: 1121

ABSTRACT TITLE: ROLES OF CONTRAST ENHANCED ULTRASOUND AND DIFFUSION WEIGHTED MR IMAGING AND THEIR COMPARISON IN SOLID SPACE OCCUPYING LESIONS OF LIVER.

PRESENTING AUTHOR: SANTOSH RAI

CO-AUTHOR:

Learning Objectives: To establish the role of contrast-enhanced ultrasound (CEUS) and Diffusion Weighted (DW) Magnetic Resonance imaging (MRI) in the characterization of solid liver lesions.

Background: Prospective analysis of 22 patients undergoing CEUS and DW MR imaging following identification of 1 or more solid liver lesions on conventional US. The CEUS and DW MR imaging diagnosis was compared to other imaging modalities, histopathology, and/or clinical follow up after 12 months.

Imaging findings: CEUS correctly identified malignant liver lesions in 13 out of 14 cases, with the final diagnosis confirmed by histopathology in 6 cases, by other imaging modalities in 7 cases and follow up in 1 case. 8 patients were correctly identified as benign liver lesions on CEUS imaging, with all these cases confirmed on other imaging modalities and/or follow up and two cases by histopathology. In the detection of malignancy, the sensitivity is 86.7% and specificity is 100%. On the DW MRI Mean apparent diffusion coefficient (ADC) value for benign lesions is 1.5 and mean ADC value for malignant lesions is 0.7.
Conclusions: In our experience, contrast-enhanced ultrasound and DW imaging with ADC values are highly accurate in confirming benign lesions, early detection of malignant lesions. Other advantage of CEUS and DW MR imaging is that it is also cost effective and can be performed in renal insufficiency patients. Hence we conclude that CEUS and DW MR imaging sequence can be used in routine practice.

Abstract ID: 1141

ABSTRACT TITLE: HEPATIC VEIN VARIATIONS IN 1000 PATIENTS: SURGICAL AND RADIOLOGICAL IMPORTANCE

PRESENTING AUTHOR: NEELMANI SHARMA

CO-AUTHOR: DR. BINIT SUREKA, DR. PUSHPINDER KHERA, DR. PAWAN K GARG, DR. TARUNA YADAV

Purpose: The purpose of the study was to evaluate the spectrum and incidence of hepatic vein variations on triphasic abdomen multidetector CT and to discuss the surgical and radiological implications.

Materials and Methods: A retrospective review of 1000 triphasic MDCT abdomen scans was performed in patients sent for various liver and other abdominal pathologies between Jan 2016 and Sept 2018. MIP images of hepatic venous phase were reviewed in all the planes. The variations in hepatic vein were classified according to classification used by Soyer et al AJR 1995; 164:103-108 and Cheng et al J Clin Ultrasound 1996;24:11-16.

Results: The most common pattern of the three hepatic veins in these subjects was a right hepatic vein and a common trunk for the middle and left hepatic veins.

In 39% of patients, the RHV was small and was compensated by a large right inferior hepatic vein 21.0%, an accessory RHV 8.5% or a well-developed MHV 6.5%.

Among the 63 patients in whom the middle hepatic vein was visible, 95% had one main middle hepatic vein, rest have 2-3 veins. Among the 60 patients in whom the left hepatic vein was visible, 85% had one main left hepatic vein with small branches, 10% had two separate left hepatic veins, two 3% had two left hepatic veins forming a common trunk joining the middle hepatic vein, and one 2% had three left hepatic veins.

Conclusion: Acquaintance of hepatic venous branching patterns is prerequisite for guiding hepatic resection, various intervention procedures and must be candidly utilized to avoid major catastrophic events

Abstract ID: 1168

ABSTRACT TITLE: RADIOLOGICAL SPECTRUM OF FINDINGS IN 200 CASES OF GB CARCINOMA

PRESENTING AUTHOR: ANMOL MOHTA

CO-AUTHOR: DR SSG MOHAPATRA, DR SUBHASHREE DAS, DR SOUMYA RANJAN NAYAK, DR BEENA DEVI AGARWAL

Purpose: Retrospective study based upon findings on CECT Abdomen in pathologically proven cases of carcinoma GB and assessment of its role in diagnosis, evaluation of various morphological variants, staging and surgical resectability.

Background: Gallbladder carcinoma is a common malignancy of the biliary tract. Carcinoma GB has three major patterns of presentation on cross sectional imaging. The three patterns include
Sub-hepatic mass replacing or obscuring the gall bladder often with invasion of the adjacent liver
Intraluminal polypoidal mass in the GB
Eccentric focal irregular nodular wall thickening with post-contrast enhancement

Methodology: This retrospective study reviewed CT examination findings in 200 histopathologically proven (FNAC/FNAB/ from post operative specimen biopsy) cases of carcinoma GB.

All the patients had been subjected to helical CT scan examination on a 128 slice GE Optima 660 CT scanner.

Results: Most common presentation seen was of a sub-hepatic mass replacing or obscuring the gall bladder (45%) with a majority of them presenting with invasion of the adjacent liver.

Eccentric focal irregular nodular wall thickening was seen in 40% cases in this study.

Approximately 15% of carcinomas present as an intraluminal polypoidal mass in the GB.

Resectability criteria of all the patterns were also noted. Significant number of cases were locally advanced and also had peritoneal and omental implants. So, they were unresectable.

Conclusion: Contrast enhanced CT scan is a significant diagnostic tool in diagnosis, staging and planning of treatment.

Abstract ID:1171

ABSTRACT TITLE: POST TRAUMATIC BILE DUCT NEUROMA
PRESENTING AUTHOR: ANMOL MOHTA
CO-AUTHOR: DR ADYA K PANDA, DR P BAHINIPATI, DR SATYA SWARUP JENA, DR RAJESH PATTNAIK,

Learning Objectives: Post traumatic Neuroma is a rare condition that usually occurs following trauma, surgical manipulation or infection of the extra-hepatic biliary tree. It is due to chronic proliferation of nerve fibers, as a reparative response after injury.

Neuroma formation is thought to be precipitated by post traumatic nerve cell growth after surgery and such nerve hypertrophy in response to injury is similar to that seen with extremity amputation.

Background: This is a case report of a 55-year-old woman who presented with history of progressive jaundice associated with right upper quadrant pain and breathing difficulty.

She had a history of open cholecystectomy for calculus cholecystitis 15 years back.

Physical examination revealed icteric sclera and a right sub-costal scar. No e/o any palpable abdominal mass. Liver function tests were mildly deranged with elevated bilirubin, ALP and transaminases.

Imaging Findings: Ultrasound imaging of the abdomen showed absent GB (post cholecystectomy status), bilobar dilatation of intra hepatic bile ducts, proximal CBD cutoff with an ill-defined hypoechoic lesion at site of transitional narrowing.
MR cholangiopancreatography (MRCP) revealed bilobar IHBR dilatation with an irregular T1W/T2W hypointense lesion involving proximal CBD reaching up to primary biliary confluence with associated mild eccentric wall thickening of RHD. No nodal disease was noted in porta hepatitis, paraortic, portocaval and aortocaval stations.

Though there was no nodal disease, but considering the location and age, Cholangiocarcinoma was suspected. Surgery was performed and post op histopathology findings revealed post traumatic bile duct neuroma.

**Conclusion:** Possibility of post traumatic neuroma should always be considered in differential diagnosis of patient suspected of hilar cholangiocarcinoma with previous history of cholecystectomy.

**Abstract ID:1181**

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<tr>
<th>ABSTRACT TITLE</th>
<th>UNWANTED COMPLICATIONS OF PANCREATITIS :EXPERIENCE FROM A TERTIARY CARE HOSPITAL IN NORTHWESTERN INDIA</th>
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<td>PRESENTING AUTHOR</td>
<td>NEELMANI SHARMA</td>
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<tr>
<td>CO-AUTHOR</td>
<td>BINIT SUREKA, PUSHPINDER SINGH KHERA, PAWAN GARG, TARUNA YADAV, KAVISH CHAURASIA, VAIBHAV VARSHNEY, RAMKARAN CHoudhary, POONAM ELHENCE</td>
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**Learning Objectives:**
1. List the various common and uncommon complications of pancreatitis
2. Recognizing unusual complications related to pancreatitis on imaging
3. Discuss the management and role of IR

**Background:** Acute severe pancreatitis is associated with high morbidity and mortality and is frequently complicated. The aim of this presentation is to present an overview of the complications of pancreatitis.

**Imaging findings:** The findings have been categorised system/organ wise and is presented in the form of a pictorial essay.

1. Vascular complications
   a. Arterial
      i. Pseudoaneurysms
      ii. Hemorrhage secondary to arterial pseudoaneurysm, bleeding gastro-esophageal varices, Mallory weiss tear.
2. Gastrointestinal - paralytic ileus, mechanical obstruction, ischaemic necrosis, hemorrhage, fistula and perforation
3. Hepato- pancreatio-splenic
   a. Pancreatic fistula
   b. Hepatic pseudocyst
   c. Splenic pseudocyst
4. Genitourinary
a. Renal pseudocyst

5. Miscellaneous
   a. Secondary Infection in walled off necrosis managed by pig tail catheter drainage

**Conclusion and/or Teaching points:** Pancreatitis is associated with complications affecting the pancreas itself, surrounding vasculature and bowel. The radiologist must to be aware of the possible complications and imaging appearance, so that timely diagnosis can be made and further management decisions can be taken in time to reduce the morbidity and mortality.

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**Abstract ID: 1185**

**ABSTRACT TITLE:** THE CHOLANGIOPATHIES – DISEASES OF THE BILIARY TRACT: RADIOLOGISTS QUANDARY

**PRESENTING AUTHOR:** NEELMANI SHARMA

**CO-AUTHOR:** BINIT SUREKA, PUSHPINDER SINGH KHERA, PAWAN GARG, TARUNA YADAV, VAIBHAV VARSHNEY

**Learning Objectives:**

- Enumerate various cholangiopathies
- Defining primary sclerosing cholangitis & its sub types
- How to differentiate between benign and malignant strictures
- Discuss imaging findings of various cholangiopathies

**Background:** Cholangiopathies can lead to bile duct strictures and deranged liver function tests. Various causes of bile duct strictures include Benign causes of bile duct strictures include iatrogenic causes, acute or chronic pancreatitis, choledocholithiasis, primary sclerosing cholangitis, IgG4-related sclerosing cholangitis, liver transplantation, recurrent pyogenic cholangitis, Mirizzi syndrome, acquired immunodeficiency syndrome cholangiopathy, and sphincter of Oddi dysfunction.

Malignant causes include cholangiocarcinoma, pancreatic adenocarcinoma, and periampullary carcinomas.

Rare causes include biliary inflammatory pseudotumor, gallbladder carcinoma, hepatocellular carcinoma, metastases to bile ducts, and extrinsic bile duct compression secondary to periportal or peripancreatic lymphadenopathy, amylodosis, eosinophilic cholangiopathy, histiocytosis X, abdominal trauma, intra arterial chemotherapy, mast cell cholangiopathy, ischaemic cholangiopathy and sarcoidosis

**Imaging findings:** Reporting should answer following questions

- confirmation of the obstruction
- exclusion of the other causes of jaundice
- determination of the multiple levels of obstruction (intra or extrahepatic ducts),
- approximate length of the biliary stricture,
- status of the proximal bile ducts
- presence or absence of intraductal calculi
- nature of stricture (benign vs malignant).
Irregular wall thickening, asymmetric, long segment, luminal irregularity, narrowing, indistinct outer margin and hyperenhancement relative to liver suggest a malignant stricture.

**Conclusion:** Contrast-enhanced MR imaging with MRCP is very useful in the evaluation of the bile ducts in patients with obstructive jaundice. Although biopsy is necessary for distinguishing malignant from benign strictures, certain MR imaging are typical for specific type of cholangiopathy.

**Abstract ID:1201**

**ABSTRACT TITLE:** EFFICACY OF ULTRASOUND ELASTOGRAPHY IN CHARACTERIZING FOCAL LIVER LESIONS WITH HISTOPATHOLOGIC CORRELATION

**PRESENTING AUTHOR:** NAGARAJAN K B

**CO-AUTHOR:** PROF.DR.S.KALPANA, PROF.DR.R.RAVI

**Purpose:**
1. To find ultrasound elastographic parameters in persons with focal liver lesions.
2. To examine whether ultrasound elastography can be used to differentiate between benign and malignant focal liver lesions.

**Inclusion Criteria:** Patients with space occupying lesions of the liver not previously treated.

**Exclusion Criteria:** Patients with focal liver lesions which have been treated previously, those unable to hold breath and those with gross ascites.

**Materials and Methods:** A total of 50 patients with focal liver lesions underwent abdominal sonographic examinations and free hand elastography using Hitachi Aloka A推介会 S70 Machine. Elastographic parameters were measured for each focal hepatic lesion. The mean of the observed values was calculated for each group of lesions. These values were correlated with histopathological results. The ability of these values to differentiate between benign and malignant focal liver lesions was assessed.

**Statistical Analysis:** The collected data were analysed with IBM.SPSS statistics software 23.0 Version

**Results:**
1. The mean stiffness value of malignant lesions was 32.51±17.14 kPa and that of benign lesions was 11±4.82 kPa.
2. The mean stiffness ratio of malignant lesions was 3.59±2.76 and that of benign lesions was 1.53±0.55.
3. The mean shear wave velocity of malignant lesions was 2.45±0.50 m/s and that of benign lesions was 1.53±0.44 m/s.
4. The mean strain ratio of malignant lesions was 3.36±0.52 and that of benign lesions 1.12±0.35.
5. There was significant difference between mean values of elastographic parameters between benign and malignant liver lesions (P=0.0005).
Limitations:

1. Sample size was small and hence, further large scale confirmation studies are needed to validate our findings.
2. Only patients with limited type of benign lesions (Haemangioma, Focal nodular hyperplasia) were included in this study.

Conclusion: The mean values of elastographic parameters were significantly higher in malignant liver lesions compared to benign liver lesions.

Abstract ID: 1240

ABSTRACT TITLE: ROLE OF MRI IN PREOPERATIVE PREDICTION OF MICROVASCULAR INVASION IN HEPATOCELLULAR CARCINOMA

PRESENTING AUTHOR: RISHABH AGGARWAL

CO-AUTHOR: DR. RUCHI RASTOGI, DR BHARAT AGGARWAL

Purpose: To evaluate microvascular invasion which is a poor indicator of survival after liver transplantation and/ hepatic resection for hepatocellular carcinoma (HCC) patients by non-invasive MR imaging and correlation with histopathological findings.

Material and Methods: Retrospective observational study was conducted in 40 HCC patients with tumor size of more than 1 cm who were referred for preoperative assessment. Patients with macrovascular invasion and contraindication for performing contrast enhanced MRI were excluded. Number, size, location, margin, T1/T2 signal, intralesional fat and post contrast enhancement was assessed on MRI and compared with same findings including grading, microvascular invasion and lymph node metastasis. Spearman rank correlation coefficient and regression analysis was used to assess correlation with microvascular invasion. P value of <0.05 was considered statistically significant and analysis was done using SPSS software 21.0.

Results: The presence of three or more tumors and ill defined margins on MRI had positive correlation with R square value of 67% and 72% with 95% confidence interval, correlation coefficient of 0.651 and 0.810 with P value of <0.01 for the prediction of microvascular invasion. A total of 57 HCC in 30 patients at explant, with size of more than 1cm were analyzed. 6 patients had three or more tumors, 8 out of 11 patients with ill defined margins showed microvascular invasion. Size, location, intralesional fat and lymph node metastasis showed poor correlation with microvascular invasion.

Conclusions: Tumor multifocality and ill defined margins on MR showed good correlation with microvascular invasion on histopathological examination.
Abstract ID:1245

ABSTRACT TITLE: IDENTIFYING THE ROLE OF MDCT IN PATIENTS WITH PERIAMPULLARY AND PANCREATIC TUMOURS

PRESENTING AUTHOR: SANDEEP KUMAR
CO-AUTHOR: GN SINGH, A K MANDAL

Introduction: MDCT can be useful, not only for the lesion detection and characterization but it also an important tool for predicting the tumour resectability and comprehensive preoperative assessment.

Aims and Objectives:
• To identify the role of MDCT in patients with periampullary and pancreatic tumours.
• To predict the tumour resectability

Material and Methods: It was a Hospital based prospective observational study conducted in Department of Radiology Patna Medical College Patna from June 2017 to Feb 2018 on 40 patients. All scans were performed using M.D. (multi-detector row) -slice CT scanner. Image analysis was done for the tumour detection and the characterization of the tumor and compressive preoperative assessment of the tumour were studied. The resectability of the tumor was also determined.

Observation & Discussion: The most common tumour in the present study was Ampullary carcinoma making around 35% with male predominance. The bulging papilla was the most common imaging feature of Ampullary carcinoma (86%) followed by double duct sign (79%). Gastroduodenal artery was the most common artery to be involved by the periampullary and pancreatic tumours followed by splenic artery.

Conclusion & Recommendation:
• Most common tumour in present study was Ampullary carcinoma
• Pancreatic adenocarcinoma was the most common tumour to show borderline resectability in the present study.
• In borderline resectability criteria among the arteries, gastro duodenal artery was the most common artery to be involved in the present study making around 15% of the cases

Abstract ID:1289

Title: Imaging of one of the rarest anatomic variations in the biliary tree and their clinical significance.
Topic: Hepato-pancreatico-biliary Imaging

Aim: Imaging of one of the rarest anatomic variations in the biliary tree and their clinical significance.

Methods: Rare anatomic variations in the biliary tree detected on MRCP in a case of Type V Choledochal cyst with Choledocholithiasis in the Department of RadioDiagnosis, MGMcri, Puducherry.

Results: A 7 year old boy with intermittent abdominal pain was found to have dilated CBD and Choledocholithiasis on Ultrasonography and was subjected to MRCP which revealed Type V Choledochal cyst and Choledocholithiasis along with Co-existence of rare biliary anatomical variants ie. Trifurcation anomaly and accessory right hepatic duct, which has an incidence of less than 1%.
Conclusion: Magnetic resonance cholangiopancreatography (MRCP) has become the modality of choice for noninvasive evaluation of abnormalities of the biliary tract as it is devoid of ionizing radiation and is safe for patients who are allergic to iodinated contrast agents.

Discussion: Normal biliary anatomy is seen in only 58% of the population. Biliary anatomy and its common and uncommon variations are of considerable clinical significance as it helps reducing the morbidity and mortality following hepatobiliary surgeries and radiological interventions in hepatobiliary system.
Abstract ID: 61

ABSTRACT TITLE: SEGMENTAL NEUROVASCULAR SYNDROMES: A NEW CONCEPT AND A NEW CLASSIFICATION.

PRESENTING AUTHOR: VIKRAM REDDY G

CO-AUTHOR: DR.RASHMI SARAF, DR.SHEHBAZ ANSARI

Purpose:

- Understanding the concept of migration of neural crest cells which serves as a common link between various components of cerebral, facial and spinal vascular syndromes.
- Illustrate radiological findings of craniofacial and spinal vascular malformations, their correlation and classification into metameric syndromes.

The concept of segmental vascular syndromes with different, seemingly unrelated, diseases is based on the embryology of the neural crest and the mesoderm migration of cells that share the same metameric origin. Migrating patterns of these cells link the brain, the cranial bones, and the face on the same side. A somatic mutation developing in the region of the neural crest or the adjacent cephalic mesoderm before migration can, therefore, be postulated to produce arterial or venous metameric syndromes, including PHACES, CAMS, CVMS, SAMS & Cobb syndrome.

Materials and Methods: 10 patients with craniofacial/brain/spinal AVMs fulfilling criteria of metameric syndromes, were evaluated, clinical history and distribution and types of lesions were recorded. All patients were investigated by angiography and MRI. As an aid to diagnosis we divided the potential areas of involvement into three zones (brain, orbit and face) and propose the criteria that lesions must be present in at least two of these zones for the diagnosis to be made.

Results: The location and types of vascular malformations were evaluated and subgroups were identified according to their embryological origin and topographic projection and classified into CAMS 1/2/3, CVMS, SAMS and PHACES. Few patients had overlapping territories producing mixed phenotypes likely due to a more extensive insult.

Conclusion:

- The discovery of an AVM in the cerebrofacial region should prompt investigation for other clinically silent AVMs along the same metameric level.
- When evaluating a vascular malformation in the face, one should consider it as part of a more generalized malformation.

References:

1. Segmental Neurovascular Syndromes in Children T. Krings
2. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3621461/#
Abstract ID: 72

ABSTRACT TITLE: COMPARISON OF PERCUTANEOUS TRANSHEPATIC BILIARY DRAINAGE AND ENDOSCOPIC BILIARY DRAINAGE IN THE MANAGEMENT OF MALIGNANT BILIARY TRACT OBSTRUCTION

PRESENTING AUTHOR: ANKUSH JAJODIA
CO-AUTHOR: DR ABHISEKH BANSAL

Purpose: Demonstrate benefit of percutaneous transhepatic biliary drainage (PTBD) after a failed ERCP (Rescue PTBD) in decreasing risk of cholangitis & evaluate contribution of PTBD as compared to ERCP in management of patients with malignant Biliary tract obstruction (MBTO).

Methods and Materials: Retrospective analysis (2011-2016) in cases of MBTO. Number of patients who underwent PTBD (both Rendezvous and Rescue)- 184. No of patients who underwent ERCP as primary modality and later PTBD - 10. Inclusion criteria: (1) failed conventional ERCP and inaccessible papilla due to duodenal obstruction, periampullary tumor infiltration, or surgically altered anatomy. Exclusion criteria: (1) uncorrectable coagulopathy, history of allergy to radio contrast agents (2) Patients lost to follow up (3) ESLD with portal hypertension, varices and/or ascites.

Results: 10 patients met the required criteria. PTBD attempted in all of them. Internal stenting was technically and clinically successful in 7. (70%). External catheter drainage was performed in 3. Complications occurred in 4 (major) and 6 (minor). Late stent occlusion occurred in 2.

Conclusion: The study therefore does not prove that PTBD is superior to ERCP. PTBD exhibited a better therapeutic success rate than ERCP. Patients who underwent PTBD were less likely to have cholangitis as those who underwent EBD, whereas the overall complication rate was similar between the two procedures. The study is non-randomized and has the limitation. However, this study indicates that in centres where ERCP failed as primary modality; PTBD approach may offer more favourable clinical outcomes.

Abstract ID: 78

ABSTRACT TITLE: IMAGE-GUIDED MINIMALLY INVASIVE TREATMENT FOR SMALL RENAL CELL CARCINOMA (RCC) – HOW I DO IT?

PRESENTING AUTHOR: CHANDAN J DAS
CO-AUTHOR: VAIBHAV NICHAT

Learning Objectives:
- To present application status of Microwave ablation (MWA) and Radiofrequency ablation (RFA) in treatment of small RCC
- To introduce technical principles and procedural details of MWA & RFA in small RCC treatment

Background: RCC is increasingly detected incidentally at early stages. Partial nephrectomy was considered as gold standard for management of small malignant renal masses, whereas treatment with image-guided percutaneous ablation is reserved for those patients who cannot undergo nephron-sparing resection due to various reasons. There is paradigm shift towards minimally invasive approach due to reduced complication rate and low morbidity.
Procedure Details:

**MWA** – Electromagnetic wave (915–2,450 MHz) passes through antenna that causes resonance of water molecules which produces heat and increases tissue temperature to nearly 100 °C. Larger area is ablated as higher temperatures are reached within tumor regardless of tissue electrical conductance. It is not limited by tissue impedence, desiccation or charring and heat sink phenomena.

**RFA** – High-energy radio waves heat the tumor. Needle-like probe is placed through the skin and advanced in the tumor. Once needle is in place, electric current is passed through tip of the probe, which heats tumor and destroys cancer cells.

**Follow-up:** Patients are usually followed up with CT/MRI after 6 weeks for response evaluation. Hemorrhage is usual complication followed by partial ablation. Contrast ultrasound is upcoming modality for immediate evaluation and also for follow-up.

**Conclusion:** RFA and MWA are minimally invasive therapy for treatment of small RCC. Small size and non-central location are favorable tumor characteristics.

**References:**


**Abstract ID: 146**

**ABSTRACT TITLE**: PHLEBOGRAPHIC PATTERNS IN LOW FLOW VASCULAR MALFORMATIONS AND THEIR IMPLICATIONS ON MANAGEMENT

**PRESENTING AUTHOR**: BARUN BAGGA

**CO-AUTHOR**: DR. ANKUR GOYAL, DR. ASHU SEITH BHALLA, DR. ABANTI DAS, DR. DEVASENATHIPATHY KANDASAMY

**Purpose**: To classify low flow vascular malformations (LFVM) as per phlebographic patterns and study management implications (choice of sclerosant and clinical response).

**Materials and Methods:**

- Retrospective analysis of 224 patients with LFVM from Jan 2015 to April 2017 was done.
- LFVM [venous (VM) and lymphatic malformations (LM)] were classified into cavitary, spongy, dysplastic or mixed pattern based on phlebographic morphology. The status of draining veins was also assessed. These were then compared with the sclerosant used and clinical response obtained.

**Results:**

- Mean age of subjects was 21yrs with 63% males and 37% females.
- Among VM (N=205): cavitary and spongy patterns were the commonest, seen in 42.9% and 37.6% cases. Dysplastic venous pattern was less common and seen only in the extremities (89.5%). Among LM (N=19),
cavitary pattern was most common (84.2%).

• 79% VM were managed with a single sclerosant (sodium tetradecylsulfate STS in 62% and polidocanol in 15.6%).

• Among LM, bleomycin was the commonest agent, used alone in 52.6% and in combination with other agents in 31.6%.

• Good response to sclerotherapy (>30% clinical response) was achieved in 76.1% of VM and 100% of LM. Excellent response (>60%) was achieved in 51.7% of VM and 84.2% of LM.

• Phlebographic morphology of dysplastic veins was associated with poor response to sclerotherapy (p-value=0.038).

• Presence of early draining vein and direct connection between VM and draining vein correlated with good clinical response (p-value 0.004 and 0.005 respectively).

• Side-effects were seen in 9 patients of VM and were common in face region (66.7%) and with spongy pattern on phlebography (77.8%).

Conclusion:

• Good clinical response was achieved in majority of VM and all LM regardless of the site likely because of appropriate sclerosant selection.

• Dysplastic venous pattern correlated with poor response while early draining vein and direct connection with VM correlated with good response.

Abstract ID: 184

ABSTRACT TITLE: IS IT NECESSARY TO ABLATE THE INCOMPETENT PERFORATORS IN PATIENTS WITH CHRONIC VENOUS INSUFFICIENCY?

PRESENTING AUTHOR: ASHISH GEORGE

CO-AUTHOR: DR.ABHINANDAN RUGE, DR.BABU PHILIP

Learning Objective: Clinical and Doppler changes in incompetent perforator following isolated endovascular laser ablation of great saphenous veins or short saphenous veins in patients with chronic venous insufficiency.

Background: Varicose veins are dilated and tortuous superficial veins mainly occurring in the lower limbs and often associated with chronic venous insufficiency. EVLA is the choice of therapy for the symptomatic case of venous insufficiency. Currently done as isolated ablation of GSV/SSV or by additionally ablating the incompetent perforator veins. There is no sufficient evidence to prove the added benefit of ablating the incompetent perforators.

In this study, 30 patients who have undergone isolated GSV/SSV laser ablation procedure were considered. Clinical improvement of the patients was assessed by CEAP classification and Venous Clinical Severity Score. Colour Doppler and greyscale USG were used to assess improvement via imaging. The diameter of the perforators and the presence of venous reflux were assessed. The clinical and imaging assessment mentioned above were performed: Pre-procedure, after 1 month, 3 months and 6 months.

Imaging Findings: Using greyscale USG, the diameters of the perforators were measured pre-procedure and during follow up and were found to be progressively decreasing with each follow-up.

Using colour Doppler, the presence of venous reflux was assessed pre-procedure and during follow-up. The absence of venous reflux was noted by the follow-up at 6 months.
Conclusion:

- Significant reduction in the diameter of GSV/SSV was noted.
- Reduction in the number and size of incompetent perforators were achieved by isolated ablation of GSV/SSV over the course of 6 months.
- Significant symptomatic and clinical improvement in the condition of the subjects who underwent EVLA was noted.
- According to our study ablation of perforators is not necessary for the treatment process of chronic superficial venous insufficiency.

Abstract ID: 225

ABSTRACT TITLE: IMAGING AND INTERVENTION IN TRAUMATIC PERIPHERAL VASCULAR INJURIES

PRESENTING AUTHOR: PRITVIRAJ S.K.

CO-AUTHOR: SHIVANAND GAMANAGATTI, ATIN KUMAR

Purpose:

- To discuss various imaging pattern of peripheral vascular injury following blunt as well as penetrating trauma
- To describe the role of intervention radiology in the management of peripheral vascular injury

Background: Post traumatic peripheral Vascular injury needs early diagnosis and management as it is associated with significant morbidity and mortality. Using MDCT, Peripheral vascular injury can be accurately diagnosed and appropriate treatment can be planned. Endovascular options such as treatment embolization/stent graft placement, plays important role in treatment of hemorrhagic type of vascular injury.

Materials and Methods:

MDCT: Patients underwent multiphasic CT scan with arterial and venous phase. Various peripheral vascular injuries like pseudoanurysm, thrombosis, dissection etc will be demonstrated. Vascular Injuries are broadly classified into ischaemic and haemorrhagic type.

Patients with haemorrhagic type of vascular injuries and haemodynamically stable, who underwent either embolisation, stent graft placement or thrombin injection depending upon type of vessels involved, will be discussed.

Results: Post-procedure patients were followed both clinically and radiologically to assess the clinical response and complications.

Conclusion: MDCT is the modality of choice for imaging of patients with suspected peripheral vascular injuries, which helps in identifying the type of injury, extent of injury and planning the treatment. Endovascular treatment plays vital role in the management of haemorrhagic type of vascular injuries as an alternative to surgical treatment.

References:

Introduction: Safe vascular access is integral to critical procedures. Chemoport implantation is a type of central venous access that was exclusively in the domain of surgeons till few years ago. However, interventional radiology (IR) taking shape in our country more and more central venous access procedure is being done by radiologists and the results are almost equal or better.

Aim: To evaluate the technical success and outcomes of image guided percutaneous chemoport placement at a tertiary care centre.

Objectives:
1. To evaluate the technical success rate of the percutaneous placement of chemoports while using image guidance in a tertiary care centre.
2. To assess the intraprocedure, early & late complications of chemoport placement in these patients.

Material & Method: This prospective study was conducted on 28 subjects at a tertiary care hospital from Jul 16 to Dec 17 as per laid down inclusion and exclusion criteria. All patients were counselled prior to the procedure. Patients were taken up for chemoport placement under 2% Local anaesthesia. Ultrasonography was used as initial modality to access the IJV. Further procedure was done under fluoroscopy guidance.

The patients were observed for intraoperative, early and delayed complications as per SIR guidelines.

Result: Total of 28 patients (Male=10 & Female=18) were included in the study. The technical success was achieved in 100% of cases. Per operative complication was recorded in one case (3.5%). No early or delayed complication noted.

Conclusion: Image guided chemoport placement is safe and has a high technical success rate.
Abstract ID: 293

ABSTRACT TITLE: DIGITAL BREAST TOMOSYNTHESIS VACUUM ASSISTED BIOPSY (DBT VAB) – DIAGNOSTIC PERFORMANCE IN DETECTION OF SONOGRAPHICALLY OCCULT LESIONS

PRESENTING AUTHOR: RAJAKUMARAN R

CO-AUTHOR: DR. J. DEVIMEENAL, DR. P. CHIRTRARASAN, DR. K. GOPINATHAN

Learning Objectives:

• List the indications, contraindications and complications of DBT VAB
• Describe the procedure of DBT VAB
• Evaluation of diagnostic performance of DBT VAB

Background: Digital Breast Tomosynthesis (DBT) provides significant gains in the detection of masses and architectural distortion, which may be obscured on standard 2D projections. A non-calcified lesion appreciated on DBT either at the time of screening or diagnostic evaluation, is followed by an ultrasound (US) to localize the lesion and determine if biopsy will be required. DBT-detected architectural distortions have been shown at surgery to have a high rate of malignancy when surgically excised. In our institution, when a DBT-detected lesion meets the mammographic standards for biopsy and is occult on a targeted US, we proceed to digital breast tomosynthesis vacuum assisted biopsy.

Procedure: All the cases of DBT VAB were drawn from DBT-detected lesions on screening mammography utilizing the CC and MLO Combination mode. A 90-degree lateral view with DBT was performed for the purposes of localization and biopsy planning prior to DBT VAB. The lesion was targeted in the projection where the target was best seen and the biopsy needle would traverse the least amount of breast tissue. Under sterile technique and local lignocaine anesthetic, the 9 Gauge needle was introduced and positioning was confirmed with pre- and post-fire 2D stereotactic pair images. Multiple core biopsy samples were obtained. A specimen radiograph was performed after obtaining adequate samples.

Conclusion: DBT VAB was easily and quickly performed in our patient population. The imaging findings of the malignancies and high risk lesions in our population were indistinguishable, and therefore tissue sampling was essential. DBT VAB is an excellent way to establish the pathologic diagnoses for DBT-detected suspicious lesions, particularly if ultrasound is negative.

Abstract ID: 469

ABSTRACT TITLE: SUCCESSFUL SNARING OF MISPLACED GUIDEWIRE USING BALLOON AND WIRES FROM INTERNAL JUGULAR VEIN ACCESS

PRESENTING AUTHOR: PANKAJ SHARMA

CO-AUTHOR: DR UDIT CHAUHAN, DR ASHISH KAUSHIK

Purpose: To demonstrate innovative method of snaring accidentally misplaced wire in Central Vein using balloon and guidewires.

Materials and Method: A 25 year old male was referred to Department of Interventional Radiology, AIIMS Rishikesh. Central vein placement was attempted outside. But, accidentally wire was misplaced in central vein and access was lost. Patient was referred for snaring of misplaced guidewire.
Result: As Snare was not available, innovative method for removing centrally misplaced guidewire was thought and 8F sheath was placed in right Internal Jugular Vein. Though this sheath, two guidewires and one 10x40mm balloon was passed into Superior Vena Cava. These wires and balloon were rotated and accidentally misplaced guidewire was entrapped and brought inside sheath. Whole assembly of guidewires and balloon were pulled out in single assembly. In this way, accidentally misplaced guidewire was snared though right Internal Jugular Vein.

Conclusion: Innovative methods should be thought when regular hardware like snare is not available and Interventional Radiologist is facing an emergency.

Moreover, this innovative method is economical for the patient.

Abstract ID: 474

ABSTRACT TITLE: PERCUTANEOUS TRANSHEPATIC BILIARY DRAINAGE(PTBD) IS EFFECTIVE IN PALLIATIVE MANAGEMENT OF MALIGNANT OBTURATIVE JAUNDICE

PRESENTING AUTHOR: ROHIT SHARMA

CO-AUTHOR: ANURADHA SHARMA, PUNEET GUPTA, RAHUL BHAN

PTBD plays an important role in the management of these patients. It is most often used as a palliative procedure, aiming to relieve the symptoms (pruritis, cholangitis etc.) and improve the quality of life and also reduces the morbidity associated with the disease, although it is not going to alter the basic disease prognosis. It is a safe & cost effective method of biliary drainage in malignant obstructive jaundice.

Aim: The aim of this study was to evaluate role of PTBD in management of patients suffering from malignant obstructive jaundice.

Introduction: Pancreatic and Hepatobiliary system malignancies constitute the most common reasons for malignant obstructive jaundice. Both ERCP and PTBD have well established and effective role of palliation in unresectable cases. ERCP is usually performed in cases of distal CBD block (beyond hilum), whereas PTBD is preferred in cases of proximal biliary obstruction.

Materials and Methods: Prospective study

Inclusion criteria: Patients of malignant obstructive jaundice not amenable to surgical treatment (inoperable). Patients of malignant obstructive jaundice requiring decompression of bile duct before going for definitive surgery.

Patients who were not candidate for endoscopic intervention.

Exclusion criteria: Patients with significant ascites.

Patients with advanced cirrhosis.

Patients with incorrectable coagulopathy or any other co morbidity.

Results: Patients who were intervened were in the age group of 35 – 80 years. Most of the patients fell in age group of 45 – 74 with mean age of 58 years. There is significant fall in the values of S.Bil., S.G.O.T., S.G.P.T & S.Alk. Phosphatase

Conclusion: PTBD provides effective measure of decompressing the biliary tract alongwith tremendous improvement on quality of life.
We recommend the procedure for palliative care of such terminally ill patients to relieve the problem of obstructive jaundice as well as for symptomatic relief. The procedure is also cost effective & is not too demanding regarding establishment of too many equipments.

Abstract ID: 485

**ABSTRACT TITLE**: USE OF ENDOVENOUS LASER ABLATION IN THE TREATMENT OF SAPHENOUS VEIN INSUFFICIENCY: A PROSPECTIVE STUDY.

**PRESENTING AUTHOR**: ASHISH GEORGE

**CO-AUTHOR**: DR.BABU PHILIP, DR.ABHINANDAN RUGE

**Purpose**: To evaluate the early efficacy of Endovenous Laser Ablation treatment (EVLA) in Saphenous vein insufficiency.

**Materials and Methods**: A sample size of 30 was set for a confidence interval of 95% and an alpha value of 5%.

The EVLA procedure was done using a 1470 nm laser diode.

The patients were evaluated clinically and by using colour Doppler. The evaluation was done before the procedure, one month, three months and six months after the procedure. The following criteria were used:

- Measurement of the diameter of saphenous veins 3 cm caudal to the SFJ and SPJ level.
- Assessment for any recanalization of the ablated vein.
- Clinical classification using the CEAP classification of varicose veins.
- Assessment using Venous Clinical Severity Score (VCSS).
- Assessment using Visual analogue scale (VAS) for severity of pain

The descriptive statistics for the groups in terms of the properties emphasized were expressed as mean, standard deviation, minimum and maximum values. Paired t-test was applied to assess change in the parameters assessed before and after the EVLA procedure.

**Results**:

**Pre-procedure**:
- The diameters of the saphenous veins ranged between 3.8 mm and 8.7 mm (mean=5.2 ± 0.9).
- Mean VAS score: 7.26 ± 1.2.
- Mean VCSS score: 7.48 ± 1.7.

**Six months after the procedure**:
- The diameters of the saphenous veins ranged between 1.6 mm and 3.1 mm (mean=2.1 ± 0.4).
- Mean VAS score: 1.7 ± 1.0
- Mean VCSS score: 1.1 ± 0.9.

The difference between the pre-procedure and the six months post-procedure values were found to be statistically significant (p<0.05).
Recanalisation of the ablated vein seen in 1 out of 30 patients (3.33%).

Conclusion: EVLA is a safe and successful treatment method for superficial venous insufficiency.

Abstract ID: 496

**ABSTRACT TITLE**: SPINAL AVM: A RARE CAUSE OF POST TRAUMATIC PARAPLEGIA IN CHILDHOOD

**PRESENTING AUTHOR**: SHIKHA AWASTHI

**CO-AUTHOR**: DR K UDAY BHANU, DR SAMAR CHATTERJEE, DR NK JAIN

**Background**: Spinal AVMs (AV malformations) are rare and under-diagnosed entities that typically lead to progressive symptoms and myelopathy if not treated properly. The actual incidence of spinal AVMs is poorly known. Still rarer is the presentation of spinal AVM in children less than 02 years of age.

**Aim**: The purpose of the report is to present a case of spinal AVM in a child aged 17 months of age and discussion of its findings and discuss the endovascular treatment and post treatment apperance.

**Material & Methods**: This study was conducted at the Department of Radio-diagnosis, Armed Forces Medical College, Pune. The patient was a 17 months old child who presented with sudden onset paraplegia following fall from bed. The child was initially evaluated using CEMRI of the spine.

**Results**: The CE MRI revealed a type II intramedullary spinal AVM which was being supplied by feeders from the posterior inter-coastal arteries at D9 and D11 levels. Multiple tortuous enlarged draining veins were seen. Also seen was a venous sac within the substance of the cord which was showing intense post contrast enhancement. The findings of CEMRI were confirmed on DSA and the nidus was embolised in the same sitting.

**Conclusion**: Spinal AVMs are rare entities which can present with catastrophic symptoms. They are still rarer in pediatric age group. One should have a high index of suspicion for this entity, even in the setting of trauma to obviate unnecessary procedures.

Abstract ID: 556

**ABSTRACT TITLE**: PERCUTANEOUS RADIOFREQUENCY ABLATION OF OSTEOID OSTEOMA: PRINCIPLE AND TECHNIQUE

**PRESENTING AUTHOR**: AMMAR MODI

**CO-AUTHOR**: DR. SACHIN KHATAKALLE, DR. AKASH RAMTEKE

**Learning objectives**: To describe the principle and technique for performing radiofrequency ablation (RFA) in osteoid osteoma involving appendicular skeleton.

**Background**: Osteoid osteoma is a benign skeletal tumor seen in young individuals with male:female ratio 2:1. It can be observed in almost any bone region, but has a higher incidence in long bones, mainly in the diaphyseal region of the tibia and femur. Clinically, it presents with a persistent, long-lasting and vague pain, worsening at night, that is sometimes relieved with non-steroidal anti-inflammatory drugs (NSAIDs) particularly aspirin. Surgery is the definitive treatment, but difficulty in lesion localization and extensive dissection is a problem. Radiofrequency ablation (RFA) has been found to be a safe, fast, minimally invasive and reliable method of treating osteoid osteomas.
Imaging findings: Osteoid osteoma shows radiolucent nidus with surrounding reactive bony sclerosis and cortical thickening with nidus usually <1cm in diameter. When radiographs are negative, CT scan are necessary to identify lesion. The main radiographic differential diagnoses of osteoid osteoma are brodies abscess, bone infarction, chronic osteomyelitis, and chondroblastoma. CT-guided radiofrequency ablation is a percutaneous technique in which the use of electrodes connected to an energy source leads to protein denaturation and coagulative necrosis.

Conclusion: CT-guided radiofrequency ablation is a safe, quick, minimally invasive option for the management of osteoid osteoma, presenting good results.
Abstract ID: 639

ABSTRACT TITLE: PERCUTANEOUS TRANSHEPATIC BILIARY DRAINAGE (PTBD) IN THE MANAGEMENT OF EXTRAHEPATIC BILIARY OBSTRUCTION

PRESENTING AUTHOR: ANADI GUPTA
CO-AUTHOR: DR. PANNAG DESAI, DR. A. ASHOK KUMAR

Learning Objectives: 1. Review the indications and identify the appropriate patient population for PTBD 2. Review the complications associated with PTBD 3. Describe basic PTBD technique

Background: The key purpose of percutaneous biliary interventions such as PTBD is to decompress the obstructed biliary system and if possible to develop a communication between the biliary tree and the bowel allowing physiological bile flow. This decreases pain, jaundice and occurrence of cholangitis by relieving the obstruction. As hepatic dysfunction is a risk factor for major hepatic resection, biliary drainage helps in improving the liver function prior to surgery or neoadjuvant chemotherapy. PTBD is successful in cases where endoscopy has failed like duodenal stricture, high or multiple obstructions, failure to traverse the biliary stricture or failure to canulate papilla, post-surgical patients with altered anatomy or biliary enteric anastomosis.

Imaging findings: The cases included in this study are:
1) 70 year old male with Mid CBD stricture secondary to gallbladder carcinoma.
2) 34 year old male with hilar stricture post laparoscopic cholecystectomy.
3) 56 year old male with periampullary carcinoma causing distal CBD stricture.
4) 73 year old female with periampullary carcinoma causing distal CBD stricture.
5) 45 year old female, post partial gastrectomy in view of gastric carcinoma and now had malignant biliary obstruction

In all the above cases endoscopy had failed either due inability to cannulate the papilla or traverse the stricture or due to altered anatomy. PTBD was done in these patients and internal-external biliary drainage was successfully achieved.

Teaching points:
1. PTBD can be carried out either temporarily or as a palliative option and is very efficient in relieving biliary obstruction.
2. Preoperative knowledge of possible complications of PTBD is essential.
Abstract ID: 771

ABSTRACT TITLE: ENDOVASCULAR MANAGEMENT OF CIRSOID ANEURYSM - A CASE REPORT
PRESENTING AUTHOR: KIRANMAI MYNAMPATI
CO-AUTHOR: DR. M SATYANARAYANA MD DM, ASSISTANT PROFESSOR, DR. T. NAGESWARA RAO, MD PROFESSOR, DR. D. ANKAMMA RAO, DMRD DNB PROFESSOR.

Case report: Endovascular management of Cirsoid aneurysm.

Objective: Imaging and management of Cirsoid aneurysms.

Introduction: Cirsoid aneurysm is an arteriovenous malformation over scalp. The treatment options include endovascular embolization and surgical excision. Of which Percutaneous embolization being less invasive and safe procedure.

Materials and Methods: CT Angiography, Fluoroscope, Blood investigations, Percutaneous embolization using 17% glue.

Case History: A 28 yr old female presented with a slow growing scalp swelling in left parieto-occipital region since 4 years with history of trauma 4 yrs back. On examination approximately 10 x 7 cm soft pulsatile mass with bruits noted. No evidence of discoloration or ulcerations. Systemic examination was within normal limits.

Under Local anesthesia Four vessels angiogram was done which revealed arteriovenous malformation over left parietal region supplied by bilateral superficial temporal and occipital arteries. Venous drainage is seen in to ectatic vein that drains into External Jugular Vein. No intracranial drainage noted.

Under road map guidance multiple per cutaneous access to the fistula site was obtained with 21 G butterfly needle and the fistula was embolized with 17% Glue. Post operative angiogram revealed complete obliteration of the fistula.

Conclusion: Percutaneous direct-puncture embolization of cirsoid aneurysms is a safe and less invasive procedure with good outcome and early recovery. It can be effectively used as an alternative or adjunct to surgery.

Abstract ID: 833

ABSTRACT TITLE: IS CYTOLOGY IMPERATIVE DURING AN ASPIRATION? -ABSCESS - THE CONCEALER
PRESENTING AUTHOR: AKSHATHA R BHAT
CO-AUTHOR: DR. SANTOSH RAI

Learning Objectives: To know the importance of imaging guided intervention and cytology/HPE in correct diagnosis of concealed malignancy. To suspect and rule out malignancy in an unresolving abscess.

Background: Periappendiceal abscesses are managed conservatively with percutaneous drainage due to its decreased morbidity and improved clinical outcomes. However mucinous adenocarcinoma can masquerade as an abscess.

Case: A 47 year old male first admitted on 14th June 2018 with complains of pain the right lower abdomen since 1 month of moderate to severe intensity, non radiating and partially relieved on medication. There was mild nausea but no vomiting. No history of fever, burning micturition, altered bowel habits, bleeding per
rectal or dark coloured stools. No comorbid features. Clinical examination revealed a mass palpable 6x4cm with well defined margins in right iliac fossa with mild tenderness. Initial CT abdomen (GE-BRIGHT SPEED) suggested appendicular abscess.

Patient was managed conservatively on antibiotics and analgesics and was discharged with a plan for an interval appendicectomy.

Patient readmitted on follow-up on 02.07.2018 with persisting abdominal mass and reevaluated. USG guided aspiration done and aspirate sent for CS. No growth on micro.

**Imaging Findings:** CT abdomen- Ill-defined irregular heterogeneously enhancing collection/lesion with necrotic areas in the RIF ~ 6.9 x4.2 x5.5 cm, appendix separately not visualized. Multiple enhancing ovoid lymph nodes noted in the pericaecal region - largest seen in RIF, ~11 mm on short axis diameter.

USG guided FNAC revealed mucinous adenocarcinoma.

**Conclusion:** Imaging alone is inadequate for the follow-up of periappendicular abscess. All unresolving periappendicular abscesses treated conservatively / with percutaneous drainage must undergo cytology/HPE to unmask the underlying malignancy.

**Keywords:** Periappendicular abscess, USG guided aspiration, cytology, adenocarcinoma.

**Abstract ID:** 925

**ABSTRACT TITLE:** USG GUIDED GENICULAR NERVE BLOCKAGE IN PATIENTS WITH SEVERE OSTEOARTHRITIS OF KNEE- A CASE SERIES

**PRESENTING AUTHOR:** TAPENDRA NATH TIWARI

**CO-AUTHOR:** DR. NARENDRA KARDAM, SR. PROFESSOR

**Purpose:** To establish validity of ultrasound guided genicular blockage

**Materials and Methods:** The study was conducted at the outpatient clinic of the R.N.T. Medical College and associated group of hospitals, Udaipur, Rajasthan. Patients were between 40 and 80 years old, fulfilled the ACR criteria for knee OA22, had symptomatic knee OA, not responded adequately with NSAID. Patients with meniscal or cruciate ligament injury were excluded. Eligible patients were required to have radiologic evidence of OA of the affected knee on a radiograph obtained at the start of the study. Patients were randomly assigned to the steroid or saline treatment group based on a table of randomly assorted digits. USG guided identification of genicular nerve was done then perineural injection was given. Patients undergone clinical evaluation at baseline, at 2 weeks interval, monthly thereafter for 6 months. Patients were evaluated using the WOMAC likert scale.

**Results:** 294 patients, 146 in steroid group and 148 in saline group were enrolled for study. Total 275 patients 142 in steroid group and 133 in saline group were followed for 6 months. 19 patients could not be followed because of various reasons. Mean age of patients was 66.5 years and 65.1 years in steroid and saline group respectively. Mean weight was 71.8 kg in steroid group and 73.1 kg in saline group. Average baseline WOMAC score was 56.21 in steroid group and 55.56 in saline group.

**Conclusion:** USG guided blockage of genicular nerve appears to be safe and effective method of pain relief in patients with moderate to severe osteoarthritis. It is easily and widely available as compared to pulsed radiofrequency ablation. One can easily master the technique. Although it is temporary method, it can be repeated whenever required.
Abstract ID: 963

ABSTRACT TITLE: PERIPROCEDURE RECOMMENDATIONS IN INTERVENTIONAL RADIOLOGY: THE EVIDENCE OF LITERATURE

PRESENTING AUTHOR: RESHAM SRIVASATAVA

CO-AUTHOR: PROF R.C SHUKLA, DR AMIT NANDAN DHAR DWIVEDI, DR. ISHAN KUMAR, DR. RITU OJHA

Learning Objectives:

* To learn about the current formal recommendations concerning the use of sterile technique during IR procedures
* Do’s and don’t’s during Interventional Radiology procedures

Background: Surgical site infection is the third most frequently reported nosocomial infection. Studies show that SSI lead to increased length of hospital stay and increased health care costs. To minimise it, there is a need for formal recommendations regarding periprocedural sterile techniques. This is particularly important given increasing incidence of antibiotic resistance, complications from nosocomial infection, emphasis on quality of care.

Conclusion: *Assessment of the patient before IR procedure by:

- Taking problem focused history and examination
- Categorisation of procedure type

*Preprocedure patient skin preparation (hair removal; scrub; paint) to reduce microbial counts at surgical site immediately prior to making incision

*IR suite:

- Limit traffic flow in suite
- Instrument backtable prepared in advance
- Sterile field incorporates laminar ventilation, surgical drapes, sterile instrumentation
- Proper procedure room attire and aseptic practices

*Surgical attire:

- Scrub suits
- Sterile gowns and gloves (technique; do’s and don’t’s)
- Surgical masks and caps
- Shoe covers

*Hand Antisepsis:

- Technique of hand washing
- Alcohol based handrubs versus traditional scrub agents

*Safe medication practices as per Joint commission:
- labelling medications on the sterile field  
- ensuring proper patient identification  
- documenting all patient medications  
- managing medications off and on the sterile field  
- monitoring patients effects from medications administered  

*Cleaning Procedures:*  
- Proper disinfection of IR suite and work surfaces after every procedure  
- Proper waste disposal as per latest BMW rules (red, yellow, transparent, blue)  

*Invasive procedure environment:*  
- Equipment clean storage area  
- Soiled holding area  
- Handscrubbing facilities  
- Housekeeping closet  

*Postprocedure patient care:*  
- Regular dressings  
- Monitoring  

**Abstract ID: 981**  
**ABSTRACT TITLE:** ROLE OF MAGNETIC RESONANCE GUIDED FOCUSED ULTRASOUND (MRGFUS) IN TREATMENT OF UTERINE FIBROIDS: PRELIMINARY EXPERIENCE IN A TERTIARY CARE HOSPITAL.  
**PRESENTING AUTHOR:** NIDHI PRABHAKAR  
**CO-AUTHOR:** VEENU SINGLA, TULIKA SINGH, VANITA JAIN, SHALINI GAINDER, NIRANJAN KHANDELWAL  

**Purpose:** To describe and evaluate the treatment of uterine fibroids using Magnetic Resonance Guided Focused Ultrasound (MRgFUS) in a tertiary care hospital in North India.  

**Materials and Methods:** Patients with T2 hypointense uterine fibroids, without bone or bowel loops in the ultrasound beam pathway and with symptom severity score (SSS) of >= 25 points on the uterine fibroid symptom and quality of life (UFS-QOL) questionnaire were included in the study. Treatment was performed with Exablate 2000 coupled with 3T MRI (GE, Discovery 750D, USA). Post procedure Contrast enhanced MRI (CEMRI) was performed to visualize the outcome of the treatment. NPV (non perfused volume) defined as non-enhancing area on CEMRI acquired immediately after treatment was calculated. SSS was calculated at baseline and at 2 months post-treatment and was compared.  

**Results:** All patients had significant improvement in symptoms post MRgFUS, with decrease in SSS. NPV was directly related to the decrease in the symptoms. Fibroids more than 10 cm in size took longer time to treat and showed relative less improvement in symptoms.
Conclusion: MRgFUS is a novel new non-invasive modality which can be used for treating uterine fibroids in selected patients.

Abstract ID:997

ABSTRACT TITLE: INTERVENTIONS IN DEEP PELVIC PATHOLOGIES USING ENDOCAVITARY PROBES: A NOVEL APPROACH
PRESENTING AUTHOR: APARNA SINGH
CO-AUTHOR: DR. USHA JAIPAL, DR. MEENU BAGARHATTA, DR. NARESH MANGALHARA

Purpose: Percutaneous image-guided procedures of deep pelvic lesions such as aspiration and drainage of abscesses and obtaining nonsurgical pathologic diagnosis may be difficult through conventional trans-abdominal or trans-gluteal route with CT or US guidance owing to overlying loops of bowel, bladder and blood vessels. We evaluated trans-vaginal/ trans-rectal drainage of deep pelvic abscesses with use of a trocar method, aspiration of lesions for cytological analysis and core biopsy of deep pelvic masses to overcome the difficulties encountered with the other approaches.

Materials and Methods: This study was conducted in our institute from April 2018 to August 2018. Out of 159 procedures conducted on pelvic pathologies during this period, 11 were found to be suitable candidates for endocavitary approach and were included in the study after taking informed consent. Age of the patients ranged from 16-74 years old. A trans-vaginal sonography probe, a catheter guide (we used the outer protective plastic tubing for the stylette that comes with the catheter set), latex condoms as probe cover, lignocaine gel, 18G needle for abscess drainage and automatic biopsy gun were used.

Results: Trans-rectal/trans-vaginal biopsies were done in 7 cases of inaccessible pelvic masses. FNAC was done in 2 cases of ovarian masses. Confirmative tissue diagnosis was obtained in lesions inaccessible by traditional biopsy routes and offered nonsurgical solution. Trans-rectal drainage of deep pelvic abscesses was done in 2cases. Minimally invasive drainage was obtained avoiding potentially higher risks associated with general anesthesia and surgery. No major post procedure complications were observed.

Conclusion: Trans-rectal/trans-vaginal US guidance requires minimal or no anesthesia, traverses short distances, avoids anterior structures, and uses extra-peritoneal paths, which minimizes intra-peritoneal contamination. It is a very effective, simple and safe approach offering precision in reaching the desired site.

Abstract ID:1106

ABSTRACT TITLE: DIRECT INTRAHEPATIC PORTOCAVAIAL SHUNT USING TRANS-SPLENIC APPROACH IN A CHALLENGING CASE OF BUDD-CHIARI SYNDROME WITH PORTAL VEIN THROMBOSIS AND GASTRIC VARICES
PRESENTING AUTHOR: MANISH MISHRA
CO-AUTHOR: DR. NAVIN M MULIMANI

Purpose: Direct intrahepatic portocaval shunt (DIPS) is a modification of TIPS and serves to create an artificial communication between IVC and portal vein in a case of unsuitable or inaccessible hepatic veins in BCS.

PV thrombosis present technical difficulty during DIPS due to nonvisualization of PV. In such patient, trans-splenic approach is utilized to navigate thrombosed PV.
Material & Method: We report a case of 31 yr old male who presented with pain in abdomen & refractory ascites, on CT & MRI diagnosed with BCS secondary to venous occlusion with portal vein thrombosis & gastric varices.

Endovenous hepatic venous recanalisation for occluded hepatic venous outflow was attempted but was not successful.

Trans-splenic approach was taken and portal vein thrombolysis with angioplasty was done and DIPS procedure was also done in a same setting.

- DIPS with recanalisation of portal vein thrombosis
- Endovascular coil embolization of gastric varices

Result: Final angiogram showed patent stent with recanalisation of portal vein and embolization of gastric varices.

Patient improved symptomatically with complete resolution of ascites at 10TH day with maintained patency of stent with flow velocity & in subsequent 1st and 2nd follow ups.

Conclusion: The DIPS procedure seems to be useful in the management of BCS in the setting of occluded hepatic veins. This procedure is associated with high shunt patency with long term primary patency of stent.

Learning Objectives:

- To enlist the differential diagnoses affecting the popliteal artery and to learn when to clinch the diagnosis of PAES clinically and radiologically.
- To understand the digital subtraction angiography (DSA) imaging findings along with dynamic study findings so as to diagnose PAES.

Background: Normally, the popliteal artery is seen to descend between the medial and lateral heads of the gastrocnemius muscle over the popliteus muscle. PAES is a rare congenital anomaly affecting young adults predominantly males and also usually seen in well-conditioned athletes, who present with symptoms of calf claudication and ischemia. It is characterized by various anatomic relationships between the muscle and arteries in the popliteal fossa, with resultant extrinsic arterial compression. Accurate diagnosis of PAES is indispensable. Imaging techniques are necessary to confirm the diagnosis. DSA has long been the primary radiologic technique used for diagnosis and has advantage of dynamic study using the plantar flexion of the affected limb. Eventually, due to microvascular trauma, stenotic turbulent flow and arteriosclerosis, an irreversible lesion of the popliteal artery can manifest as aneurysmal dilatation, thrombosis, or embolism, which can result in severe limb ischemia. PAES should be treated surgically, the principle of treatment is to release the entrapped vessel, usually by myomectomy, and to restore normal arterial flow to the extremity.

Imaging Findings: The DSA findings of PAES include partial or complete lumen occlusion of the popliteal artery with resultant collateral formations, ectasia of the popliteal artery, fine luminal irregularities and can
vary from case to case. The dynamic study also termed as Stress angiography-DSA performed in neutral position as well as with foot in dorsiflexion or plantar flexion to demonstrate the compression. This is usually performed to confirm the diagnosis prior to the surgery. The type surgery depends on the type and severity of PAES.

**Conclusion:** In any young patient, with symptoms of lower limb ischemia, PAES should always be included in the differentials of limb ischemia. Also, dynamic scanning should always be performed.

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**Abstract ID: 1192**

**ABSTRACT TITLE:** ANEURYSM AND PSEUDOANEURYSM OF UPPER LIMB DIALYSIS FISTULA – DIFFICULT ORDEAL FOR DIAGNOSTIC, INTERVENTIONAL RADIOLOGIST AND SURGEON

**PRESENTING AUTHOR:** ANNU SHRI

**CO-AUTHOR:** DR PRASHANT SARDA, DR. ARVIND MAKKER

**Purpose:** In past decade there has been an increasing trend noted in dialysis arterio-venous fistula (AVF) due to increasing number of patients requiring dialysis access. Therefore, there is increase in dialysis fistula complication like aneurysm (A) and pseudo-aneurysms (PA’s) due to repeated needle cannulation and infection. The purpose of our study was to evaluate efficacy of percutaneous thrombin injection (TI) in management of A and PA’s of dialysis fistula in upper limb.

**Material And Methods:** Ours was a retrospective, single institution study of 20 patients (15 females, 5 males), all with brachiocephalic dialysis fistula. Diagnosis was made on Color Doppler Ultrasonography and Digital Subtraction Angiography (DSA). 8 out of 20 subjects were diagnosed with narrow neck (1-3 mm neck diameter) PA’s at AVF site or venous site and 12 as fusiform aneurysm involving the cephalic vein segment. Depending on case wise scenario, PA’s were planned to treat with balloon occlusion and percutaneous TI or surgery.

**Results:** 4 out of 8 PA’s which appeared narrow necked on Color Doppler Ultrasonography and DSA came out to be wide neck on surgery. Percutaneous TI failed to achieve desired end result and PA’s were ultimately managed surgically.

**Conclusion:**

- Percutaneous TI failed to achieve desired results for treating high flow dialysis fistula PA’s in our experience.
- Angiography and ultrasound do have limitation in exact approximation of neck size as most of A and PA’s are iatrogenic or secondary to infection with varied presentation.
- Covered stents, if possible; offers the best result by salvaging fistula as well as approximating the aneurysm size. However, due to brachiocephalic location none of our cases were planned for covered stenting as all the PA’s were, at or near joint.
- With chronicity of aneurysm surgery can be challenging as it requires complete dissection of A and PA’s and salvage of fistula is not possible.
Abstract ID: 1213

ABSTRACT TITLE: AN UNUSUAL CASE OF MESENTERIC ISCHEMIA
PRESENTING AUTHOR: SHIBU GARG
CO-AUTHOR: DR. ARMEL ARPUTHA SIVARANJAN

Aim: To revascularize the occluded/severly stenosed superior mesentric artery by stenting.

Objective: To analyze the results and durability of angioplasty/stenting of the superior mesenteric artery (SMA).

Materials And Methods: 7F JR guide catheter, 5F JR diagnostic catheter, 0.035” exchange length Terumo guide wires, 3 x 15 mm, 4 x 23 mm coronary balloons. Balloon expanding stent 10 x 20 mm [Formula 535 – Cook Medical], 5F diagnostic pigtail catheter SMA angioplasty with stenting.

Results: Stenosed area in the SMA is deployed with a stent and revascularization is achieved and patient symptomatically improved a lot.

Conclusion: Angiography is the gold standard for occlusion/stenosis of the mesentric arteries because we have an advantage of direct visualization of mesentric vasculature. Selective catheterization and pressure measurements across stenosis area can be expertly evaluated.

Abstract ID: 1214

Title: CT-guided pediatric interventions: a tertiary care centre experience
Topic: Interventional Radiology

Purpose: To study the spectrum of interventions performed under CT-guidance in pediatric patients and analyse the indications, technical success, and diagnostic spectrum of biopsies in pediatric patients.

Materials and Methods: A retrospective analysis was carried out for patients less than 18 years who underwent CT guided procedures from January 2015 to August 2018 in department of Radiodiagnosis, AIIMS, New Delhi. A total of 84 children were included during this period.

Results: Various therapeutic procedures [collection drainages (11) and radiofrequency ablation of osteoid osteoma (13)]; and diagnostic procedures [biopsies (60)] were done under CT guidance.

Out of total 60 biopsies, 25 were for thoracic lesions [mediastinal/lung/ chest wall masses] (17 positive, 5 negative and 3 technical failure); 26 were for bony lesions (13 positive, 7 negative and 6 technical failure); 5 were for abdominal masses (3 positive, 1 negative and 1 technical failure) and 4 were for head and neck lesions (3 positive and 1 technical failure).

- 17 positive thoracic lesions included neural crest origin lesions like ganglioneuroma, ganglioneuroblastoma and neuroblastoma (7), Hodgkin's lymphoma (3), Tuberculosis (2) and 1 case each of Burkitt lymphoma, Ewing's sarcoma, adenocarcinoma, primitive neuroendocrine tumor, thymoma and chronic inflammation.
- 13 positive bone lesions included chondroblastoma (4), Langerhans cell histiocytosis (2), tuberculosis (2) and 1 each of lymphoma, Erdheim Chester disease, osteoid osteoma, osteoblastoma and primitive neuroendocrine tumor.
- 3 positive cases of abdominal lesions included 1 each of Burkitt lymphoma, Hodgkin lymphoma and reactive lymph node.
Conclusion: Therapeutic and diagnostic CT guided interventions are effective in management of a variety of pediatric disorders. The spectrum of conditions requiring CT guidance for biopsies were predominantly in bone and thoracic lesions which inaccessible on USG and deep seated abdominal and head and neck.

Learning Objectives:

1. To know about the rare complications associated with chronic pancreatitis like gastroduodenal artery pseudo-aneurysm.
2. To know about the emergency intervention procedure that must be done in case of suspected gastroduodenal artery aneurysm.

Background: A 45-year-old patient presented with bleeding per rectum, pain abdomen and vomiting for 20 days along with 1 episode of haematemesis. On examination, there is tenderness in the epigastric region.

Imaging Findings: Endoscopy showed fresh bleed from the ampullary opening.

Ultrasound showed a hypoechoic lesion in the sub hepatic area with peripheral calcification which showed positive yin-yang sign on colour Doppler. Pancreas showed multiple small calcific specks suggestive of chronic pancreatitis. Contrast enhanced computed tomography of the abdomen and pelvis showed chronic calcific pancreatitis with pseudo-aneurysm arising from the gastroduodenal artery and a small pseudocyst posterior to the main portal vein.

Embolization of the gastroduodenal artery pseudo-aneurysm was done under local anaesthesia with right femoral approach. Celiac angiography showed a large pseudo-aneurysm arising from the gastroduodenal artery. The gastroduodenal artery was selectively catheterized and embolization coil was placed, following which no flow was seen in the pseudo-aneurysm.

Conclusion / Teaching Points: Even though gastroduodenal artery pseudo-aneurysm is a rare complication of chronic pancreatitis, rupture might occur which leads to a fatal outcome, hence emergency intervention is needed in case of incidental detection of gastro-duodenal artery pseudo-aneurysm. Gastroduodenal artery aneurysms constitute 1.5% of all the visceral artery aneurysms, most common being splenic artery aneurysm followed by renal artery and hepatic artery aneurysms.
Abstract ID: 1258

ABSTRACT TITLE: PERCUTANEOUS IMAGE GUIDED ABLATION OF LUNG TUMORS: OUR INITIAL EXPERIENCE AND REVIEW

PRESENTING AUTHOR: SREEDHARA B.CHALUVASHETTY

CO-AUTHOR: N KALRA, U GORSI, M S SANDHU, N KHANDELWAL

Learning Objective: To describe percutaneous image guided ablative procedures in the management of lung tumors.

Background Information: Lung cancer is the leading cause of cancer deaths worldwide in men and second most common in women, and lung is also the common site of metastatic disease. Percutaneous image guided ablative therapies are viable alternative or complementary treatment option for patients with primary and secondary pulmonary malignancies who are not suitable for surgery. Ablative techniques can be thermal or non thermal. Thermal ablative techniques include radiofrequency ablation, microwave ablation and cryoablation. Irreversible electroporation is a non thermal technique, uses high voltage, high intensity electric pulses of short duration to create irreversible pores in the cell membrane resulting in cell death and apoptosis.

Teaching points: We outline the various ablative techniques used in the management of primary or secondary lung malignances. Indications, contraindications, advantages and limitations of each ablative technique, and post ablation follow up imaging appearances are provided. Technical success, clinical outcome and potential complications of each procedure are described. We also describe the technique and outcome of radiofrequency ablation and cryoablation at our institute.

Conclusion: Percutaneous image guided ablative therapies are safe and effective methods for ablating and debulking solid lung tumors, and can provide radical cure or palliation. They are associated with low procedural morbidity and mortality compared to surgery with good survival benefit.

Abstract ID: 1264

ABSTRACT TITLE: ROLE OF ABLATIVE THERAPIES IN THE MANAGEMENT OF INTRABDOMINAL SOLID TUMORS

PRESENTING AUTHOR: SREEDHARA B.CHALUVASHETTY

CO-AUTHOR: N KALRA, U GORSI, M KANG, A LAL, M S SANDHU, N KHANDELWAL

Learning Objective: To describe our experience in percutaneous management of solid intra-abdominal tumors by using different ablative techniques.

Background Information: Minimally invasive percutaneous tumor ablation is an established non surgical curative treatment option for focal solid tumors in the liver, kidney, bone and lung, with expanding indication for focal tumors in other locations. The ablative therapies can be thermal, non thermal or chemical ablation. Thermal ablative techniques use extreme temperatures to destroy the tumor cells, which include radiofrequency ablation, microwave ablation and cryoablation. Irreversible electroporation is a non thermal technique, uses high voltage, high intensity electric pulses of short duration to create irreversible pores in the cell membrane resulting in cell death and apoptosis. Heat sink effect is not a limitation, and is devoid of serious thermal injuries to adjacent vital structures. Chemical ablation uses ethanol or acetic acid to produce cellular dehydration, coagulative necrosis and destroy tumor cells.
Teaching points: We outline the various ablative techniques used at our institute in the treatment of focal solid tumors of intrabdominal organs. Detailed discussion of the procedure, Indications, contraindications, and limitations of each ablative technique is provided. We also describe the technical success, clinical outcome and potential complications of each procedure.

Conclusion: Percutaneous ablative procedures are an effective treatment option associated with low procedural morbidity and mortality compared to surgery. They can be used as curative, palliative or as bridge to transplant therapies, and can be used in conjunction with other treatment modalities.

Abstract ID:1281

ABSTRACT TITLE: PREDICTORS OF RESPONSE TO PERCUTANEOUS DRAINAGE IN PATIENTS WITH PANCREATIC FLUID COLLECTIONS

PRESENTING AUTHOR: SUMAN KOCHHAR

CO-AUTHOR: DR BALAJI BELLAM, DR RAKESH KOCHHAR, DR PANKAJ GUPTA, DR NARENDRA DHAKA, DR SAROJ SINHA

Introduction: Percutaneous catheter drainage is effective initial step of step-up approach for management of acute pancreatitis (AP). The objective of this study was to identify factors that lead to surgical intervention or mortality after initial management with PCD.

Methods: This was a prospective observational study between July 2016 - Nov 2017. A total of 101 consecutive AP were recruited. Step up approach of management was followed, initially all patients received medical management and subsequently 51 patients requiring PCD were enrolled in the study. We evaluated the association between success of PCD drainage (i.e. survival without necrosectomy) and various factors. Baseline parameters (demography, CTSI, etiology, % necrosis, APACHE II, CRP and intraabdominal pressure (IAP), morphologic characteristics on Computed Tomography), characteristics of collection before PCD (nature of collection, volume, site, solid component), PCD parameters (initial size, maximum size, number and duration of drainage) and factors after PCD insertion (fall in CRP, fall in IAP, reduction in volume of collection) were evaluated.

Results: Out of 101 patients of AP, 51 patients required PCD drainage. The success rate of PCD in our study was 66.66 % (34/51) and 4 patients required additional surgical necrosectomy after PCD. Overall mortality rate in our study was 29.4 % (15/51, including 2 deaths after necrosectomy). PCD alone improved organ failure in 72.54% patients. Of all the parameters evaluated, initial PCD size (P= 0.011) and > 50% volume reduction in collection after PCD insertion (P=0.000) were positive predictors of PCD success. Total volume of collection more than 750 CC before PCD emerged as a negative predictor of PCD outcome (P=0.05).

Conclusion: Larger size of the first PCD and more than 50% reduction of collection after PCD were positive predictors of PCD success. Total volume of collection more than 750 cc before PCD was a negative predictor of PCD outcome.
Cerebellum is largest part of hind brain and it lies in posterior fossa behind the brain stem structures. In foetal embryo, it starts developing by 5th week of gestation. Determination of gestational age is very important in obstetrics as it plays major role in evaluation of foetal development and further management in pregnancy.

Ultrasound being cost-effective and non invasive technique is popularly used to determine gestational age by various diameters. Demonstration of cerebellum and measurement of TCD is a newer and unique method that is helpful in determining foetal gestational age and foetal brain growth as well.

Aims and Objectives: Assess development of fetal cerebellum and its role in determining gestational age of a fetus.

Materials & Methods:
- The study was conducted in Department of Radiology of C. U. Shah Medical College, Surendranagar.
- The study was carried out on 50 antenatal females in 2nd & 3rd trimester visiting our department for routine antenatal scans.
- The machine used was GE LOGIQ P5 USG machine.

Results & Interpretations:
- Pregnant females between 19 to 37 years have been included in this study. Of which 32 were primi and rest 18 had one or more children.
- The mean TCD between 12 to 20 weeks was 16.42 mm; between 20 to 28 weeks was 27.49 mm and in >28 weeks mean TCD was 39.48 mm.
- When mean TCD was charted against the Gestational age, linear relationship was obtained.
- The correlation coefficient between TCD and Gestational age was +0.952 with p value being <0.005

Conclusion:
- TCD increases with gestational age in normally developing fetus.
- TCD is a reliable indicator of gestational age, fetal growth and assessment of intrauterine posterior cranial fossa

Good correlation between TCD and Gestational Age suggest TCD can be reliably used in estimation of Gestational Age even when LMP is not known.
Abstract ID: 18

ABSTRACT TITLE : A CASE OF MECKEL-GRUBER SYNDROME
PRESENTING AUTHOR : ANISH SUNDAR RAJ
CO-AUTHOR : DR. K. KANAKARAJ, MD

Aim: Evaluation of an incidental case of Meckel-Gruber Syndrome diagnosed during regular antenatal screening of the pregnant patient during 13 to 14 weeks of gestation.

Materials and Methods: Regular antenatal assessment of pregnancy by ultrasonography; first trimester dating scan; analysis of the developing fetus.

Results: Single live intrauterine gestation corresponding to 13 weeks; nuchal translucency measures 2.2 mm; occipital encephalocele; acromelic shortening of limbs; bilateral polycystic kidneys; hypoplastic vermis; dilated ventricles with Viking Sign; agenesis of corpus callosum – features suggestive of Meckel-Gruber Syndrome.

Conclusion: Meckel-Gruber syndrome, also known as pseudo-trisomy 13, is an autosomal recessive disease, consisting of a triad of (a) renal cystic dysplasia, (b) occipital encephalocele or holoprosencephaly, and (c) post-axial polydactyly. The presence of multiple renal cysts is found in most patients, while the incidence of occipital encephalocele is around 70 %, while that of post-axial polydactyly is around 65 %. The overall incidence of the disease is around 1 in 30000. This report documents one such patient who came for regular antenatal screening, and the relevant features of the developing fetus were picked up by ultrasonography.

Abstract ID: 33

ABSTRACT TITLE : MEDICAL ETHICS IN RADIOLOGY
PRESENTING AUTHOR : BIJIT KUMAR DUARA
CO-AUTHOR : (None)

Science without conscience is but ruin of soul. Ethics ensures stronger moral and personal identity as well as brighter horizon for satisfying professional life. Ethics is voluntary framework of guiding principles which brings order and purpose to professional activities. Lack of ethics is a void between laws on one hand and freedom for all on the other. Ethics are different from laws and are described as allegiance to unforceable.

Hippocrates oath may be taken as basis of ethical principles of modern day medical/Radiological practice. Guidelines--norms for correct behaviour Ethics--Correct behaviour dictated internally by one's own conscience Law--Correct behaviour governed externally by state. Ethics are a system of moral principles and standards governing professional conduct. A set of rules or standard governing a profession. A set of moral principles of right conduct of an individual.

Medical/radiological ethics is the art of making value laden choices.

A health care quality professional - regardless of his or her specific practice setting, organisation size or portfolio work is dedicated to improving clinical outcomes, reducing systemic waste and ensuring stakeholder’s engagement and satisfaction. A Health care quality professional is defined by his/her ethical purpose and not by job description.
Role of Radiology in clinical management of patient is ever increasing. The complexity of modern radiology service delivery have restructured relationship of both the provider and recipient and interrelationship between many providers of medical/radiological services. The departure from historic modes of initiation and response provide Radiologist with unprecedented challenge regarding daily judgement -- what constitute ethical and appropriate behavior radiological professionals.

Therefore Ethics in radiological management of patient, hazard levels in radiology, quality assurance of imaging products, research ethics are discussed.

Abstract ID: 64

**ABSTRACT TITLE**: EVALUATION OF THE ROLE OF SIMULATION TRAINING IN NUCHAL TRANSLUCENCY MEASUREMENT

**PRESENTING AUTHOR**: RITHI MELISSA DSILVA

**CO-AUTHOR**: DR MAHESH, DR BASAVARAJ, DR ABISHEK MENON

**Purpose**: To study simulation based ultrasonography training versus conventional training in nuchal translucency (NT) measurement among first year radiology residents assessed 6 months into their residency.

**Materials And Methods**: This was a comparative study between two 1st year radiology residents with no prior experience of performing NT scans. Primary investigator was responsible for selection of participants randomly using lottery method. It was a single center, randomized observer-blind study. Images were evaluated by a blinded experienced radiologist who scored them based on 7 criteria’s which included fetal position, magnification, identification of NT, presence of echogenic tip of nose, rectangular shape of palate anteriorly, translucent diencephalon, proper placement of calipers. Data obtained was analyzed using appropriate statistical tests.

**Results**: Total of 2 participants were tested who performed 30 NT scans each on same pregnant women. In overall scores for all cases, candidate trained with simulation had better mean score (mean score - 8.9) compared to candidate trained by conventional method (mean score - 4.4) with p value of 0.009.

**Conclusion**: NT scan plays a pivotal role in prenatal screening of fetal chromosomal anomalies. Our study showed ultrasound simulator to be an effective instrument of learning for radiology residents in terms of scanning technique, quicker acquisition and fine tuning of acquired skills. This would reduce the error in reporting and improve confidence level of performing NT scans among radiology residents.

Abstract ID: 88

**ABSTRACT TITLE**: ROLE OF GRAY SCALE AND DUPLEX DOPPLER IN EVALUATION OF CERVICAL LYMPHADENOPATHY

**PRESENTING AUTHOR**: BHAVANA

**CO-AUTHOR**: DR ABDUL GAFOOR, DR JOJI REDDY

**Aims and Objectives:**

1. To differentiate between Malignant and Non Malignant cervical lymphadenopathy.
2. To correlate between ultrasonography findings and Histopathology / cytological (FNAC) findings of cervical lymph nodes.
**Materials and Methods:** A prospective study on 30 patients who attended outpatient department and were referred to the Department of Radio-Diagnosis for high resolution USG of neck to Kurnool medical college and Government general hospital, Kurnool.

USG was performed with an esaote (My Lab Class C) using 12MHz linear transducer. Lymph nodes were assessed using grey scale and colour Doppler parameters like nodal Level and site, Size, Shape, L/S ratio, border,Hilum, Echotexture, necrosis, Matting and flow (R.I and P.I).A provisional diagnosis was suggested after the sonographic examination and these findings were correlated with Fine Needle Aspiration Cytology / Histopathological findings.

**Results:** A total of 98 lymph nodes in thirty patients were sonographically sampled. In our study out of 65 benign nodes (diagnosed by FNAC) only 35 nodes were identified as benign on sonography prior to FNAC. Out of possible 33 malignant nodes detected on ultrasonography only 24 lymph nodes turned out to be malignant on FNAC. Lymph node size < 6mm, oval shape, echogenic hilum, homogenous echotexture, ill defined borders, L/S ratio > 2 and hilar vascularity were considered as significant parameters (p ≤ 0.001) in detecting benign lymph nodes. lymph node size > 6mm, round shape, absent hilum, heterogenous echotexture, sharp borders, L/S ratio < 2, displacement of vessels, short vessel segments and focal absence of perfusion were considered as significant parameters (p ≤ 0.001) in detecting Malignant lymph nodes. Correlation of sonographic findings with Fine Needle Aspiration Cytology / Histopathological findings, which showed good agreement between the two (kappa = 0.5). Sensitivity and specificity of ultrasound in differentiating benign and malignant

**Abstract ID: 102**

**ABSTRACT TITLE:** PICTORAL ESSAY ON UNUSUAL SITES OF METASTASIS FROM VARIOUS PRIMARY MALIGNANT NEOPLASMS

**PRESENTING AUTHOR:** TULIKA DE

**CO-AUTHOR:** DR PATHAPATI DEEPTHI

**Learning Objective:** A pictorial essay on unusual sites of metastasis from various primary malignant neoplasms.

**Background:** Malignant neoplasms are, by definition, those that metastasize. Tumor metastasis add to the disease morbidity and mortality and have dramatic effects on disease staging, treatment and prognosis. According to literature, most primary malignant neoplasms exhibit few common patterns of metastasis. However, some malignant neoplasms show bizarre metastatic pattern. Hence, identifying the unusual sites of metastasis is crucial for accurate staging and treatment.

**Imaging Findings:**

CT scans of 15 cases were evaluated.

Based on general area of metastasis, the cases have been categorized in various groups as follows : pancreas, choroid, spleen, endobronchial / tracheal etc.

CT scans of the cases are studied and presented categorically in a pictorial manner.

**Conclusion / Teaching Points :**

- Early recognition of any unusual metastasis is extremely important.
CT examinations performed for follow up in known cases of primary neoplasms should be evaluated carefully to identify any unusual metastasis.

Abstract ID: 106

**ABSTRACT TITLE**: VOGT KOYANAGI HARADA SYNDROME

**PRESENTING AUTHOR**: ANAND JAISWAL

**CO-AUTHOR**: DR. S.B.S NETAM, DR. SANJIV KIRAR

**Learning Objectives**: Identification of rare syndrome with the help of imaging techniques.

**Background**: Vogt-Koyanagi-Harada syndrome (VKHS), initially described as an uveo-meningo-encephalitic syndrome, is a rare systemic granulomatous autoimmune disease that targets melanocyte-rich tissues, such as the eye, inner ear, meninges, skin and hair. VKHD is often associated with neurologic and cutaneous manifestations, including headache, hearing loss, vitiligo and poliosis. Here presenting a case report of VKHS.

**Case Report**: 27 year old female with complains of loss of vision in both eyes with history of fever, headache and diminished vision since 7 year and no history of trauma. On general examination vitiligo spot present over back of chest. Routine blood examination are normal. Ophthalmic examination reveals no perception of light in both eyes. Bilateral eye lagopthalmos, clear conjunctiva, keratopathy, shallow anterior chamber and exudative membrane over pupils in both the eyes. USG, CT scan and MRI- All suggestive of bilateral small eye, retinal detachment, calcified lens and diffuse thickening of choroid.

**Imaging Finding**: B-mode ocular ultrasound features of Vogt-Koyanagi-Harada syndrome are: low to medium reflective thickening of the posterior choroid, serous retinal detachments, mild thickening of the sclera and/or episclera adjacent to areas of choroidal thickening, vitreous opacities and sub-retinal septations may be seen.

MR imaging may detect early CNS involvement by Vogt-Koyanagi-Harada syndrome before the onset of neurologic symptoms which include: typical bilaterality of ocular findings, scattered periventricular white matter lesions on T2-weighted imaging/FLAIR, and pachymeningeal enhancement. Bilateral contrast enhancement of the choroid is seen along diffuse choroidal thickening with scleral sparing and retinal detachment. Complications include glaucoma, subretinal fibrosis, choroidal neovascularization and cataract.

**Conclusion**: Diagnosis of rare VKH syndrome can be made by high suspicion on clinical finding and should be confirmed by imaging. Early diagnosis and prompt treatment can prevent serious neurological and ocular complications.

Abstract ID: 152

**ABSTRACT TITLE**: INCIDENTAL FINDINGS WITH POTENTIAL CLINICAL IMPLICATIONS DETECTED ON STAGING CT

**PRESENTING AUTHOR**: EKTA DHAMIJA

**CO-AUTHOR**: ANUPAMA RAMACHANDRAN AND SANJAY THULKAR DEPARTMENT OF RADIODIAGNOSIS, DR B.R.A. IRCH, AIIMS, NEW DELHI

**Learning Objective**: To identify incidental findings (visceral or vascular) on CT scan routinely performed for staging of malignancy To discuss clinical significance of the respective finding.
Background: CT is the modality of choice performed for staging any malignancy. More than often, there are other findings which are overlooked and considered as insignificant at the time of baseline imaging. Many times, these have significant implications in the due course of management of the patient. The clinical significance has been graded into minor, moderate and major categories in limited literature. For instance, partial anomalous venous drainage in itself might not affect staging or treatment protocol in a patient with leukemia; however, it has major significance when patient is being considered for peripheral insertion of central line. Similarly, accessory or aberrant origins of arteries have bearing when tumor embolization is being planned. Hence, it is imperative for a radiologist to be aware of and to mention these features while routine reporting of the cross-sectional imaging done with other purposes.

Imaging findings: The incidental findings have been classified as:

1. Vascular- Aberrant or accessory origin of artery, double SVC/IVC, incidental deep vein thrombosis, venous collateral formation eg portal cavernoma
2. Visceral- simple cyst vs mets in liver/spleen/pancreas/ kidney, abdominal hernias, fatty liver, non-malignant pain due to intestinal worm or radiation colitis, radiation induced chest wall fibrosis or osteoradionecrosis

Conclusion: It is important to be familiar with clinical significance of incidental findings seen during routinely performed CT scans for baseline staging or follow up in cancer patients.

Abstract ID: 207

ABSTRACT TITLE: A RARE ETIOLOGY OF DEEP VEIN THROMBOSIS – “KILT SYNDROME”
PRESENTING AUTHOR: J SRAVANTHI
CO-AUTHOR: DR.M.SAI SWETHA, PROF.DR.CH.MADHAVI.

Introduction: KILT syndrome is a rare condition composing the triad of kidney and inferior vena cava abnormalities and extensive venous thrombosis. Agenesis of the Inferior vena cava is a rare anomaly which can be identified as incidental finding or can be associated with iliofemoral venous thrombosis. IVC agenesis has a known association with renal anomalies.

We present a 41 yr male patient came with chief complaints of right loin pain, swelling and varicosities over both lower limbs.

Imaging Findings: Colour Doppler confirmed the presence of chronic DVT of both lower limbs. No underlying hematologic risk factors were identified.

A CT scan was obtained which demonstrated absent infrarenal IVC resulting in dilatation of lumbar, paravertebral, azygos system of veins and formation of multiple collaterals along lateral pelvic walls, splenic hilum - probably due to developmental hypoplasia of IVC.

An additional finding in this patient was small sized right kidney with uniformly narrowed vasculature -likely to represent right renal hypoplasia and compensatory hypertrophy of left kidney.

Conclusion: KILT syndrome is a rare condition and is commonly an incidental finding during deep venous thrombosis or acute loin pain .

Once diagnosed, these patients need long term follow up.

Due to high thrombotic risk, one should consider avoiding risk factors like oral contraception & prolonged immobilization.
Rarity in literature would preclude definite conclusions, but consider prolonged if not life long anticoagulation for venous thrombosis in this patient group.

More follow up studies on these patients to determine their recurrence of symptoms, length of treatment, alternate treatment options and prognosis are needed.

**Abstract ID: 261**

**ABSTRACT TITLE**: MRI EVALUATION OF SOFT TISSUE VASCULAR MALFORMATIONS

**PRESENTING AUTHOR**: PEEYUSH KUMAR DHAGAT

**CO-AUTHOR**: DR MEGHA JAIN

**Introduction**: Soft tissue vascular malformations are an heterogeneous group of lesions which can cause significant morbidity depending on their extent and the region involved. They are a common cause of soft tissue masses in children and young adults. Imaging plays an crucial role in diagnosis and in selecting the appropriate therapy. Ultrasound and Doppler examination can evaluate the vascularity and assess the nature of the lesion, however their disadvantages include operator dependence, limited penetration and field of view. Dynamic contrast MRI with its superior soft tissue characterisation is the modality of choice for evaluating the nature and extent of these lesions.

**Aim**: Evaluate the characteristics of soft tissue vascular malformations with dynamic contrast enhanced MRI.

**Materials & Method**: Total of 33 patients (18 Males & 15 females) were included in the study. All patients underwent detailed clinical evaluation. Most patients presented with soft tissue swelling and were initially referred for ultrasound examinations. All patients underwent Dynamic contrast enhanced MRI on 1.5T scanner.

**Results**: Lesions were classified as low flow (31) and high flow malformations (02). Venous malformations were the most common lesion seen (22 cases). Lymphatic malformations comprised (04) & venolymphatic (05) respectively. There were 02 cases of high flow malformation.

**Conclusion**: Dynamic contrast enhanced MRI was found to be excellent for evaluating the extent and depth of the lesions and in categorizing the lesions as low flow or high flow which helped to decide the line of management.

**Abstract ID: 337**

**ABSTRACT TITLE**: PERSISTENT BILATERAL SCIATIC ARTERIES WITH ANEURYSM: DEMONSTRATION OF THE ANOMALY ITS COMPLICATIONS, IMAGING FINDINGS AND MANAGEMENT.

**PRESENTING AUTHOR**: ABIN V L

**CO-AUTHOR**: DR.FARHA FURRUQH, DR.BABU PHILIP

**Learning Objective**: Radiological modalities and the respective findings in persistent sciatic artery. Role of intervention radiologist in treating aneurysm of the persistent sciatic artery.

**Background**: A persistent sciatic artery result from the lack of regression of fetal arterial blood supply of the leg. Here we discuss the clinical, colour Doppler contrast CT findings and management of a case of a bilateral
persistent sciatic artery with right-sided pseudoaneurysm on the gluteal region. A patient presented with the clinical history of throbbing pain over the right lower limb with swelling and pain over the right gluteal region. Following clinical examination, the patient underwent colour Doppler of bilateral lower limb and contrast-enhanced spiral CT.

Imaging findings: Colour Doppler:-Initial colour Doppler evaluation of right gluteal region shows a hypoechoic area measuring 2.6 x 2.0 cm with Doppler showing bidirectional flow within. CT angiogram was suggested in view of suspicion of an aneurysm

CT angiogram: Prominent arteries noted arising on both sides from the internal iliac arteries and coursing through the sciatic notch to the posterior gluteal regions and thighs – Suggestive of bilateral Persistent Sciatic Arteries (PSA). It was associated with fusiform dilatation of right PSA noted in the posterior gluteal region over a length of 7.5 cm-- s/o partially thrombosed pseudoaneurysm. The patient underwent transcatheter coil embolization using 12 x 30mm and 14 x 60mm coil.

Conclusion: Persistent sciatic artery is a rare anomaly which results in complications like an aneurysm, pseudoaneurysm, thrombosis and limb ischemia. Inpatient with suspected PSA, CT angiogram with 3D reconstruction will help in accurate diagnosis and planning for intervention.

Abstract ID: 358

ABSTRACT TITLE : IMAGING SPECTRUM OF GRANULOMATOSIS WITH POLYANGITIS.
PRESENTING AUTHOR : SHEHBAZ ANSARI
CO-AUTHOR : YASHANT ASWANI, AYUSH JAIN

Learning Objectives:
• To be familiar with various manifestations of the disease.
• To be able to give a differential diagnosis of individual lesions of the disease, when encountered as an isolated manifestation.

Background & Imaging Features: Granulomatosis with polyangiitis (GPA) is a rare, necrotizing vasculitis, involving the medium and small vessels, presenting classically as a triad of upper respiratory tract, lower respiratory tract and renal involvement. It predominantly affects middle age person, affecting both sexes equally. In the sinonasal area, it predominantly affects the nasal septum and turbinates, causing bony erosions, mucosal thickening and neo-osteogenesis. The pulmonary involvement is in the form of nodules and masses with a tendency towards cavitation. Other lung manifestation include pulmonary haemorrhage presenting as ground glass opacity/consolidation. Airway involvement is usually in conjunction with pulmonary disease, showing varied types of laryngotracheal wall thickening, eventually resulting in subglottic stenosis. Ocular involvement, in the form of conjunctivitis and scleritis earlier in the disease and orbital pseudotumour later, is seen in half. Renal involvement is usually in the form of focal segmental glomerulonephritis. The most common radiological finding being a focal renal mass, easily mistaken for a tumor. Intracranial manifestations of WG, although uncommon, include involvement of parenchyma, pituitary and dura.

Conclusion/Teaching Points:
• The incidence of GPA is on a rise presumably due to improved detection rates and earlier diagnosis. It is therefore essential for a radiologist to be familiar with the various appearances of the disease.
• Presence of some manifestations of GPA should guide for a search of possible other manifestations of the disease.
REFERENCES:


Abstract ID: 391

ABSTRACT TITLE: ULTRASOUND APPEARANCES OF BENIGN SOFT TISSUE LUMPS AND BUMPS. HINTS AND TIPS FOR DIFFERENTIAL DIAGNOSIS.

PRESENTING AUTHOR: SUDHANSHU TONPE

CO-AUTHOR: SANDEEP KATTA

Learning Objectives: The purpose of this study is to present the ultrasound appearances of a variety of benign soft tissue masses, focusing on specific sonographic features narrowing the differential diagnosis.

Background: In routine practice a number of patients present with various symptomatic or asymptomatic lumps and bumps throughout the body. Ultrasound is a useful imaging tool to provide clinically vital information in assessing a wide range of soft tissue pathologic conditions. Ultrasound is an excellent imaging tool to determine the nature of a mass lesion (cystic or solid) and anatomic relation to adjacent structures. Lesions can be also characterized in terms of their size, shape, number, echotexture, and vascularity with power and colour Doppler US. Ultrasound can also demonstrate compressibility of the lesion and relation with adjacent moving structures, such as tendons. In this pictorial assay we present the common benign lesions, while keeping in mind that malignant lesions can also be assessed with ultrasound.

Imaging findings: We present our one-year experience with almost 1000 patients, with benign soft tissue lesions. Patients present with a visible, palpable, painful or painless lump.

The lesions were categorized as follows;

Cystic lesions: Ganglia, Synovial cysts, Sebaceous cysts, Epidermal cysts.

Inflammatory lesions: Bursitis, Foreign body granulomata, Abscesses and Joint effusion related to sepsis or synovitis, Enlarged lymph nodes.

Solid lesions: Lipoma, Plantar fibromatosis, Morton’s neuromas.

Post traumatic swelling like: Haematoma, Fat necrosis, Tendon injuries, Vascular malformations and haemangiomas.

Conclusion: Ultrasound is of value in the differentiation of benign soft tissue lesions and also in the differential diagnosis of malignant versus benign lesions. Ultrasound of soft tissue lesions aid determining patient management strategies, rationalizing at the same time the use of MRI imaging.
**Abstract ID: 460**

**ABSTRACT TITLE**: MRI EVALUATION OF SOFT TISSUE VASCULAR MALFORMATIONS – DIAGNOSIS, CLASSIFICATION AND TREATMENT.

**PRESENTING AUTHOR**: RANJITHA KULKARNI

**CO-AUTHOR**: DR VIJAY KUMAR K R, DR ARUL T DASAN, DR NEERAJA AKKI

**Aim**: Vascular malformations are heterogeneous group of pathologies which need accurate classification and diagnosis for planning of specific therapy. The purpose is to evaluate role of MRI in characterization of soft tissue vascular malformations to establish appropriate management strategy.

**Methods**: This prospective study is conducted in department of radio-diagnosis Bangalore medical college and research institute from August 2017 to August 2018. 40 patients of all age groups diagnosed clinically and sonologically with vascular malformations were subjected to MRI (1.5T Siemens system). Examination protocol includes T1 weighted, T2 Weighted, Fat suppressed T2 weighted and contrast enhanced T1 fat suppressed multiplanar imaging and MR angiography when necessary. The malformations were categorized based on ISSVA revised classification considering their morphology and hemodynamic characteristics.

**Results**: Out of 40 patients, 25 patients had low flow malformations, 14 patients had high flow vascular malformations i.e. Arteriovenous malformation in 12 patients and Arteriovenous fistula in 2 patients. 1 patient had infantile hemangioma. In low flow malformations, 19 had venous malformations and 6 had lymphatic malformations.

**Conclusion**: Low flow malformations are the most common lesions in which venous malformations are most commonly encountered ones followed by lymphatic malformations which will be treated with percutaneous sclerotherapy. Infantile hemangioma is the most commonly seen vascular malformation in children. Arteriovenous malformations are more common than arteriovenous fistula in high flow vascular malformations and transarterial embolization is the treatment of choice. Thus MRI is the most effective modality in delivering significant information about the vascular malformations which aids in adapting appropriate therapy.

**Abstract ID: 491**

**ABSTRACT TITLE**: IMAGING SPECTRUM OF VASCULAR ANOMALIES IN EXTREMITIES ON DOPPLER AND ULTRASOUND – A PICTORIAL ESSAY

**PRESENTING AUTHOR**: ANUSHKA

**CO-AUTHOR**: DR POOJA ABBEY, DR RAMA ANAND, DR ROY CHOUDHARY

**Objective**: To evaluate the vascular anomalies in extremities on doppler and ultrasound and categorize them as High /Low flow lesions, according to the ISSVA 2014 classification nomenclature.

**Background**: Vascular malformation of extremities are divided into three broad categories. They are- high flow lesions (hemangiomas, arterio-venous malformation), low flow lesions (venous, capillary, lymphatic malformations) and those associated with various syndromes (Klippel Trenaunay, Park Weber syndrome).

**Imaging Finding**: Ten patients with suspected vascular anomalies in the extremities were studied. Five patients were diagnosed with venous malformation, two with Klippel Trenaunay syndrome, and one each with hemangioma, park weber syndrome and arterio-venous malformation.
The hemangioma appeared well defined, solid, homogenous, with both arterial and venous flow.

Arterio-venous malformation appeared as a cluster of vessels with arterial and venous flow along with arterIALIZATION OF VENOUS STRUCTURES.

Venous malformations were solid, mutispacial, echogenic lesions with phleboliths and venous or no flow.

Combined capillary-venous-lymphatic malformation with limb hypertrophy were seen in Klippel Trenaunay syndrome.

AVM, capillary malformation and limb hypertrophy were noted in a patient with Park Weber syndrome.

Conclusion: US should be the initial imaging modality in evaluation of vascular anomalies to determine the type of lesion. Color doppler further helps in categorizing the vascular anomalies into: high and low flow lesions to guide the management. However, in selected cases, like AVM/AVF and multispacial lesions, further imaging with CT/MRI(including Angiography) is indicated to evaluate the feeding artery and draining vein and the depth of lesion.

Abstract ID: 512

ABSTRACT TITLE: TYPICAL IMAGING FEATURES OF MELIOIDOSIS

PRESENTING AUTHOR: NADELLA SINDHU

CO-AUTHOR: DR PRAKASHINI K, DR SAMIR P M

Learning Objectives: Typical imaging findings of melioidosis in central nervous system, respiratory system, musculoskeletal system, liver and spleen.

Background: Melioidosis is a potentially fatal and emerging infection in Indian subcontinent. Hence recognising the typical imaging manifestations and early diagnosis has a key role in reducing mortality.

Imaging findings: We studied 9 culture proven melioidosis cases affecting various systems. Typical imaging features are seen in all these cases. We have a case of CNS melioidosis with parietal bone osteomyelitis and subdural abscess. Other case was brain stem encephalitis characteristic involvement of cortico-spinal tract, cranial nerve nuclei and cranial nerves was seen.

Two cases of melioidosis of lung showing rapidly expanding cavitatory lesions in upper lobes, multiple coalescing nodules were seen which is again characteristic of melioidosis. Another case of melioidosis of lung showing migratory cavitatory lesions with associated multiple splenic abscesses.

Two cases of melioidosis presenting as liver abscess with characteristic multiple enhancing septa in the abscess giving honey comb appearance. A case of melioidosis of elbow causing osteomyelitis and septic arthritis of elbow. A case of melioidosis presenting as multiple tiny abscesses in spleen. Conclusion and/or Teaching points: Melioidosis is a great clinical mimicker of tuberculosis. Certain typical imaging features can help in diagnosis of melioidosis.

Associated skull bone osteomyelitis, spread along axons causing involvement of long tracts is characteristic feature helpful in identifying CNS melioidosis. Expanding lung cavities predominantly involving upper lobes with no significant fibrosis, migratory cavities in lung and honey comb appearance in liver abscess are typical feature in melioidosis. Identification of these features can be of great help in diagnosing and reducing mortality in melioidosis.
Abstract ID: 520

ABSTRACT TITLE: MECKEL-GRUBER SYNDROME AND FETAL MRI: A CASE REPORT

PRESENTING AUTHOR: SUDIP KUMAR ACHARJEE

CO-AUTHOR: DR. J RAY

Learning Objective: Fetal MRI as an adjunct to ultrasonography in antenatal diagnosis of Meckel-Gruber syndrome

Background: Meckel-Gruber syndrome is a rare and lethal autosomal recessive disorder characterized by the triad of occipital encephalocele, polycystic kidneys and postaxial polydactyly. Worldwide, incidence of Meckel-Gruber syndrome is 1 per 13,250-140,000 live births and in India highest incidence is reported in the Gujarati peoples with 1 affected birth per 1,300 (carrier rate, 1 in 18). The mortality is 100% and most dies in utero or shortly after birth due to pulmonary hypoplasia.

Imaging findings: we had a 22 year old female with 19 wks of GA for 2nd trimester anomaly scan and ultrasonography revealed bilateral multiple cystic lesion virtually replacing both kidneys, occipital encephalocele, bilateral clubfeet and severe oligohydramnios. Fetal MRI revealed hypoplastic cerebellum, dysplastic brainstem and deformed lower limbs in addition to ultrasonographic findings.

Conclusion: Among the triad of meningoencephalocoele, polycystic kidneys and post axial polydactyly, 2 of the 3 major abnormalities should be present to ascertain the diagnosis and in our case except polydactyly all were present. We performed fetal MRI as an adjunct to ultrasonography because of severe oligohydramnios and few additional findings were revealed. Prenatal ultrasound is the best method to diagnose Meckel-Gruber syndrome antenatally and MRI can enhance and clarify ultrasound findings in presence of severe oligohydramnios.

Abstract ID: 669

ABSTRACT TITLE: RENAL ARTERY STENOSIS INDUCED HYPERTENSION CAUSING POSTERIOR REVERSIBLE ENCEPHALOPATHY SYNDROME

PRESENTING AUTHOR: BENO JEFFERSON

CO-AUTHOR: DR. MANIKANDAN PALANIAPPAN, SENIOR RESIDENT DR. PRABHAKARAN.M, PROFESSOR

Purpose: An interesting case of renal artery stenosis induced hypertension causing posterior reversible encephalopathy syndrome in a 15 year old female patient.

Materials And Method: A 15 year old patient presented with headache for a period of 5 days and an episode of loss of consciousness which lasts for seven minutes. On examination, blood pressure was raised – 180/110 mm Hg. All other parameters were within normal limits. CT Brain, MRI Brain, USG abdomen and CECT abdomen were performed.

Results: CT brain showed mild diffuse cerebral edema with vasogenic edema noted in bilateral parieto-occipital lobes. MRI brain showed gyral and subcortical T2 hyperintense signal in the parasagittal region in the left superior frontal region with no significant restricted diffusion. USG abdomen shows contracted right kidney and renal artery doppler showed features of renal artery stenosis. CECT abdomen showed focal short segment high grade stenosis in juxta hilar portion of right renal artery. Diagnosis of Posterior reversible encephalopathy syndrome (PRES) secondary to renal artery stenosis induced hypertension was made.
Conclusion: Although most cases of PRES are reversible, delay in diagnosis and treatment may lead to irreversible lesions [1]; therefore, early recognition and correction of the condition underlying PRES is the recommended treatment. Therefore, it is necessary to suspect posterior reversible encephalopathy syndrome (PRES) in a child with hypertension headache and loss of consciousness and search for the underlying cause and rectify it.


Abstract ID: 687

ABSTRACT TITLE: A RARE ZOONOTIC SUBCUTANEOUS MANIFESTATION OF HUMAN DIROFILARIASIS
PRESENTING AUTHOR: ABHILASH PEDDU
CO-AUTHOR: DR. LOKESH KUMAR.T

Aim: Imaging of a rare zoonotic subcutaneous manifestation Human Dirofilariasis.

Objective: Ultrasonography is the modality of choice for primary evaluation of subcutaneous parasitic manifestations compared with other radiological investigative modalities. Live movements of the worm are also recorded USG, which is practically very difficult to achieve with other modalities.

Methods: A very rare worm manifestation which was detected by Ultrasonography and further evaluated using MRI in the Department of Radio Diagnosis, MGMCRI, Pondicherry.

Results: A 29 year old male, accidentally diagnosed with Dirofilaria repens, which presented as a tangible nodule measuring about 1.5 - 2.0 cms at the medial aspect of right elbow which was moving against the skin and base. He was subjected to USG and two coiled worms with minimum movement were detected. MRI was done for research purposes and then the worms were surgically excised and sent to Vector Control Research Centre, Pondicherry for identification of species. This is the third case of dirofilariasis to be recorded in India.

Conclusion: Ultrasonography proved worthy in the primary detection of the parasite, compared to superior modalities like MRI. Ultrasound examination provides accurate information like size, shape and location of the parasite.

Abstract ID: 691

ABSTRACT TITLE: A CASE STUDY OF TUBEROUS SCLEROSIS
PRESENTING AUTHOR: M DEEPTHI
CO-AUTHOR: (None)

Learning Objective: A case report of tuberous sclerosis

Background: A 39 yr female sent for USG abdomen with a chief complaint of white discharge since 10 days. Past H/O seizures up to the age of 12 YRS on examination she had papules of brownish red color in bimalar distribution s/o Facial angiofibromas

Imaging Findings: USG ABDOMEN-bilateral kidneys enlarged in size hypechoic in echotexture, loss of corticomedullary differentiation, left kidney showed 13 mm calculus in lower pole with mild hydronephrosis
CT ABDOMEN-bilateral enlarged kidneys with focal areas of fat & soft tissue attenuation, - S/o Renal angiomyolipomas, and left renal calculus.

CT BRAIN-multiple calcified subependymal nodules & cortical tubers

Conclusion: The above features suggestive of tuberous sclerosis

Tuberous sclerosis is an autosomal dominant inherited neurocutaneous syndrome characterized by a variety of hamartomatous lesions in various organs. It can affect both sexes and all ethnic groups. The estimated prevalence ranges from one in 6000 to one in 12 000, and approximately two-thirds of the cases are sporadic.

Classically, it demonstrates a triad of clinical features (Vogt triad):

1. Facial Angiofibroma
2. Epileptic Seizures ,
3. Mental retardation

Abstract ID: 704

ABSTRACT TITLE: FAT CONTAINING LESIONS HEAD TO TOE: WHEN DIET AND EXERCISE WONT HELP!

PRESENTING AUTHOR: VATSAL KANIA

CO-AUTHOR: (None)

Teaching Points: List out the fat containing lesions of the body head to toe in a system wise manner. Discuss the characteristic imaging features of each that help to arrive at the diagnosis. Understand their significance.

Table Of Contents/Outline: Characteristic imaging features other than fat that help to identify the lesion.

Imaging features that help to determine leave alone benign lesions from indeterminate ones that warrant further investigations. Understanding the current management guidelines of the important ones with emphasis on long term prognosis. Check list of important findings that clinicians look forward in the Radiology report.

SUPRACEREBELLAR DERMOID CYST: A 65 year old male, treated case of left frontoparietal oligodendroglioma, an incidentally detected well defined lobulated supracerebellar midline mass was seen, which was stable over a follow up period of 15 years. The mass is hyperintense to gray mater on T1WI, hypointense on T2WI and FLAIR and non enhancing on post contrast fat sat T1WI . Features are consistent with supracerebellar dermoid. It causes mass effect on cerebellum.

ANTERIOR MEDIASTINAL MATURE TERATOMA: A 17 year old male with complaints of loss of weight and on and off fever, on evaluation contrast enhanced CT scan showed a well defined lobulated mass containing areas of fat attenuation, calcifications and enhancing soft tissue componenet . It is abutting the arch of aorta, compressing the main pulmonary trunk and the left pulmonary artery. Upfront surgery and tumor excision was done. HPR showed mature teratoma.

CYSTIC TERATOMA RIGHT OVARY: 27 year female with complaints of pain in lower abdomen, USG showed a large well defined right adnexal cyst with hyperechoic material within. MRI shows a well defined mass with alarge cystic componenet which is hypointense on T1WI

HEPATIC ADENOMA: Multiple well defined liver lesions which showed a signal drop out in T1W.
Abstract ID: 725

ABSTRACT TITLE: DEVELOPMENTAL VENOUS ANOMALY
PRESENTING AUTHOR: SOUJANYA C
CO-AUTHOR: (None)

Learning Objectives: A Case report of developmental venous anomaly

Background: A 9 year old female patient presented with the complaints of swaying and headache. Other causes of swaying like vestibular disorders were ruled out to be normal. Blood investigations revealed a normal complete hemogram and normal levels of serum cholesterol, triglycerides and all other lipoproteins

Imaging Findings: CT BRAIN: NORMAL.

MRI BRAIN PLAIN WITH CONTRAST: T1W and T2W images showed iso to hypointense linear tract in left cerebellum with a maximum thickness of 4mm and extending over a length of 27mm. FLAIR and DWI images showed hypointense linear tract.

On contrast strong enhancement of the linear tract was noted and stellate tubular vessels converged on collector vein. Collector vein drained into left transverse sinus. Classical “Medusa head” of enlarged venous tributaries draining into a collector vein which inturn is draining into left transverse sinus was noted. On MRV Medusa head and drainage pattern were well delineated.

CONCLUSION & TEACHING POINTS: Above f/s/o DEVELOPMENTAL VENOUS ANOMALY.

Abstract ID:994

ABSTRACT TITLE: ARTIFICIAL INTELLIGENCE IN RADIOLOGY- BOON OR BANE?
PRESENTING AUTHOR: MITHUN BHOYAR
CO-AUTHOR: SUSHILKUMAR KALE

Learning Objectives: To emphasize the role of AI in radiological interpretations as complementary and enriching; contrary to recent panic among radiologists community fearing job losses due to AI tools.

Background: AI algorithms, particularly deep learning, have demonstrated remarkable progress in image-recognition tasks in research settings. It had led to speculation that AI might one day replace human radiologists. Radiological practice would certainly benefit from such systems by way of reduced human labour, lower costs, and improved diagnostic accuracy; thus benefiting patients and physicians alike. Automation has brought many challenges but has also opened up new horizons too.

Expert opinions: Dominant opinion across media is optimistic regarding future of radiology with AI tools. First, they argue that radiologists do more than read and interpret images like performing image-guided medical interventions, defining technical parameters of imaging examinations, correlate imaging findings with medical records, consulting with patients etc. Second, clinical processes for employing AI-based image work are a long way from being ready for daily use. Finally, changes will be required in medical regulation and health insurance for automated image analysis to take off.
Conclusion and/or Teaching points: AI will change radiology, but it won’t replace radiologists. We will need to adopt new skills and work processes to work effectively alongside AI tools. Those who are reluctant to embrace inevitable AI in digital world would certainly be left out. As Mahatma Gandhi had said- “Be the change you want to see in the world”.

Abstract ID:1008

ABSTRACT TITLE : SOFT TISSUE VASCULAR MALFORMATIONS-A REPORT OF TWO CASES
PRESENTING AUTHOR : G SRUJANA
CO-AUTHOR : DR.M.VENKATESH, DR.V.N.NARVEKAR,DR.VEDARAJU, DR.RAMA KRISHNA RAO BARU, DR.P.SUNEETHA

Objective: We are reporting 2 cases of soft tissue vascular malformations emphasizing the importance of Doppler, MRI in evaluating and characterization of these lesions

Background: Vascular malformations comprise a wide, heterogeneous spectrum of lesions that often represent a diagnostic and therapeutic challenge. Gray-scale ultrasonography coupled with color Doppler US provides information about the degree of vascularity of a lesion. US is considered the imaging modality of choice for initial assessment and characterization of soft-tissue lesions of vascular origin. Magnetic resonance imaging is the most valuable modality for classification of vascular anomalies because it accurately demonstrates their extension and their anatomic relationship to adjacent structures.

Imaging Findings: We had 2 patients presented with soft tissue swellings and were assessed with Doppler US and MRI for characterization.

One of the lesion was Low flow vascular malformation which is heterogeneously hypo echoic with low velocity 10 cm/sec and hypo intense on T1, heterogeneously hyper intense on T2, few flow voids and blooming on gradient echo sequence.

Another lesion is high flow vascular malformations which is hyper echoic with tortuous vessels with velocity 80 cm/sec, hyper intense on T2, MR Angio gram showing feeding vessels.

Conclusion: Vascular malformations are rare but they require aggressive treatment and imaging plays an important role in their diagnosis. Color Doppler ultrasound with MR imaging play a crucial role for assessment of these lesions

Abstract ID:1031

ABSTRACT TITLE : BLENDED INTERACTIVE TEACHING-LEARNING METHOD AND VIDEO LECTURE IN RADIODIAGNOSIS RESIDENCY PROGRAMME: A COMPARATIVE STUDY
PRESENTING AUTHOR : DEEPAKKUMAR V. MEHTA
CO-AUTHOR : (None)

Purpose: Aim was to bridge the gap between learning by video/multimedia resources and by interactive Teaching-Learning (T-L) method by blending both methods.

Materials and Methods: Comparative interventional educational study was done with eight radiology resident doctors as participants and a faculty observer. Six lectures were taken in 3 modalities: Ultrasound, CT scan & MRI with 1 core topic [Must Know] and 1 non-core topic [Nice to Know]. All topics were taught first
by video lecture and then, blended interactive session incorporating video for evaluation and comparison. Ten questions pre-tests were taken before first intervention. After each lecture session, post-tests and written feedback were taken. Total 96 data points were generated for each topic. Qualitative Data Analysis of all tests and scaled feedback forms was done by paired t-test considering p values < 0.005 significant.

**Results:** Significant knowledge improvement (p value < 0.0001) was found in core topic, non-core topic and overall performance after these lectures among all residents; which was significantly better after blended interactive lecture. Learning was significantly more joyful by residents for blended interactive lecture.

**Discussion:** Interactive teaching-learning method is popular method in small group teaching. Image & cine archival storage resources has brought paradigm shift in teaching radiology. Blended interactive T-L method using both has synergic effect and more advantages.

**Conclusion:** Promising results were found for blended interactive T-L method with video with significantly better knowledge gain and more joyful learning with teacher having role of facilitator. Blended method should be experimented at multiple institutions for validation.

**References:**

**Abstract ID:1094**

**ABSTRACT TITLE:** IMAGING OF COMPLICATIONS POST TUMOR TREATMENT THERAPY

**PRESENTING AUTHOR:** APARNA PRAKASH

**CO-AUTHOR:** DR MUKESH KUMAR DR SANJAY THULKAR

**Learning Objectives:** To demonstrate a spectrum of complications related to radiation and chemotherapy in a specialized oncologic setup.

**Background:** Cancer therapy although targeted at tumor cells has deleterious effects on normal body tissues especially rapidly regenerating ones such as bowel, nevertheless no organ is immune to these toxic effects. As radiologists we play an important role in identifying these complications and bringing these to notice for appropriate treatment.

**Imaging findings:** The gastrointestinal system may show enteritis, gastritis, pneumatosis, pseudomembranous colitis. Hepatobiliary system may show pseudocirrhosis and steatosis.

Pancreas may show pancreatitis. Pulmonary complications include tumor related bronchiolitis obliterans and pneumonitis. Cerebral toxicities can be seen such as hemorrhage and PRESS. Radiation may cause complications such as osteoradionecrosis of bones, fistula formation especially along the uterus.

**Conclusion:** It is essential to be aware of complications caused due to tumor treatment. Complete history with knowledge of drug related toxicity and the associated imaging findings can simplify diagnosis and further management.
Abstract ID: 1266

ABSTRACT TITLE: ROLE OF DYNAMIC CONTRAST ENHANCED MRI OF LUMBAR SPINE IN ASSESSING TREATMENT RESPONSE IN CHRONIC MYELOID LEUKEMIA

PRESENTING AUTHOR: SREEDHARA B. CHALUVASHETTY

CO-AUTHOR: N VARMA, P MALHOTRA, N KHANDELWAL.

Objective: To investigate the significance of the dynamic contrast enhanced magnetic resonance imaging (DCE-MRI) parameters of bone marrow infiltration in patients with chronic myeloid leukemia and correlation with histological grading and treatment response.

Methods: DCE-MR imaging of the lumbar spine performed in 20 patients with histologically proven CML. 23 subjects with normal spinal MRI, made up the control group. Peak enhancement ratio (Emax), enhancement slope (ES), and time to peak (TTP) were determined from a time intensity curve (TIC) of lumbar vertebral bone marrow. A comparison between baseline and follow-up MR images, parameters and its histological and cytogenetic correlation were evaluated in 16 patients. The infiltration grade of hematopoietic marrow was evaluated by a histological assessment of bone marrow.

Results: Emax and ES values were significantly higher for the CML patients than for the normal bone marrow group (P<0.05). A positive correlation was found between Emax, ES values and the histological grade of bone marrow infiltration (p < 0.01). No statistically significant difference in Emax, ES, and TTP values between the grade 1 and grade 2 marrow involvement seen on follow up MRI (p value of 0.770, 0.338, and 0.269 respectively which is >0.005). The average mean of Emax was significantly lower following chemotherapy (P<0.001) suggesting good correlation with treatment response.

Conclusion: DCE-MRI of spine can be a useful tool in detecting marrow infiltration, while its parameters including Emax, ES, and TTP can reflect the histological grade and may be helpful in evaluating the treatment response in CML.

Abstract ID: 1270

ABSTRACT TITLE: FETAL LUMPS AND BUMPS: A PICTORIAL REVIEW

PRESENTING AUTHOR: APARNA SINGH

CO-AUTHOR: DR. USHA JAIPAL, DR. KULDEEP MENDIRATTA, DR. ALKA GOYAL

Learning objectives:
1. To discuss the types of fetal masses with their imaging findings encountered at our institute.
2. To discuss the specific imaging features which may alter the prenatal management of a pregnancy, the mode of delivery and help in postnatal plan.

Background: The incidence of fetal tumors has increased owing to better prenatal evaluation and imaging techniques. Other lesions such as encephalocele or cystic hygroma may also appear as fetal masses. Early detection of a fetal mass and understanding of its imaging features are very important for fetal, maternal, and neonatal care. Ultrasonography is usually used for the detection and magnetic resonance imaging is increasingly being used as a complementary study.

Imaging findings: The findings of fetal tumors are different from those of pediatric tumors and have special characteristics which may alter prognosis. Certain lesions like encephalocele and cystic hygroma may present
as masses and have few differentiating imaging features. Thus early detection by 2D and 3D sonography and understanding of these imaging features is helpful for prenatal planning and neonatal care. Colour Doppler may be helpful for characterizing these lesions. MRI is increasingly being used as a complementary study.

**Conclusion:** A myriad of lesions appearing as a mass can arise in fetal life. Specific imaging features help distinguish these lesions. It is important to identify these lesions prenatally to assist in the delivery and postnatal care.

**Abstract ID:1305**

**ABSTRACT TITLE:** REVIEW OF VARIOUS IMAGING FINDINGS IN FISTULAS IN BODY

**PRESENTING AUTHOR:** GEETAI TIKAR

**CO-AUTHOR:** DR.PADMA V. BADHE

**Learning objectives:**

- To study radiographic features of various fistulas in body.
- To study the importance of early detection of fistulas prior to the surgical intervention and prevention of complications

**Background and imaging findings:** Fistula is defined as an abnormal connection between the two epithelial surfaces. Fistulas can occur spontaneously or secondary to surgical intervention or any chronic infectious or neoplastic etiology. Fistulas can be classified as vascular and avascular. Various vascular fistulas include carotico-cavernous fistula, pulmonary arteriovenous fistula, cerebral arteriovenous fistula, arteriovenous fistula, hepatoportal fistula and fistulas of artery.

Avascular fistulas include branchial fistula, tracheoesophageal fistula, cutaneo pericardial fistula, gastric fistula, gastrojejunocolic fistula, gastrocolic fistula, colocolic fistula, enterocutaneous fistula, choledochoduodenal and choledochocolic fistula. Various genitourinary fistulas include urethral fistula, vesicovaginal, enterovaginal and rectovaginal fistulas while anorectal fistulas include fistulas in ano and perianal fistulas. Early identification of these fistulas by barium imaging, computed tomography and magnetic resonance imaging with special emphasis on barium studies has been provided in this educational exhibit. It provides accurate information about the anatomy and pathological findings prior to appropriate surgical management and helps in preventing unwanted complication.

**Teaching points:**

- Radio graphic imaging helps in early detection of fistulas and prevention of complications by proper surgical interventions.
- To study detailed anatomic and pathologic findings prior to surgical procedures.
Abstract ID: 12

**ABSTRACT TITLE**: CARTILAGE AND MENISCAL MAPPING IN OSTEOARTHRITIS KNEE USING 3T MRI

**PRESENTING AUTHOR**: SHRUTI MITTAL

**CO-AUTHOR**: DR. GAURAV S PRADHAN, DR. SAPNA SINGH

**Purpose**:  
- To detect articular cartilage and meniscal degeneration in early osteoarthritis knee  
- To study the changes in articular cartilage and menisci after treatment of osteoarthritis knee with oral glucosamine using T1 and T2 on 3Tesla MRI

**Materials and methods**: A prospective study of 25 patients and 10 healthy volunteers was carried out in Department of radiodiagnosis, Maulana Azad Medical college and Lok Nayak Hospital, Delhi.

Patients with symptoms of osteoarthritis and Kellgren-Lawrence grade I-II on plain radiograph were included for baseline MRI knee. The same set of patients were followed for repeat MRI after 24 weeks of treatment with oral glucosamine. Patients with inflammatory arthritis, infection, trauma and history of knee surgery were excluded.

**Results**: T1 and T2 relaxation time values of cartilage and menisci were significantly higher in osteoarthritis patients as compared to healthy volunteers.

No significant difference in morphological thickness of articular cartilage and menisci in early osteoarthritis patients and healthy volunteers.

No significant change in morphological thickness; T1 and T2 values of cartilage and menisci in osteoarthritis patients before and after 24 weeks of treatment with oral glucosamine.

**Conclusion**: T1 and T2 mapping are noninvasive MR techniques reflecting changes in the biochemical composition of cartilage and menisci. T1 values reflect changes in proteoglycan content and T2 values are sensitive to interaction between water molecules and collagen network. Mapping techniques assess early cartilage and meniscal matrix degeneration in osteoarthritis knee, helps in initiating treatment and monitoring disease progression.

MRI is a sensitive modality for assessment of pathologic changes in articular cartilage. With use of T1 and T2 mapping techniques, it is possible to evaluate the collagen network and proteoglycan content in articular cartilage and meniscal matrix.
Abstract ID: 23

ABSTRACT TITLE: EARLY RHEUMATOID ARTHRITIS: SPECTRUM OF ULTRASONOGRAPHY AND COLOUR DOPPLER FEATURES IN PATIENTS WITH NORMAL RADIOGRAPHS.

PRESENTING AUTHOR: ABHISHEK BAIRY
CO-AUTHOR: DR. HEMANGINI THAKKAR (ASSO. PROF, DEPT. OF RADIOLOGY)

Purpose: Rheumatoid arthritis (RA) is a chronic symmetric connective tissue disorder affecting the synovium of joints and that around tendons. Early changes of RA like synovial thickening, synovial fluid and disease activity in the form of neovascularization are non-osseous in nature and hence seen better on Ultrasonography (USG).

This study aims to evaluate the role of USG in detection of early changes in RA as compared to a radiograph which can help initiate prompt treatment to improve patient outcome preventing long term deformities.

Materials and Methods: 40 patients of diagnosed RA (as per ACR-EULAR 2010 criteria) who were symptomatic for less than two years underwent clinical examination, laboratory investigations (ESR, anti CCP), radiograph and USG. Patients with positive radiographic changes for RA were excluded from the study. USG was performed on the flexor aspect of 2nd, 3rd and 4th metacarpophalangeal and proximal interphalangeal joints; ulnocarpal, radiocarpal and intercarpal joints of both hands; 2nd, 3rd and 4th metatarsophalangeal and proximal interphalangeal joints; tibiotalar and intertarsal joints of both feet and any other clinically affected joint using Gray Scale for synovial hypertrophy, effusion, joint erosions and tenosynovitis; and Colour Doppler for disease activity. Median Nerve was also evaluated for Carpal Tunnel Syndrome.

Results: On USG, all 100% EULAR positive RA patients had synovial thickening, 55% patients had tenosynovitis, and 20% patients had synovial effusion (predominantly in the large joints). USG detected joint erosion in 7.5% patients. CTS was detected in 5% of patients.

Conclusion: In cases diagnosed RA as per EULAR criteria, USG is a reliable method to detect early inflammatory activity and destructive changes in joints. Hence, USG can be incorporated in clinical practice as an important parameter for disease assessment.

Abstract ID: 26

ABSTRACT TITLE: A RARE CASE OF SACRAL CHORDOMA

PRESENTING AUTHOR: ASHRAF NADAF
CO-AUTHOR: DR. N L RAJENDRA KUMAR, DR. C P NANJARAJ, DR. SANJAY P YADAV, DR. MANU R

Learning Objectives: To study the imaging features of Chordoma

Background: A 42 year old female presented with chronic low back pain with weakness of left lower limb & gait disturbance which has progressed gradually over a period of 8 years. No h/o bowel/ bladder incontinence. No significant past medical/surgical history. Conventional radiography, GE Hi-speed Dual Slice CT scanner & 1.5 T GE Optima MR360 were used for diagnosis.

Imaging Findings: AP Radiograph of the pelvis showed a large ill-defined lytic destructive lesion, arising from the body of sacrum on left side extending into the left iliac bone. Lateral radiograph showed soft tissue extension of the lesion into pre sacral space.
CT Pelvis showed a large lytic destructive lesion involving sacrum, left sacroiliac joint and iliac bone with pre-sacral & post-sacral soft tissue components.

On MRI, the lesion showed heterogeneous appearance on T2W images with areas of hyperintensities (likely mucin) and central hypointense area (likely fibrocollagenous component). On T1W images the lesion was iso- to hypointense with no blooming on GRE. Contrast enhanced T1W images revealed heterogeneous enhancement with central non-enhancing areas.

FNAC of the lesion showed physaliphorous cells.

**Conclusion:** Chordoma is the most common primary malignant tumor of the sacrum. It arises from notochordal remnants. Imaging classically shows a destructive sacral mass with lobular growth, high water content (high T2 signal intensity), and foci of hemorrhage and calcification, commonly extending into the pre- and post-sacral soft tissues. DDs include metastasis, chondrosarcoma, GCT, myxopapillary ependymoma, and plasmacytoma.

**Abstract ID: 59**

**ABSTRACT TITLE:** MRI IN EARLY DETECTION OF SPINAL TUBERCULOSIS

**PRESENTING AUTHOR:** POOJA PATIL

**CO-AUTHOR:** DR SHIVANAND MELKUNDI, DR JYOTHI PATIL

**Aim and Objectives:** To demonstrate, analyze and evaluate MRI as a valuable non invasive diagnostic tool in spinal tuberculosis (Pott’s spine) and to promote its early detection.

**Material and method:** MRI was performed in 30 patients with appropriate MR sequences, referred to the department of Radiology, BASAVESHWAR TEACHING AND GENERAL HOSPITAL, KALABURAGI in a period of 1 year with clinically and imaging wise suspected case of Pott’s spine.

**Results:** In our study, Pott’s spine commonly affected age group between 20-40 yrs (50%). Of 30 patients (990 vertebral), 17 patients (56.6%) had two vertebral involvement, 6 had three vertebral (20%) involvement, 3 had four vertebral (10%) involvement and 4 had single vertebral (13.4%) involvement.

Thoracic spine involvement was common (55.89%) followed by Lumbar (39.76 %), then Cervical (2.93%) and lastly, Sacrum (1.42%).

Of total, 86.67% patients had involvement of vertebral end plate, disc (80%), posterior elements (20%) and 70% and 63.33% had pre- and paravertebral soft tissue involvement respectively.

83.33 % patients had thecal compression. Out of which 36.67 % had actual cord compression & cord edema in 20% patients causing neurological complaints.

**Conclusion:** MRI is superior in diagnosing Pott’s spine and results showed that young adults (20-40 yrs) were commonly affected with predilection for thoracic spine.

Most cases in the study showed multiple (contiguous or noncontiguous) vertebral involvement but few had single vertebral involvement.

Using MRI, it was possible to determine cord compression, osseous and non-osseous involvement and extent of the disease.
Abstract ID: 76

**ABSTRACT TITLE**: IMAGING IN PERIPHERAL MONONEUROPATHIES - A REVOLUTIONARY SPINOFF

**PRESENTING AUTHOR**: AAKANKSHA AGARWAL

**CO-AUTHOR**: DR USHA JAIPAL, MR SHOBEY JOHN, MR JOHNSON NJ

**Purpose**: The study was done to demonstrate the revolutionary use of high resolution ultrasonography (HRUS) and MR neurography in diagnosis of peripheral mononeuropathies. Sensitivity of both the modalities, calculated taking nerve conduction velocity (NCV) as gold standard, was taken as the measure of diagnostic accuracy.

**Materials and Methods**: HRUS followed by targeted MR neurography was performed for the 46 cases of upper limb peripheral mononeuropathy diagnosed by NCV after taking written and informed consent. Cases with idiopathic carpal tunnel syndrome, leprosy, plexopathy, spinal cord injuries and open wounds were excluded from this hospital based comparative study. Data analysis was done by chi square and unpaired t test using Epiinfor version 6 software.

**Results**: The most common nerve involved was the ulnar nerve (43.47%) followed by the radial and median nerve with 34.8% and 21.7% cases respectively. Overall, the most common site of involvement in our study was the forearm (43.47%) with 34.7% cases presenting with a history of local trauma. Taking NCV as the gold standard, the sensitivity of HRUS was calculated to be 95.6%. T1 sequence of MRI had a sensitivity of 54.3%, fat saturated T2 sequence was as sensitive as HRUS while PD fat saturated sequence was 100% sensitive in diagnosing peripheral nerve pathologies. The difference in diagnostic ability of HRUS, T2 FS and PD FD sequence proved to be statistically significant when compared to the T1 sequence with a p value of <0.05.

**Conclusion**: HRUS is 95.6% sensitive in diagnosing peripheral neuropathy and can be used as the initial imaging modality. PD fat saturated sequence, which is comparable to the gold standard (NCV) provides additional soft tissue details and contributes to the differential diagnosis. These diagnostic modalities provide unmatched details about the affected nerve, thus helping in better patient care.

Abstract ID: 98

**ABSTRACT TITLE**: BONE BRUISE PATTERNS IN KNEE INJURIES

**PRESENTING AUTHOR**: ADARSH MURUGAN

**CO-AUTHOR**: DR. I. VENKATRAMAN

**Purpose**: Bone bruises represent an entity of occult bone lesions that can occur in the knee, causing knee pain and tenderness clinically. The purpose of this study was to investigate the incidence and pattern of bone bruising seen in the anterior cruciate ligament (ACL) injury cohort and the non-ACL injury cohort, and between both cohorts.

**Methods**: 486 knee MRIs performed over an eight month period were retrospectively reviewed. A hundred and eighteen patients with a history of a knee trauma were selected. The clinical findings and mechanism of injury were noted. The location of bone bruises and associated injuries were noted in all the cases.

**Results**: Among these 118 patients, 79 patients had an ACL injury (48 had isolated ACL injuries; 31 had combined ACL and other ligamentous injuries). Among the 39 who had non-ACL injuries, 23 had either an MCL, LCL, or PCL injury. The remaining 16 patients had no associated ligament injury. With an ACL injury, the most common sites of bone bruise are the lateral femur (72%) and lateral tibia (65%). Without an ACL injury, the bone bruises were more common in the lateral femur (67%) and medial tibia (39%).
**Conclusion:** Bone bruises are important as they can cause persistent knee pain. This study has shown that there are differences in pattern of bone bruising in knee injuries with or without ACL injuries.

**Abstract ID: 99**

**ABSTRACT TITLE:** RECURRENT PATELLAR DISLOCATION: DYNAMIC INSTABILITY VS PASSIVE STABILIZERS: OUR EXPERIENCE

**PRESENTING AUTHOR:** GURDARSHDEEP SINGH MADAN

**CO-AUTHOR:** VIKRAM KHANNA, CM SREENHAR

**Learning Objectives:**

a) Refreshing normal anatomy of the patello femoral joint including the passive and dynamic stabilizers of the knee.

b) Objective and subjective assessment of the passive and static stabilizers of the knee.

c) Evaluating injuries to the dynamic stabilizers to the patellofemoral joints.

d) Institutional experience

**Background:** Patellar injuries are one of the common injuries and cause of pain and discomfort especially in young and active adults. The incidence of the patellar dislocation is about 6-70 / 1,00,000. However, it is more in certain subgroups which includes recruits and young soldiers. We scanned patients presented with complaints of recurrent dislocation of patella using 1.5 T MRI and the salient understanding and the results of the institution are discussed below.

**Imaging findings:** We discuss the procedure to ascertain trochlear dysplasia, sulcal angle, lateral trochlear inclination, trochlear facet asymmetry, patella alta.

Findings of kissing contusion, Vastus medialis oblique (VMO) and medial patello femoral ligament (MPFL)/retinaculum injury and ilio tibial band (ITB) are also illustrated and discussed. Surgical intervention for correction was briefly discussed.

**Conclusion and/or Teaching points:** Correct evaluation and assessment is essential for prognosis of recurrence and management of abnormality especially in highly active individuals

**Abstract ID: 122**

**ABSTRACT TITLE:** ROLE OF ULTRASOUND IN KNEE INJURIES AND ITS CORRELATION WITH MAGNETIC RESONANCE IMAGING

**PRESENTING AUTHOR:** INDERMEET MANGAT

**CO-AUTHOR:** DR AMANDEEP SINGH

**Purpose:** The study aimed to evaluate of the role of ultrasound in knee injuries and its correlation with magnetic resonance imaging.

**Material/Methods:** This prospective study included 50 patients referred for ultrasound and MRI because of knee injuries. High-resolution ultrasound examination of the involved knee was performed together with an examination of the contralateral normal knee, followed by MRI of the symptomatic knee in all 60 patients.
Results: In the present study, the majority of patients were in age group 26–65 years, 65% were males and 35% were females. A total of 50 patients were diagnosed as having ligamentous/meniscal tears on ultrasound (USG) and MRI. In the diagnosis of meniscal/ligamentous tears, the strength of agreement between ultrasound and magnetic resonance imaging was good.

Conclusions: High resolution ultrasound gives high accuracy & specificity which nearly approaches that of MRI. As regarding its sensitivity, it is of lower comparable value than that of MRI. So it is preferable to use high resolution ultrasound as a preliminary investigation for diagnosis as the patient can avoid performing the high cost MRI unless the patient was proved to be injured and needing MRI.

Abstract ID: 125

ABSTRACT TITLE: 3D CT IN KNEE JOINT INJURIES
PRESENTING AUTHOR: RISHI DIXIT
CO-AUTHOR: M S HEMHNATH

Purpose: The knee joint is a complex joint and is most commonly injured nowadays due to increased road traffic accidents and sports injuries. Fractures around the knee joint present with numerous complications and an affirmative diagnosis will lead to an effective treatment plan.

Materials and methods: 20 patients of knee trauma underwent 3D reconstruction CT. The types of fracture and displacement were evaluated in all cases.

Results: Of the patients evaluated for knee trauma it was found that tibial plateau fractures are found to be more common, out of these 20% of the fractures were underestimated on plain radiograph.

Conclusion: 3D CT helps in better demonstration of fracture fragments and extent of fracture in complex anatomical location. Even though radiography can detect fractures in majority of cases it cannot detect subtle fractures, depression of fracture fragments, intra articular fragments and displacement of fragments which help in pre operative planning. These can be adequately evaluated by 3D CT. With the advancing algorithm and precision in data acquisition 3D CT will become a necessary complement to traditional CT in management of knee trauma.

A well known disadvantage is radiation and inability to detect ligament injuries but with advancing generation of CT low dose examination may be considered. As there is no additional scanning or radiation involved in reconstruction of images 3D volume rendering and MPR is a valuable tool in interpreting knee fractures. 3D reconstruction is useful to assess bony architecture in large comminuted fracture, displaced fractures involving multiple planes. In case of complex fractures it allows adequate visualisation and easy interpretation of fracture segments and their relationship to one another which is very helpful in deciding pre operative planning for each patient.
Abstract ID: 129

**ABSTRACT TITLE**: THE ROLE OF MAGNETIC RESONANCE IMAGING IN THE EVALUATION OF HIP PAIN

**PRESENTING AUTHOR**: STALINPREET SINGH

**CO-AUTHOR**: DR. KUNWARPAL SINGH

Background and Objectives: Hip joint pain is a common complaint in the present day practice and could be due to various reasons. The objective of the study was to assess the diagnostic performance of MR hip protocols using coronal T1 and STIR and axial T1 and PD SPAIR sequences in patients presenting with hip pain.

Materials and Methods: A prospective cross sectional study was done on a total of 50 patients including both the sexes and all age groups who presented with hip joint pain (excluding fractures and degenerative changes), subsequently underwent MRI of the hip joint and the data analysed.

Results: Of the 50 cases the males (60%) were commonly affected than females (40%). Majority of the patients were in the age group of 31-40 years (24%). In our study, the commonest pathology found was avascular necrosis of femoral head 13 cases (26%), followed by infective 9 cases (18%), mitotic 4 cases (8%), sacro-ilitis 4 cases (8%), synovitis 3 cases (6%), perthe’s disease 2 cases (4%) and miscellaneous 15 cases (30%).

Conclusion: MR imaging is a valuable tool in the evaluation of hip disorders because it enables assessment of articular cartilage, epiphyses, joint fluid, bone marrow and extra-articular soft tissues structures. There is no radiation exposure and it is the modality of choice when clinical examination is suspect for hip disease and the plain radiographs are normal or equivocal.

Abstract ID: 135

**ABSTRACT TITLE**: THE ROLE OF F-18 FDG PET/CT IN EVALUATION OF PLEXOPATHIES

**PRESENTING AUTHOR**: CHANDAN J DAS

**CO-AUTHOR**: RAKESH KUMAR

Plexopathy is a form of peripheral neuropathy affecting a network of nerves in the brachial or lumbosacral plexus. There are traumatic and non traumatic causes of plexopathy Non traumatic causes include: Diabetic amyotrophy, Tumour, Radiation fibrosis, Infection, inflammation. Amongst Malignant etiology contiguous spread of tumour, metastatic involvement from breast and lung cancer are common.

Evaluation of the plexopathies presents a great challenge to the clinician and radiologist due to the rare occurrence and complex anatomical features. Accurate localization and detection of plexus involvement is of critical importance

**Invasive**: Electrodiagnostic assessment – needle EMG & NCS

**Non invasive**: Imaging modalities: Ultrasound, Computed Tomography, MRI, F18-FDG PET/CT

In this exhibit, we present the role of F-18 FDG PET/CT hybrid imaging in evaluation of brachial and lumbosacral plexopathies.
Abstract ID: 137

ABSTRACT TITLE: DIAGNOSTIC VALUE OF MAGNETIC RESONANCE IMAGING (MRI) IN EVALUATION OF TUBERCULOSIS OF THE SPINE

PRESENTING AUTHOR: ROHTAS KANWAR YADAV

CO-AUTHOR: (None)

Aims and Objectives: To evaluate the diagnostic value of MRI and the profile of various MRI findings in patients of Tuberculosis of the spine.

Methods and Materials: 50 patients with clinical diagnosis of Tuberculosis of spine were subjected to detailed clinical history, physical examination and relevant lab investigations. MRI consisted of multislice acquisitions in coronal, sagittal and axial planes using spin echo sequences, dominated by T1 and T2WI. Gadolinium enhanced T1 weighted images and Fat suppressed images were also acquired, if required. Diagnosis of Tuberculosis of spine was confirmed on culture and / or histopathology in all cases.

Results: 26 male and 24 female patients between 6-90 years of age on plain radiography showed vertebral body involvement in 44, posterior elements in 5 and gibbous deformity in 3. Dorsal spine was most commonly involved (44%), followed by lumber (20%), dorso-lumber (18%), lumbosacral (10%) and cervicodorsal spine (8%). On MRI the lesion was seen as hypointense signal intensity on T1 WI and hyperintense signal intensity on T2 weighted & STIR images. Most common pattern of involvement was paradiscal (72%), followed by body (24%) and intervertebral disc only (4%). Gadolinium administered in 36 patients showed peripheral enhancement of soft tissue lesion in 34 and bone lesion enhancement in all the patients.

Conclusions: The anatomical pattern of involvement is specific for Tuberculosis of the spine. The ability of MRI to detect Tuberculosis of the spine earlier than any other diagnostic modality can reduce bone destruction and deformity and also avoid the need for surgical intervention.

Abstract ID: 148

ABSTRACT TITLE: HEMOPHILIAC PSEUDOTUMOR: WHAT THE RADIOLOGIST NEEDS TO KNOW?

PRESENTING AUTHOR: JERIN KURUVILLA VARGHESE

CO-AUTHOR: UTTAM B GEORGE, AKANKSHA WILLIAM

Learning Objectives: To highlight the salient imaging features which are required in effective reporting of cases of hemophilic pseudotumor and provide an algorithmic approach to diagnosis and aid in management.

Background: Hemophilic pseudotumor (HPT) occurs in 1-2% of hemophiliacs. If these lesions are diagnosed early, they may be managed medically, else surgical management becomes the only alternative. Early and accurate diagnosis becomes essential for prognostic benefits.

Imaging findings: PseudocapsuleIt comprises of different layers of fibrous tissue and a covering of variably arranged muscles fibre strands, depicted best on MRI, having hypointense signal on both T1 and T2WI. Owing to its predominant fibrous structure and presence of hemosiderin, it is thicker and more hypointense on T2W images. On CT, the capsule is mostly isodense to muscle. Intensely enhancing capsules may suggest rich vascularity of these pseudotumors. Calcification and ossific changes are seen as hyperdensity on CT and hypointense areas on MRI.
Intralosomal features of Hemophilic pseudotumour: Heterogenous signal intensities are seen on T1 and T2WI, corresponding to blood products in various stages of evolution. CT demonstrates a mass of low density (CT values of 10-35 HU). Soft tissue nodules can also be seen, likely representing smaller hematomas, are well seen on MRI as heterogeneous nodules. Compression of vessels, nerves, and ureters are also well characterized on cross sectional imaging.

Conclusion/ Teaching points: Comprehensive reporting including essential points such as location, size, vascularity, relationship to neurovascular bundles and algorithmic approach comes in handy for successful management.

Abstract ID:157

ABSTRACT TITLE: ASSESSMENT OF US7 SCORE IN RHEUMATOID ARTHRITIS TO DETERMINE DISEASE ACTIVITY.

PRESENTING AUTHOR: SAURABH MAHESHWARI

CO-AUTHOR: S CHATTERJEE, U RAJESH, D S GREWAL, N K JAIN

Learning objectives: To understand the role of US7 score in current radiology and rheumatology practice and illustrated description of the methodology for its evaluation.

Background: Rheumatoid arthritis (RA) is a chronic inflammatory disease of unknown etiology marked by a symmetric, peripheral polyarthritis.

Ultrasound (US) is a sensitive imaging technique for assessment of anatomical changes, disease activity, and therapeutic efficacy in RA. Moreover, US is patient-friendly, non-invasive, safe, less expensive, allows multiple target assessment in real time and helps in measuring therapeutic response (1).

The semiquantitative US scoring system, US7 score, has been proposed to assess established RA and other inflammatory arthropathies (2). It includes the assessment of 7 joints using palmar and dorsal scan of the clinically dominant hand and foot including: wrist, second and third metacarpophalangeal (MCP) joints, second and third proximal interphalangeal (PIP) joints, and second and fifth metatarsophalangeal (MTP) joints.

Imaging findings: This study was conducted at the Department of Radio-diagnosis, Armed Forces Medical College, Pune using Logiq E9 (GE, Milwaukee, USA) with ‘hockey stick’ transducer of 8-18 MHz.

A spectrum of findings in normal as well as abnormal patients of RA seen while evaluating US7 score are illustrated. The high resolution gray scale and power Doppler ultrasound images show synovitis, tenosynovitis and bone erosions in small joints of the hand, wrist and foot.

Teaching points:
- Role of ultrasound in rheumatology practice.
- Methodology of assessing US7 score in patients of RA.
- Spectrum of normal and abnormal findings in RA on ultrasound.

References:

Abstract ID:162

ABSTRACT TITLE: ANKLE ULTRASOUND IN PATIENTS WITH RHEUMATOID ARTHRITIS - A CASE SERIES OF FINDINGS IN SUBCLINICAL PRESENTATION AND CLINICAL PRESENTATION

PRESENTING AUTHOR: MANISH MISHRA

CO-AUTHOR: DR. VIRUPAXI V. HATTIHOLI

Background: Ultrasonography of ankle joint remains a neglected area despite knowing that more than 90% of patients with rheumatoid arthritis develop ankle symptoms over the course of the disease. Ultrasonography with the use of gray scale and power doppler technique is non-invasive, cost effective and is useful for evaluation of soft tissues and tendons.

After a thorough literature search, it was found that no such study has been conducted in India and therefore role of ultrasonography in evaluation of ankle joint pathologies in patients with rheumatoid arthritis can play a vital role in evaluation and treatment of ankle joint pathologies in patients with clinical as well as subclinical cases of rheumatoid arthritis.

Aim: To evaluate the role of Ultrasonography of Ankle Joint in confirmed cases of Rheumatoid Arthritis presenting with either clinical or subclinical ankle involvement and to correlate clinical and radiological findings which can further help the rheumatologist about the treatment plan.

Method: 50 patients with rheumatoid arthritis who presented to our hospital in the past one year were selected for ultrasound of ankle joint. Data was collected; clinical and imaging findings were reviewed.

Results: Patients who had no ankle symptoms have been found to have erosions, teno-synovitis and minimal joint fluid as compared to clinically present symptoms who had more obvious findings of large joint fluid collection, bone erosions, tenosynovitis and synovial thickening.

Conclusion: Although rheumatoid arthritis patients having ankle symptoms have more ultrasound findings, one should also assess the ultrasound findings with patients having no symptoms and follow up the same.

Abstract ID: 172

ABSTRACT TITLE: HIGH RESOLUTION SONOGRAPHY OF MUSCULOSKELETAL SYSTEM AN OVERVIEW

PRESENTING AUTHOR: SUDHIR KUMAR SHUKLA

CO-AUTHOR: (None)

Purpose: To evaluate large number of patients of trauma, soft tissue mass, infection, Rheumatology, sports medicine by high resolution sonography with colour doppler, establishing their diagnosis real time working with direct interaction with patient. Dynamic study performed having edge over MRI.

Materials and methods: Musculoskeletal ultrasound study of 85 patients done study group consist of Bursitis, tenosynovitis, trauma (partial & complete tear of muscle tendon & ligament), pain, soft tissue
mass, infections, joint effusion, deformity & movement restrictions. Whenever required colour doppler was applied. Higher frequency probes are used.

Result:- Found may cases of muscle, tendon & ligament tear (partial & complete), soft tissue benign & malignant masses, vascular mass seen (A.V. Malformation), subluxation (dynamic study), tendosynovitis, bursitis, early detection of osteomyelitis, demonstrating pannus in rheumatoid arthritis where xray negative.

Conclusion:
1) Dynamic study helpful many times.
2) Identify submillimeter images and higher resolution comparable to MRI for superficial structure.
3) Direct interaction with patient.
4) Cost effective.

Reference:-
3) Principles of musculoskeletal ultrasound, Heather Curtiss, M.D. University of Utah school of medicine, PM & sports medicine fellow January 2013.

Abstract ID: 196

ABSTRACT TITLE: POPEYE AND REVERSE POPEYE: CLINICO-RADIOLOGICAL SPECTRUM
PRESENTING AUTHOR: BARUN BAGGA
CO-AUTHOR: DR. ANKUR GOYAL, DR. DEEP NARAYAN SRIVASTAVA, DR. MOHAMMED TAHIR ANSARI

Learning Objectives: To identify clinical and imaging (ultrasound USG and magnetic resonance imaging MRI) characteristics of biceps brachii ruptures at shoulder and elbow. to know what the orthopedician wants from the radiology report.

Background: Proximal long head of biceps is the commonest site of biceps rupture. Distal tendon ruptures represent about 10% of cases and occur in a younger patient population. Injury to the myotendinous junction and muscle belly itself are rare and usually due to direct compressive trauma.

“Popeye sign” refers to distally retracted muscle belly in proximal biceps ruptures, and “reverse Popeye sign” is the proximally retracted muscle belly in distal biceps tendon ruptures. Hook test is helpful in distal biceps tears (1).

Imaging findings:
• USG and MRI: help confirm the diagnosis and rule out mesenchymal tumors.
• The exact location of tear, degree of tearing and the size of the gap are addressed.
• Proximal ruptures: occur at superior labrum or in bicipital groove with empty bicipital groove being diagnostic. Distal ruptures occur at the radial tuberosity with discontinuity seen at the insertion site.
Partial ruptures are more difficult to diagnose, with MRI superseding USG. Features include peritendinous fluid, partial discontinuous tendon signal intensity changes and hemorrhage adjacent to the torn tendon. It is important to rule out brachialis injuries, rotator cuff tears and cubital bursitis which can mimic as well as be the associated findings.

Conclusion and Teaching points
- USG and MRI are useful in diagnosing biceps injuries, providing information about the degree, site of tear and retraction distance, which have surgical relevance.
- Field of view (FOV) in MRI should be sufficient to visualize the retracted stump. Special positions like flexion, abduction supination (FABS) may be helpful.
- MRI supersedes USG in diagnosing partial ruptures and associated soft tissue injuries.

References

Abstract ID: 204
ABSTRACT TITLE: ROLE OF USG AND MRI IN SHOULDER JOINT PAIN
PRESENTING AUTHOR: PURMA SINDHURA PRIYANKA
CO-AUTHOR: ANIL U MADURWAR HOD AND PROFESSOR IN DEPARTMENT OF RADIODIAGNOSIS

Aims and objectives:
- To evaluate a patient with shoulder joint pain in terms of: Assessment by Ultrasound as the first line of imaging modality as compared to MRI.
- Comparing the accuracy of Ultrasonography in shoulder joint pathologies by comparing its findings with those of Magnetic Resonance Imaging performed subsequently on the same patient.
- To delineate pitfalls during image interpretation and limitation of USG and MRI. Methods and materials Prospective analysis of 30 patients presenting with shoulder pain were included.

Inclusion Criteria:
- Age >40 yrs.
- History of pain in either shoulder joint.
- History of trauma (trivial).
- Clinically suspected to have a rotator cuff injury (full thickness or partial thickness tears), biceps tendon injury, or calcific tendinitis.

Exclusion Criteria:
- Clinically suspected cases of instability.
- Known cases of Rheumatoid arthritis.
Previous surgery or prosthesis of shoulder.

Patients with pace makers, metal implants in their bodies, foreign bodies in their eyes and those having claustrophobia.

Study period: One year from a period of AUGUST 2017 to JULY 2018.

Results:

- Ultrasound is equivalent in detection of rotator cuff tears in comparison with MRI.
- MRI outscores ultrasound in detection of labral tears, cartilaginous lesions and subtle bony lesions.

Conclusion: USG examination can be used as the first line of investigating a case of shoulder pain as it is inexpensive, real time and allows for comparison with the opposite side. MRI can be used as a confirmatory tool or in problematic cases.

Abstract ID: 212

ABSTRACT TITLE: RARE CASE OF TALOCALCANEONAVICULAR COALITION
PRESENTING AUTHOR: RAVINDER SAHDEV
CO-AUTHOR: (None)

Learning Objectives: To present a rare case of talo-calcaneo-navicular coalition and review the radiographic, CT, and MR imaging findings of tarsal coalitions.

Background: As per the western literature, the incidence of the tarsal coalition is 1-2%; however the exact incidence in the Indian population is not exactly known. It has autosomal dominant inheritance with variable penetrance. They may or may not be associated with other congenital malformation syndromes. It can be a cause of chronic ankle and hindfoot pain. They are classified depending upon the bones involved. Depending upon the type of articulation, they can also be subdivided as osseous, cartilaginous or fibrous types, each with unique radiographic, CT, and MR imaging findings. MR imaging is evolving as the imaging modality of choice as it can classify the type of tarsal coalition apart from characterizing the associated soft tissue abnormalities if they are present.

Imaging Findings:

1. Calcaneo-navicular coalition:
   (a) Anteater Sign.
   (b) Reverse anteater sign.
   (c) Hypoplastic head of the talus.

2. Talo-calcaneal coalition:
   (a) Talar Beak Sign - Osseous excrescence at the dorsal aspect of the talus.
   (b) “C” Sign
   (c) Drunken waiter sign.
   (d) Narrowing of the posterior subtalar joint space
   (e) Ball & socket tibio-talar articulation.
(f) Failure of visualization of the middle facets of the anterior subtalar joint.

Conclusion and/or Teaching points: Tarsal coalition can be cause of the pain in the foot. It is important to be aware of the normal anatomy of the hindfoot and the various signs of the different types of the coalitions. Radiographs can diagnose this condition; however CT and MRI clearly demonstrate the various types of coalitions.

References:

Abstract ID: 220

ABSTRACT TITLE : CAN ADC DIFFERENTIATE TUBERCULAR SPONDYLITIS FROM MALIGNANT VERTEBRAL BONE MARROW LESIONS ?

PRESENTING AUTHOR : RAVINDER KAUR

CO-AUTHOR : DR. BRAHMDEEP SINGH, DR. ROHIT JINDAL, DR.NARINDER KAUR

Objective: Aim of this study was to assess the diagnostic performance of ADC values in differentiation malignant lesions from tuberculosis vertebral lesions as sometimes it is difficult to differentiate TB spondylitis from malignant vertebral lesions in TB endemic countries on conventional MRI sequences.

Materials and methods: DWI images of 58 vertebrae which showed altered signal intensity on conventional MRI sequences with or without collapse were evaluated in 24 patients and their mean ADC values were calculated. Mean ADC of normal vertebrae were also noted. Statistical software SPSS-22.0 was used for data analysis.

Results: 19 (79.2%) patients were diagnosed with malignant vertebral lesions. 5 patients (20.8%) were diagnosed with tubercular spondylitis.41(75.9%) vertebrae were evaluated for ADC values in 19 patients (79.2%) with malignant vertebral lesions and 13(24.1%)vertebrae were involved in 5 patients with tubercular vertebral lesions. Mean ADC value in malignant vertebral lesions was 0.93 ± 0.27 ×10−3 mm2/s and mean ADC value of tubercular vertebral lesions was .86 ± 0.39×10−3 mm2/s. However the difference was found to be non significant (P=.49)

Mean ADC value of for abnormal vertebrae (0.91 ± 0.30×10−3 mm2/s) was significantly higher (P<0.001) than mean ADC value for normal vertebrae. (0.18 ± 0.084×10−3 mm2/s).

Conclusion: ADC values of malignant and TB vertebral marrow lesions overlap and can’t be used to differentiate between the two conditions but ADC values of vertebral marrow lesions are significantly higher than the normal vertebrae.
Abstract ID: 239

ABSTRACT TITLE: RARE CASE REPORT: FINDING OF CONGENITAL OSTEOGENESIS IMPERFECTA
PRESENTING AUTHOR: ADITI A. PATEL
CO-AUTHOR: DR. HARSHAD SHAH, DR. NIRMALA CHUDASAMA, DR. RASESH VYAS

Institute: C. U. SHAH MEDICAL COLLEGE and HOSPITAL, SURENDRANAGAR, GUJARAT

(A) INTRODUCTION – Osteogenesis imperfecta (OI) refers to a heterogeneous group of congenital, non-sex-linked, genetic disorders of collagen type I production, involving connective tissues and bones. The hallmark feature of osteogenesis imperfecta is osteoporosis and fragile bones that fracture easily, as well as, blue sclera, dental fragility, and hearing loss. There is extreme variation in clinical symptoms based on genetic basis and subtypes. Osteogenesis imperfecta affects both bone quality and quantity.

(B) Aims and Objectives: Our aim is to diagnose osteogenesis imperfecta using basic radiological modality

(C) Case Summary:
- A 13 Year old male patient presented with history of fall down and multiple b/l femur fracture and painful joints.

(D) Imaging Features:
- X-ray left femur image shows shepherd’s crook deformities of the left femur with deformed, weak and brittle bones.
- X-ray right forearm image shows previous right Humerus fracture with nailing and curved forearm bones.
- X-ray right arm images shows fracture at mid shaft of right humerus.

(E) Conclusions:
- Conventional radiology using x-rays of whole body scan are useful in diagnosis of osteogenesis imperfecta

(F) Reference:
2. Lowenstein EJ. Osteogenesis imperfecta in a 3,000-year-old mummy. Childs Nerv Syst.2009

Abstract ID: 333

ABSTRACT TITLE: TO STUDY THE ACCURACY OF ULTRASONOGRAPHY IN THE DIAGNOSIS OF SUPERFICIAL SOFT TISSUE SWELLINGS IN CORRELATION WITH FNAC.
PRESENTING AUTHOR: RAMANJANEYALU N
CO-AUTHOR: DR VIJAY KUMAR K R, DR ARUL T DASAN, DR LOHITH YADAV

Aim: To determine the accuracy of ultrasonographic findings in the diagnosis of superficial soft tissue swellings in correlation with FNAC.
Methods: A prospective study of 100 patients with superficial soft tissue swellings referred to the Department of Radio-diagnosis, Bangalore medical college and research institute, were subjected to ultrasound examination were evaluated based on anatomical plane, consistency, margins, echo-pattern and vascularity. The findings were further correlated with histopathological findings.

Results: Among the 100 patients based on anatomic location the lesions were distributed in subcutaneous plane in 55 cases, muscular plane in 20 cases, deep plane in 23 cases and within skin in 2 cases. Based on sonographic features, the lesions were classified into cystic in 60 cases, solid in 35 cases and mixed types 5 cases.

Depending on the margins of the swelling, the lesions were classified into well defined in 75 cases, poorly defined in 15 cases, lobulated in 5 cases and spiculated in 5 cases.

Based on the echo pattern of the swelling the lesions were divided into anechoic(15), hypoechoic in 35 cases, isoechoic in 5 cases, hyperechoic in 25 cases and hetero-echoic 20 cases.

Depending on the vascularity of the soft tissue swellings, on colour Doppler the lesions were divided into nonvascular in 50 cases, minimally vascular in 46 cases, profoundly vascular in 06 cases and peripherally vascular lesions in 03 cases.

Conclusion: USG has high specificity and predictive value to diagnose superficial soft tissue swellings and it is inferred that USG is almost equivalent to the pathological diagnosis especially in non tumoural superficial soft tissue swellings.

Abstract ID: 343

ABSTRACT TITLE : IMAGING OF GIANT CELL TUMOR OF TENDON SHEATH OF HAND WITH HISTOPATHOLOGICAL CORRELATION : AN UNCOMMON ENTITY

PRESENTING AUTHOR : SANTANU DAS

CO-AUTHOR : DR. DEBI SANKAR GHOSH HAJRA, DR. NARAYAN PANDIT

Learning-Objectives: 1. To demonstrate characteristic imaging features of a soft-tissue mass in close proximity of tendon and compare with it’s histopathological finding.

2. A high index of suspicion in assessing a firm soft-tissue mass in close proximity of a tendon in extremity by imaging helps in accurate diagnosis.

Background: Giant-cell Tumor of tendon sheath is usually a benign soft-tissue tumor which remodels bones, displaces neuro-vascular bundle, usually involves 2nd-3rd digits. It arises from tendon-sheath and not from the tendon itself. A young female in our institute presented with a swelling over volar aspect of proximal phalanx of left thumb which was in close proximity with flexor tendons of thumb. As a work up, radiograph, followed by ultrasound and MRI was done and correlated with histo-pathology. Being a rare entity-diagnostic possibility by imaging and subsequent histopathological confirmation makes it an interesting topic.

Imaging-Findings: ON RADIOGRAPH: A well-defined, soft-tissue radio-opacity was seen at volar aspect of proximal phalanx of left thumb without any calcification, displaced fat plane and smooth bony indentation of proximal phalanx shaft. No bony erosion was noted suggesting benignity of lesion.

On USG A well-defined, solid, soft-tissue origin, hypoechoic mass was delineated without calcification and no
obvious movement with flexion or extension of adjacent tendons and high resistance pattern of vascularity was noted predominantly in peripheral part of the mass on colour doppler.

On MRI: Both T1WI and T2WI images appeared to be hypointense with few areas of blooming on GRE and moderate enhancement on post contrast images.

On Cytology: Lesion showed scattered spindle-cells and Multi-nucleated giant cells against a background of blood elements confirmed the cyto-diagnosis. Patient has undergone surgical-excision and histo-pathology confirmed the diagnosis.

Conclusion: High index of suspicion is required for a soft-tissue mass in close proximity of a tendon-sheath to arrive at a confirmed diagnosis of a rare entity like Giant-Cell Tumor of tendon-sheath. Hypointensity on T2WI prompted possibility of a tendon-sheath origin of the lesion.

Abstract ID: 344

ABSTRACT TITLE: MR IMAGING AND COLOR DOPPLER CORRELATION OF SOFT TISSUE LESIONS IN A SERIES OF 16 CASES
PRESENTING AUTHOR: KAVIRAJAN K
CO-AUTHOR: AMITA MALIK, ABHILASH SETHY

Purpose: Soft tissue lesions are commonly encountered in daily practice and they are difficult to characterize on imaging. Clinical history and direct visual examination often needed for characterization, however biopsy is needed for definite diagnosis. MRI is the preferred modality for the evaluation of soft tissue lesions. Color doppler imaging is complementary to MRI in the evaluation of soft tissue lesions. If the lesion cannot be characterized as a benign on MR imaging it should be labelled as indeterminate and the patient must be subjected to biopsy to rule out malignancy.

Materials and Methods: A series of 16 cases of soft tissue lesions came for MR evaluation in VMMC and Safdarjung hospital in February and August 2018 was included in this study. The patients were also subjected to color doppler examination.

Results: Hemangioma was seen in 5 patients, venous malformations in three patients. One Intramuscular myxoma, one schwannoma, one intramuscular lipoma, one well differentiated sarcoma, one glomangioma, one pseudoaneurysm, one ruptured bakers cyst and one congenital infiltrating lipomatosis of face are also diagnosed.

Conclusion: MRI is the preferred modality for characterization of soft tissue lesions and many lesions shows pathognomic appearance. Color doppler imaging has higher spatial resolution and is complimentary to MRI, useful in assessing the vascularity in soft tissue lesions especially in the vascular anomalies.

Abstract ID: 393

ABSTRACT TITLE: LIPOMA ARBORESCENS
PRESENTING AUTHOR: PRATEEK AGARWAL
CO-AUTHOR: DR. SANJAY SC, DR. SURESH V, DR. CHAITRA.S, DR. BINDU.

Lipoma arborescens: (LA) is rare, chronic, benign, slow growing intra-articular lesion, characterized by
non-neoplastic fatty deposits causing villous proliferation of the synovium with replacement of subsynovial connective tissue by mature fat cells, most commonly involving the supra-patellar pouch of the knee joint. The disease may affect other joints or peri-articular bursae or tendon sheaths of muscles. Laboratory tests & modalities like radiography, ultrasonography & computed tomography are of limited value in the diagnosis of LA.

MRI is diagnostic imaging modality in evaluation of LA because it displays a characteristic high signal intensity, villous or nodular foci, on both T1 and T2 weighted images that are suppressed on short tau inversion recovery (STIR) or fat supressed sequence, similar to that of any subcutaneous fat. The remaining non-fatty component of hypertrophied synovium displays heterogeneous high signal intensity on T2 or STIR sequences and intermediate -to-low intensity on T1 weighted sequence. Gadolinium shows non enhancement of hypertrophied sub-synovial fatty tissue while overlying thickened synovium displays diffuse enhancement. MR also demonstrates associated joint effusion without any sign of meniscus or ligament injury or osseous erosions.

MRI is best modality for the diagnosis of LA due to its characteristic features and excludes other aggressive joint masses and avoids the need of synovial biopsy. Early diagnosis & synovectomy prevent development of osteoarthritis.

Abstract ID: 404
ABSTRACT TITLE: BONE TUMOURS IN INDIA- SURVEY OF RADIOLOGIST PERSPECTIVE
PRESENTING AUTHOR: HITEN PANCHAL
CO-AUTHOR: DR RAJESH BOTCHU THE ROYAL ORTHOPAEDIC HOSPITAL, BIRMINGHAM, UK

Purpose: To analyse the management of bone tumours in India from a radiologist perspective.

Materials and Methods: A survey monkey of radiologists in India was performed. The survey included questions regarding the number of bone tumour cases seen by a radiologist, management, role of Multidisciplinary team, importance of person performing biopsy with some cases.

Results: There were 87 responses. Half of the respondents saw less than 10 bone tumours in a year but over 3/4th were confident of making a diagnosis on imaging. However less than 50% referred the patient to bone tumour centre with around 20% doing biopsy themselves without involvement of orthopaedic oncology surgeon. MDT’s were involves in less than 20% of the cases.

Conclusion: There is no consistent approach to management of bone tumours once they are identified on radiographs, CT or MR especially by radiologists in India. There should be increased awareness of management of bone tumours to decrease morbidity and mortality.
ABSTRACT TITLE: PAINFUL SHOULDER: HOW RADIOLOGIST CAN HELP IN MANAGEMENT OF PAINFUL SHOULDER DISORDERS

PRESENTING AUTHOR: HIMANSHU PANDEY

CO-AUTHOR: VISHAL JINDAL HIMANI SHARMA ROBIN SINGH ROHIT KAUSHIK

Learning Objective:

1. Know the important points about the image guided interventions in the shoulder region like diagnostic and therapeutic arthrograms and rotator cuff calcific tendinosis lavage/dry needling.

2. Pathophysiology, clinical presentations and imaging features of common painful shoulder disorder viz. Rotator cuff pathologies, Bursitis, Calcific Tendinosis, arthritis and Adhesive capsulitis on X Ray, Ultrasound, CT Scan and MRI/MRA.

3. MSK Interventional radiology treatment options for various painful shoulder disorders ranging from conservative management to interventional procedures.

4. Why, when and how to perform shoulder interventions with tips and tricks for more effective procedure.

Background And Imaging Findings: Shoulder pain is a common symptom and routinely observed in day to day practice. Diagnosis of various common shoulder pathologies like rotator cuff pathologies, bursitis, calcific tendinosis, arthritis and adhesive capsulitis is possible with multimodality radiology imaging including X ray, USG, CT and MRI. USG can be used for precise characterization of the exact size and location of calcium in the tendon. USG also helps in identification of associated pathologies like tendon tear and bursitis in shoulder region. MR imaging can also show calcium in the tendons, appearing hypointense on most pulse sequence with blooming on Gradient sequences. Initially conservative management is mainstay of treatment in calcific tendinosis cases, however when it fails, Ultrasound guided calcific lavage can be performed. Knowledge of the multimodality imaging findings and treatment options, allows for appropriate management of the calcific tendinosis.

Teaching Points

• Common features of Rotator cuff pathologies, Bursitis, calcific tendinosis, arthritis and adhesive capsulitis.

• Imaging features of rotator cuff tendon pathology, bursitis, calcific tendinosis, arthritis and adhesive capsulitis on XRay, Ultrasound, CT Scan and MRI.

• When to intervene? – Indications and contraindications for interventional treatment.

• Description of unique interventional treatment options available like therapeutic injections for rotator cuff tendon pathologies & bursitis and therapeutic arthrograms for adhesive capsulitis and arthritis.

• Interventional treatment options for calcific tendinosis like lavage procedure, dry needling and current role of platelet rich plasma injection.
Abstract ID: 416

ABSTRACT TITLE : WHAT EVERY RADIOLOGIST SHOULD KNOW ABOUT CHONDROID TUMORS – FROM GENETICS, CLASSIFICATION, IMAGING APPERANCES, DIAGNOSIS AND TREATMENT TO POST TREATMENT IMAGING

PRESENTING AUTHOR : HIMANSHU PANDEY
CO-AUTHOR : DIVYA BAJPAI HIMANI SHARMA VISHALJINDAL MAYANK JAIN ROBIN SINGH

Learning objective:

1- Know the genetics and various classification system for chondroid tumors (Enchondroma and Chondrosarcomas).
2- Imaging based differentiation between various types of chondroid tumors and their mimics on the basis of multimodality imaging.
3- Important points for Image guided Biopsy of the lesion
4- Pearls and pitfalls of various imaging modalities and histopathology in the diagnosis of Enchondromas and Chondrosarcoma.

Background And Imaging Findings: Condroid tumors are common and encountered in day to day practice on routine basis. Chondroid tumors can be benign and malignant and each type and subgroups have atleast some specific imaging points which will enable in differentioation of different entities. Various imaging modalities like XRAY, CT, MRI and PET-CT have roles in differentiating chondroid lesions from close mimickers. Knowledge of important differentiating point will help in more precise radiological diagnosis.

Teaching Point

- Important basic genetics of Chondroid tumors.
- Various classification systems of Chondroid tumors.
- Imaging features of each type of Enchondroma and Chondrosarcoma on different imaging modalities including X Ray, CT Scan, PET-CT and MRI.
- Description of unique differentiating characteristics for each lesion with histopathological confirmation.
- Imaging algorithm to allow for a more specific diagnosis based on imaging features of various Chondroid tumors and their mimics.

Abstract ID: 417

ABSTRACT TITLE : COMPARISON OF ULTRASOUND AND MRI IN DETECTION OF SUBSCAPULARIS TEAR WITH SURGICAL CORRELATION

PRESENTING AUTHOR : MEERA VARGHESE
CO-AUTHOR : DR GANESH K, DR PRASHANTH KUMAR M

Purpose: Tears of the most anterior part of rotator cuff, the subscapularis tendon, are reported to be uncommon and rarely occur in isolation. Ultrasound and MRI findings of subscapularis tendon tears have received little attention in radiologic publications. Here the diagnostic accuracy of ultrasound and MRI is being evaluated and correlated with surgery.
Materials and Methods: 30 case sample taken. Equipment used for study are Siemens Magneton Avanto 1.5T MRI and high resolution ultrasound. Study was hospital based after obtaining an informed consent. Patients referred to radiology department for ultrasound and MRI shoulder suspecting rotator cuff tear between 2016 – 2018 in A.J Institute of Medical sciences, Mangalore - 575004

Results: In 30 cases who were suspecting rotator cuff tear underwent ultrasound and MRI. 22 cases who underwent ultrasound had subscapularis tear which was positive on MRI and surgery. Rest 3 cases on ultrasound shows normal subscapularis tendon with minimal bursal effusion and positive on MRI and surgery. Another 5 cases who underwent ultrasound showed normal, out of which 2 cases on MRI showed minimal altered signal intensity in subscapularis tendon with no free fluid and rest 3 cases showed no findings on MRI with positive surgical findings.

Conclusion: This study showed that diagnosis of subscapularis tendon tear can be evaluated by ultrasound and MRI, but more accurately evaluated by the MRI.

Abstract ID: 428
ABSTRACT TITLE: MASTER KNOT OF HENRY REVISITED- A RADIOLOGISTS PERSPECTIVE
PRESENTING AUTHOR: HITEN PANCHAL
CO-AUTHOR: RAJKULASINGAM R, MURPHY J, JAMES S, BOTCHU R THE ROYAL ORTHOPAEDIC HOSPITAL, BIRMINGHAM, UK

The master knot of henry refers to a narrow space located between the abductor hallucis muscle and anatomic crossover between the flexor hallucis longus and flexor digitorum longus tendons. Given how the small space can lead to repetitive friction, it is not surprising to see tendinosis, tenosynovitis and tears of the latter mentioned tendons at the knot of henry.

We hope to firstly describe the anatomy of the knot of henry and show the variations in the tendinous inter-connections. This is important to know as the complex variations can affect the outcome of surgical intervention in this area. Surgery to this area is also technically challenging due to the close proximity of the medial plantar neurovascular bundle.

Moreover, we will also present rarer pathologies related to the knot of henry including ganglion, synovial sarcoma and chronic intersection syndrome among a few. Through our case series, we hope to make radiologists more aware of pathologies in this area which are not routinely seen in daily practice.

Abstract ID: 439
ABSTRACT TITLE: ELEPHANTIASIS NEUROMATOSA IN NEUROFIBROMATOSIS TYPE I MIMICKING VENOCAPILLARY MALFORMATION.
PRESENTING AUTHOR: RISHIKANT SINHA
CO-AUTHOR: DR SUBHASH KUMAR DR PRANAV KUMAR SANTHALIA DR DIPU SINGH

Background: A 14 year old male presented with progressive nontender swelling of left arm and forearm since birth. Axillary freckling was present. Café-au-lait macules were present, >6 and >15 cm in size. Slit lamp examination of left eye showed lisch nodules.

Imaging Findings: X-ray showed diffuse increase in soft tissues with widespread bony remodelling. USG showed diffuse increase in amount of fatty and fibrotic tissue with numerous vessels in subcutaneous
areas as well as coursing through the lesions. MRI showed altered signal intensity involving areas of the subcutaneous tissue, superficial and deep muscles and underlying bones of left arm and forearm with diffuse hypertrophy of subcutaneous fat with fatty and fibrotic tissue and diffuse heterogeneous enhancement of the hypertrophied components. Multiple flow voids seen throughout the arm and forearm and dilated subcutaneous, superficial and deep veins without evidence of arterial feeders. USG guided true cut biopsy confirmed neurofibroma.

Discussion: Elephantiasis neuromatosa is a rare clinical manifestation associated with the NF1 phenotype. The condition should be defined as early and excessive growth in the width and length of the affected limb due to a neoplastic proliferation of the perineural connective tissue, together with congenital lymphatic insufficiency and chronic hyperemia. The common differential diagnoses are soft tissue tumors causing elephantiasis such as filariasis, macrodystrophia lipomatosa, lymphangiomatosis, vascular malformation and proteus syndrome. Although CT is rarely helpful in making a specific diagnosis, it can provide a precise evaluation of the bone lesion, the extent of the soft tissue lesion; however, it is by far inferior to MRI in soft tissue contrast resolution and the visualization of tissue planes. Dynamic contrast-enhanced 3D MRA show the extensive capillary pooling of contrast throughout the soft tissue mass corresponding to the plethora of abnormal vessels in “the haemangio-neurofibroma” and the large ectatic veins, which is the pathognomonic finding.
Conclusion: It is important to be aware of these atypical presentations of ochronosis in addition to the classical imaging of black bone disease.

Abstract ID: 477

ABSTRACT TITLE: IMAGING IN SPINAL TRAUMA- CORRELATING THE MODES OF INJURY & NEUROLOGICAL OUTCOMES WITH SPECTRUM OF MORPHOLOGICAL FINDINGS

PRESENTING AUTHOR: MANISH KUMAR

CO-AUTHOR: HIMANI SHARMA, ADARSH AD, HIMANSHU PANDEY

Authors: 1.Dr. Manish Kumar(AP)  2.Dr. Himani sharma(JR) , Department of Radiology, Rohilkhand Medical College Hospital, Bareilly.

Background: Trauma is increasing in incidence as a cause of mortality & morbidity in today’s world. Spinal trauma assumes special importance because of the devastating neurological consequences it produces. Injuries to the spine cause disruption in the bony/ligamentous scaffolding and/or the spinal cord. Cervical spine injuries occur in 5%–10% of patients with blunt trauma.. The thoraco-lumbar junctional segment (T10-L2) is more vulnerable to injury owing to its unique anatomic and biomechanical properties. The thoraco-lumbar spine constitutes approximately 75% of all spinal fractures, and spinal cord injury occurs in approximately 1/3rd of them.Unstable injuries need to be identified urgently as suitable therapeutic planning is done.

Aim & Objectives:
1. Recognizing morphological types of spinal fractures & identifying specific modes of trauma associated with them
2. Characterizing patterns of spinal cord injury associated with different fracture types
3. Correlate the impact of imaging findings in deciding patient management(surgical/non-surgical) &compare them to neurological outcomes

Material & Methods: Study was done in the department of Radiodiagnosis, RMCH, Bareilly from November 2017 to August 2018. 50 patients referred from the department of orthopaedics with suspected spinal injury and who underwent a MDCT and/or MRI spine or both were included in the study.

Results & conclusion: Spinal injuries need a multidisciplinary approach for their diagnosis & management. CT & MRI are invaluable in the evaluation of spinal trauma as they affect therapeutic planning based on demonstration of specific injury patterns. Although neurological impairment is inevitable in higher grades of trauma, timely intervention saves significant morbidity in a fraction of patients.

References:
Abstract ID: 479

ABSTRACT TITLE: MRI EVALUATION OF SOFT TISSUE PATHOLOGIES IN A PAINFUL ANKLE
PRESENTING AUTHOR: KULBHUSHAN VISHNOI
CO-AUTHOR: DR BENO JEFFERSON, DR RISHI DIXIT

Purpose: To study the role of MRI in evaluation of soft tissue pathologies in patients with painful ankle joint.

Methods: A prospective study of 100 patients was carried in the Department of Radio-diagnosis, Sree Balaji Medical College, Chennai.

Patients from all the age groups both, men and women with complain of pain around ankle joint were examined. Sequences like Proton Density (fat suppressed) and STIR (in axial plane), T1WI, GRE, and STIR (in coronal plane) & Proton Density (fat suppressed), T1WI and T2WI (in sagittal plane) were performed. Gadolinium contrast media was given whenever required. Post contrast study includes T1WI Fat Suppressed sequence.

Results: Out of the 100 cases examined, we diagnosed 42 cases of ligamentous injury, 18 cases of tenosynovitis, 15 cases of tendon of achilles pathologies, 22 cases were normal and 3 cases of other pathologies.

Conclusion: MR imaging is the modality of choice for optimal detection of most soft-tissue disorders of the tendons, ligaments, and other soft-tissue structures of the ankle. Magnetic resonance imaging is becoming indispensable in diagnosing soft tissue conditions of ankle, demonstrating abnormalities before they become evident at other imaging modalities. Thus, MRI has opened a new horizon in diagnosis and hence in the treatment of most ankle joint lesions.

Abstract ID: 492

ABSTRACT TITLE: HIGH RESOLUTION 3 TESLA MRI IN THE EVALUATION OF ANKLE AND HINDFOOT PAIN
PRESENTING AUTHOR: ELVIS RAJA
CO-AUTHOR: DR.SAPNA SINGH DR.JYOTI KUMAR DR.V.K.GAUTAM

Purpose: Pain in the ankle and hindfoot is a common and frequently disabling clinical complaint that may be caused by a variety of osseous and soft tissue disorders. The soft tissue differentiation with MR imaging is excellent as it can differentiate between ligaments, tendons, muscles, synovium, vascular tissue and cartilage. The present study was undertaken to study the spectrum of imaging findings on magnetic resonance imaging in patients with ankle and hindfoot pain.

Materials and Methods: 45 adult patients with a complaint of ankle or hindfoot pain were taken up for this descriptive study. MRI of the ankle and hindfoot was done in all patients with follow-up MRI in patients who underwent conservative management.

Results: Ligamentous injuries constituted the largest group of pathologies with lateral ligaments being the most commonly injured ligament complex and among the lateral ligaments, the most commonly injured ligament was the anterior talofibular ligament with grade III injury being the commonest type of lateral ligament injury. The spectrum of cases also included tendon abnormalities, Haglund’s syndrome, impingement syndrome, TB, CRPS, sinus tarsi syndrome, PVNS, plantar fasciitis and bony abnormalities.
Conclusion: MRI with its exquisite soft tissue contrast resolution, non-invasive nature and multiplanar capability with no radiation hazard, was capable of demonstrating a large spectrum of pathologies affecting the ankle and hindfoot in exquisite detail. It was able to differentiate between ligaments, tendons, muscles, synovium, bone, vascular tissue and cartilage, and provided a comprehensive evaluation of the causes of ankle and hindfoot pain.

Abstract ID: 501

ABSTRACT TITLE: MORQUIO’S SYNDROME (MUCOPOLYSACCHARIDOSIS TYPE IV)- A CASE REPORT
PRESENTING AUTHOR: TANMOY DEY
CO-AUTHOR: DR, ASIM DE ASSOCIATE PROFESSOR RADIO DIAGNOSIS

Objective: To overview the radiological findings of morquio’s syndrome.

Background: Morquio’s syndrome is Type IV mucopolysaccharidosis, which is a type of lysosomal storage disorder. It is a rare Autosomal recessive disorder presenting with number of musculus-skeletal defects. incidence rate is 1:40,000. The deficiency of N-acetyl-galactosamine-6-sulfatase in this disease causes intracellular accumulation of keraten sulfate. patients appear healthy at birth. Presenting features include corneal clouding, short stature, short neck, moderate kyphosis or scoliosis, pectus-carinatum, atlanto-axial instability, joint laxity, widening of elbows or wrist, spinal deformity, genu valgum, waddling gait etc but no mental retardation.

Case Report: A 02 years old baby girl admitted at pediatrics ward of AGMC & GBP Hospital, with features of widening of wrist, chest deformity and genu valgum. On examination baby was afebrile, conscious but irriated. cardiovascular, respiratory and gastrointestinal systemic examination was normal. All routine blood examination were also normal. Subsequently baby was sent to radiology department for skeletal survey.

Radio-logical findings: skull xray revealed J-shaped sella, xray cervical spine revealed Absent odontoid peg, xray Spine revealed Anterior beaking of vertebra with platyspondyly, xray both hand revealed pointing of 2nd and 5th metacarpals, xray of both legs revealed cortical thinning of long bones, vulgus deformity of lower limb bones.

All these findings in correlation to the history pointed towards lysosomal storage disorder. Urine examination revealed presence of GAGs. Subsequently enzyme study revealed that the baby was deficient in N-acetyl-galactosamine-6-sulfatase, thus confirming the diagnosis.

Conclusion: Conventional radiology is a cheap and easily available modality which plays a key role in diagnosis of Mucopolysaccharidosis type IV. Classical radiological findings if carefully evaluated may effectively point towards the diagnosis. Thus establishing the value of conventional radiology.

Abstract ID: 514

ABSTRACT TITLE: ASSESSMENT OF ROLE OF DIFFERENT MRI SEQUENCES AND CONTRAST IN DETERMINING TUMOUR MARGINS IN MUSCULOSKELETAL TUMOURS
PRESENTING AUTHOR: RAMZI SHAMSUDDEEN
CO-AUTHOR: (None)
**Need For Study:** MRI is the most useful investigation following plain x-rays in the detection and further evaluation of both bone and soft tissue sarcomas. The multiplanar capability, combined with the excellent soft tissue contrast and anatomical detail, mean that even small soft tissue or bony lesions can be detected with accuracy.

The MRI appearance of some tissues is characteristic, so that the diagnosis may be apparent or the differential diagnoses narrowed following the MRI scan. Tissues that have a characteristic appearance on MRI include fat and hyaline cartilage. Some vascular lesions are also typical, such as arteriovenous malformations that exhibit flow voids due to rapid blood flow and venous malformations with bright slow flowing or stagnant blood. Other tissues may have an appearance that, while not diagnostic, may be suggestive of a few tissue types, for example fibrous tissue, haemorrhagic tissue or calcification.

**The diagnostic accuracy of MRI is being evaluated and correlated with surgery.**

**Aims and Objective**

1. To study with the aid of MRI in cases of bone tumors and to determine the MRI characteristics of different primary bone tumors.
2. To co-relate imaging findings with surgical findings and histopathology.
3. To evaluate the accuracy of MRI in detecting various lesions by statistical analysis.

**Materials and Method:** The proposed study will be conducted in the Department of Radiodiagnosis at AJIMS, Mangalore. The study will be done over a period of 2 years from 2016 and data will be collected during this period from all patients who undergo MRI. Equipment used for study will be Siemens magneton Avanto 1.5T MRI.

**Inclusion Criteria:** Clinical suspicion of bone tumours. Hemodynamically stable patients.

**Results:** Out of the 30 patients evaluated for musculoskeletal tumours, surgical and histopathological correlation was done. The study showed that MRI was successful in defining the tumour margins for the surgery in 20 patients and 17 patients histopathologically.

The capabilities of MRI, radionuclide bone scanning, and X-ray CT in diagnosing avascular necrosis of the hip were compared in a controlled statistical study. Diagnostic ability was measured as the area under the receiver-operating-characteristic curve. Differences in efficacy among various case pools and the standard errors of those differences were calculated. MR was better than both other techniques over the entire case pool, with the difference between MR and radionuclide scanning exceeding 2 standard errors (p less than 0.01). In the subsample of patients including more early cases, MR was better than CT by greater than 2 standard errors and better than radionuclide scanning by over 3 standard errors. This is evidence that MR is the most sensitive imaging technique for the early diagnosis of avascular necrosis.
Abstract ID: 539

ABSTRACT TITLE: ROLE OF MRI IN EVALUATION OF SUSPECTED ANTERIOR CRUCIATE LIGAMENT INJURIES

PRESENTING AUTHOR: LOHITH YADAV R

CO-AUTHOR: DR. RAMANNA H. C., DR. ARUL DASAN T., DR KAMESH G.

Aim: To study the role of MRI in evaluation of suspected anterior cruciate ligament injuries.

Materials & Methods: MRI knee was done in 50 patients referred to department of radiodiagnosis with suspected anterior cruciate ligament injuries. Siemens Magnetom Avanto model B5 1.5 Tesla MRI was used for this purpose. The following sequences will be taken T1: Axial/Sagital/Coronal, T2: Axial/Sagital/Coronal, STIR, PD. The MRI features of the anterior cruciate ligament were correlated with arthroscopic findings.

Results: Among 50 patients studied 13 patients had interstitial sprain, 12 patients had complete tear, 10 patients had mucoid degeneration, 9 patients had partial tear, 4 patients had high grade partial tear and however 2 patients had normal appearing anterior cruciate ligament.

Conclusion: MRI plays a primary and crucial role in ACL injuries and its management by allowing confident diagnosis of whether there is an ACL injury or not, especially in patients with equivocal physical examination and also provides additional information regarding the injuries of associated ligaments. MRI being a non-invasive imaging is a good modality for classifying ACL injury and evaluation of injuries to the associated ligaments.

Abstract ID: 544

ABSTRACT TITLE: MAGNETIC RESONANCE (MR) APPROACH TO THE UNSTABLE KNEE : PROPOSAL FOR A SYSTEMATIC ASSESSMENT.

PRESENTING AUTHOR: RICHITHA V PANDIT

CO-AUTHOR: DR. VINAY M. D. PRABHU, DR. A. ASHOK KUMAR

Learning Objectives: To illustrate the anatomy of the knee on magnetic resonance imaging (MRI) and to propose a systematic approach toward MRI interpretation of an unstable knee.

Background: The knee joint encompasses various structures that contribute to joint stability. It is the most commonly affected joint in a setting of lower limb trauma. The modality of choice for detecting knee injuries is magnetic resonance imaging (MRI). It is also the most commonly requested musculoskeletal examination. It is therefore pertinent to adopt a very systematic and thorough approach to its interpretation in order to perform a complete assessment of the same.

Imaging findings:

• Articular space effusion
• Ligaments and their integrity
• Menisci and their integrity
• Tendons around the knee joint
• Soft tissue
• Bones
• Teaching points
As radiologists, we should be familiar with the anatomy of the knee on MRI in order to provide accurate diagnosis and adopt a structured approach so as to avoid reporting errors.

**Abstract ID: 577**

**ABSTRACT TITLE**: ROTATOR CUFF INJURIES: ACCURACY OF ULTRASONOGRAPHY WHEN COMPARED WITH MAGNETIC RESONANCE IMAGING

**PRESENTING AUTHOR**: ROYCE DSA

**CO-AUTHOR**: DR. PARTHASARTHY K R, DR. KRISHNAPRIYA RAJ, DR. GAUTHAM, DR VEERESH PURAD.

**Aim**: To assess the accuracy of ultrasonography in rotator cuff injuries when compared with magnetic resonance imaging.

**Material and methods**: Twenty patients who were referred to the department of radiology, SS institute of medical sciences and research centre, Davangere with clinical suspicion of rotator cuff injuries were taken into the study. The long head of biceps is used as the initial landmark in rotator cuff examination in the ultrasonography. Then scanning of subscapularis followed by supraspinatus then Infraspinatus and teres minor muscles were performed. All the patients were undergone non enhanced magnetic resonance imaging further. The results of ultrasonography were compared with the magnetic resonance imaging.

**Results**: When compared to MRI, the sensitivity of the ultrasound for detection of tendinitis was 85% with 86% negative predictive value and 90% accuracy. Whereas for partial thickness tears its sensitivity, specificity, positive predictive value, negative predictive value and accuracy were 88%, 89%, 94%, 80% and 83%. But in full thickness tears both sensitivity and specificity were 100%.

**Conclusion**: Ultrasound and MRI are comparable in both sensitivity and specificity. Since ultrasound is less expensive and easily available, it can be considered as the screening method when rotator cuff injuries are suspected.

**Abstract ID: 586**

**ABSTRACT TITLE**: CORRELATION OF ACROMIAL MORPHOLOGY WITH IMPINGEMENT SYNDROME AND ROTATOR CUFF TEAR USING MAGNETIC RESONANCE IMAGING.

**PRESENTING AUTHOR**: KAMESH G

**CO-AUTHOR**: DR VIJAY KUMAR K R, DR ARUL T DASAN, DR CHANDANA UDAYAKUMAR

**Purpose**: To identify the morphological characteristics of acromion associated with rotator cuff tear and impingement syndrome as indications for acromioplasty are based on clinical symptoms and changes in acromial morphology on MRI.

**Materials and Methods**: 15 patients with rotator cuff tears (partial or complete), 15 patients with subacromial impingement and 10 controls without subacromial pathology were included in the study. Their shoulders were imaged using Siemens magneto Avanto model 1.5T MRI machine. The Acromial type (Biglani), Acromial slope (AS), Acromial tilt (AT), lateral acromial angle (LAA) and acromial index (AI) were measured and assessed.
Results:
- The acromial type according to Bigliani was not associated with any particular cuff lesion.
- A statistically significant difference between controls and impingement patients was found for acromial slope.
- Acromial tilt of the controls was significantly smaller than that of impingement and cuff tear patients.
- Lateral acromial angle of tear patients differed significantly from that of controls.
- Acromial index of controls was significantly lower than that of impingement and cuff tear patients.
- A good correlation was found between acromial type and acromial slope.

Conclusion: Low lateral acromial angle with large lateral extension of the acromion, higher acromial index and higher acromial.

Abstract ID: 623

ABSTRACT TITLE: EFFICACY OF HIGH FREQUENCY ULTRASOUND IN GRADING ROTATOR CUFF TEAR IN CORRELATION WITH CONVENTIONAL MRI

PRESENTING AUTHOR: SRITHI BHUI
CO-AUTHOR: DR.VINAYA POORNIMA

Introduction: Rotator cuff disease being the most common cause of shoulder pain due to its unstable ball and socket joint without any fixed axis of rotation, hence, needs an effective radiological assessment to image the cuff and non-cuff pathologies taking into considerations the pros and cons of each imaging modality. In this study MRI is considered as gold standard.

Aims:
1. Role of high frequency ultrasound in grading rotator cuff tears.
2. Comparing its efficacy with the conventional MRI.

Settings and design:
Sample size: 56, prospective cross sectional study in duration of 2 years

Materials and methods:
1. 1.5 T MRI system (Magnetom Siemens Avanto, 8-channel)
2. High frequency ultrasound probe (6-15 MHz -LOGIQ S-7, VOLUSION)

Statistical analysis used: -Chi-square test or Fischer’s exact test (for 2x2 tables only) was used as test of significance for qualitative data. - Kappa statistics.

Results: Most commonly affected tendon being the supraspinatus followed by sub-scapularis with Teres minor being the least affected.

Sensitivity for partial thickness supraspinatus tendon injuries (97.83%), specificity -90% with diagnostic accuracy of 96.4%. Sensitivity of subscapularis tendon is 75% with diagnostic accuracy of 96.43%. The
agreement between USG and MRI findings was measured by Kappa and highest agreement was observed for Supraspinatus (0.878).

In full thickness tears, USG had sensitivity of 91.67%, specificity of 100%, with diagnostic accuracy was 98.21% and Kappa agreement was 0.9453 (Almost perfect agreement) in diagnosis of full thickness tear in comparison with MRI.

Conclusion: USG is a reliable diagnostic technique in detecting tendon injuries more commonly partial thickness supraspinatus tears especially along the articular surface. Diagnostic accuracy of ultrasound for full thickness tear is more than partial thickness tears.

Hence, USG is an ideal screening modality for rotator cuff imaging due to its dynamic imaging and cost effectiveness.

Abstract ID: 646

ABSTRACT TITLE: PYKNODYSOSTOSIS
PRESENTING AUTHOR: JYOTI.G DULLI
CO-AUTHOR: DR. SRINIVAS, DR.ARUL DASAN

Aim: The purpose of this poster is to elaborate the skeletal features of pyknodysostosis in detail which would help to differentiate it from the close differentials, osteopetrosis and cleidocranial dysplasia.

Materials and method: This is a case report of a 14y male child who presented with fracture of right tibia on trivial trauma. Fracture was treated with POP. Then the child was referred for the evaluation of short stature, to the Department of Radio diagnosis, Bangalore Medical College and Research Institute, Bangalore. Skeletal survey if the child was done and following features were noted.

Results:
- Displaced fracture right tibia
- Diffuse increase in density of all the bones, however medullary canal was preserved.
- Persistent skull sutures, frontal bossing, hypoplastic sinuses and obtuse angled mandible resulting in receding mandible.
- Hypoplasia of distal ends of bilateral clavicles
- Bowing and overgrowth of tibia and radius, giving madelung’s deformity.
- Short and stubby fingers and toes with hypoplasia of distal ends-acroosteolysis.
- Shallow and obliquely roofed acetabulum
- Persistence of anterior infantile notching in vertebrae.
- Hepatomegaly and splenomegaly

Conclusion: Pyknodysostosis also known as osteopetrosis osteolytica or Toulouse Lautrec syndrome is a rare form of sclerosing skeletal dysplasia which is transmitted by autosomal recessive trait. The Greek meaning of pyknodysostosis is “at the extremity”, which refers to resorption at the distal challenges as observed in this condition and this is a consistent feature in this disease.
The medullary canal is thinned out but preserved in pyknodysostosis. Thus anemia is not a prominent feature of this disorder, whereas in osteopetrosis absence of medullary canal and anemia are prominent features which is an important differential between these two close sclerosing entities. Another close differential is cleidocranial dysplasia, in which chest is narrowed and is cone shaped with variable degree of hypoplasia of distal ends of bilateral clavicles which results in hypermobile bilateral shoulder joints. This feature is uncommon in pyknodysostosis.

Abstract ID: 649

ABSTRACT TITLE: LIPOMA ARBORESCENCE OF KNEE-CASE REPORT

PRESENTING AUTHOR: SRAVANTHI

CO-AUTHOR: DR.K.VENKAT RAM REDDY, DR RAMAKRISHNA REDDY, DR.BRIG.R S MOORTHY, DR VAISHNAVI.

Learning Objective: Lipoma Arborescens Is A Rare <1% , Intraarticular Lesion Characterised By Diffuse Replacement Of Subsynovial Tissue By Mature Fat Cells, Giving Rise To Prominent Villous Transformation Of Synovium

Background: A 45 Years Old Man Came To Orthopaedic Opd With Swelling Of Right Knee Joint Since One Year With Mild Increase Of Pain In Right Knee Joint While Walking For Past One Month

Conclusion:

- Lipoma Arborescens Is An Uncommon Intraarticular Lesion Consisting Of Villous Lipomatous Proliferation Of Synovium Seen In The Knee Joint Usually In Suprapatellar Pouch
- The Proliferating Cells Appearorganic And Resemble A Tree Thus The Name “Árborescens” From Latin Word “Arbor”
- Classical Frond Like Projections In Supra Patellar Region , With Joint Effusion Having Signal Intensity Of Fat On All Pulse Sequences, With Corresponding Suppression On Fat Suppressed Proton Density Sequence

Imaging Findings:

- Radiograph Of Right Knee Joint Showed Fullness Of Supra Patellar Region
- CT Demonstrated A Low Density Intra-Articular Mass
- USG Demonstrated A Joint Effusion With Echogenic ‘Frond Like’ Projections Into The Effusion
- MRI Revealed T1/T2 Hyperintense ,PdfS Sequences Showing Multiple Frond Like Projections Of Synovium With Fat Signal Intensity

References:

Abstract ID: 698

**ABSTRACT TITLE**: MRI IMAGING OF SCHMORL'S NODE: PREVALENCE AND DISTRIBUTION

**PRESENTING AUTHOR**: NAIR HARIKRISHNAN RAVEENDRAN VALSALA

**CO-AUTHOR**: DR. PREM KUMAR (ASSOCIATE PROFESSOR) AND DR. A. SENTHILKUMAR (PROFESSOR)

**Purpose**: To evaluate the prevalence and distribution of Schmorl’s Node in the patients who are subjected for MRI spine examination in the radiology department.

**Materials and Methods**: Study was conducted during the period from January 2017 to September 2018. Patients above the age of 18 years referred for various complaints for MRI spine were included in the study. 223 subjects were enrolled in the study. Study was done in Siemens 1.5 Tesla MRI Scanner. Whole spine T2 sagittal image was acquired for all the patients with additional images for the region of clinical interest if required. Presenting complaints, age, gender, occupation, activity level, height, weight, commutation history were taken from subjects.

**Results**: Demographic population was between an age of 18 to 95 years, almost equal females (111 subjects) and males (112 subjects). Overall prevalence of schmorl’s node was found out to be 17%, that is 38 people out of 223 subjects, with approximately 8.1% of the 223 subjects had in Lumbar Spine, and most commonly seen in L4 vertebral level (11.4%) and superior endplate of the vertebral body (39.4%). The most common age group with schmorl’s node was above 50% seen in 52.6% cases. Acute schmorl’s node seen in 4 patients (1.7%). It was seen less common in patients below 173 cm.

**Conclusion**: The prevalence of schmorl’s node was 17% and most commonly seen in L-Spine (9% in 223 subjects) with significant correlation for age above 50 years (p value-0.006) and height of more than 173 cm (p value-0.010). However, no significant correlation was seen between gender (p value-0.69) mode of commutation (p value-0.94), basal metabolic index (p value-0.74) and activity level (p value-0.47) was seen.

Abstract ID: 721

**ABSTRACT TITLE**: A PICTORIAL ESSAY OF NEUROPATHIC ARTHROPATHY

**PRESENTING AUTHOR**: J KRISHNA PRIYA RAJ

**CO-AUTHOR**: DR. VIJAYA MOHANA REDDY R, DR. AKHIL M KULKARNI, DR. PARTHASARTHY KR, DR. ROYCE D’SA, DR. MAHESH KARANJI

**Aim**: To describe the various imaging findings of neuropathic joint with multimodality imaging.

**Material and methods**: The spectrum of imaging findings in neuropathic arthropathy of various causes has been evaluated using multimodality imaging. Neuropathic arthropathy can be defined as bone and joint changes that occur secondary to loss of sensation and that accompany a variety of disorders. It is a chronic, progressive joint degeneration with bone fragmentation, ligamentous instability, and dislocation. Conventional radiography is the most commonly used imaging modality for diagnosing neuropathic arthropathy. Computed tomography, magnetic resonance imaging and radionuclide scintigraphy are helpful in distinguishing neuropathic arthropathy from septic arthritis and osteomyelitis.

**Results**: Based on the imaging findings studied by multimodality imaging, hypertrophied variety of arthropathy is seen more commonly than the atrophic form. The foot is the most commonly affected joint.
and diabetes mellitus is the most common clinical association. Involvement of non-weight bearing joints is mostly due to non-diabetic causes.

Conclusion: Imaging findings sometimes may mimic those of osteoarthritis, tumour and infection. However, imaging findings can be diagnostic if recognized appropriately.

Radiologists need to be familiar with the various appearances of neuropathic arthropathy to give the first clue to the diagnosis. Knowledge of initial features of neuropathic arthropathy may help in better clinical outcomes.

Abstract ID:740

ABSTRACT TITLE: THE UTILITY OF SONOGRAPHY IN THE DETECTION OF BONE EROSIONS IN PATIENTS WITH RHEUMATOID ARTHRITIS: A PROSPECTIVE COMPARISON WITH RADIOGRAPHY

PRESENTING AUTHOR: ANUPAMA TANDON
CO-AUTHOR: DR MOHD SHUAIB QURESHI, DR GOPESH MEHROTRA, DR REHMAN UL HAQ

Purpose: The presence of early erosion in RA correlates with structural damage, progression and functional capacity and its early detection is critical. Radiography, though routinely used, does not detect early erosive changes. This study assesses the accuracy of sonography for erosion detection and compares it with radiography, taking MDCT scan as reference standard.

Materials and Methods: 33 patients with rheumatoid arthritis (RA) were enrolled after informed consent and ethical committee approval. They underwent digital hand radiography (PA and ball catcher’s view) and sonography (by 2 radiologists) of bilateral 2nd to 5th metacarpophalangeal (MCP) and proximal interphalangeal (PIP) joints using 8-15MHz linear transducer. Erosion was defined as an interruption of the bone surface in 2 perpendicular planes. Erosion sites were recorded and subsequently compared using each modality. Non-contrast MDCT both hands was performed to confirm the pathologic specificity of erosions. The sensitivity, specificity, NPV, PPV of sonography and radiography were calculated taking MDCT as reference standard.

Results: Sonography detected erosions in higher number of patients than radiography (43.2% vs 27.7%) though less than CT (66%) and had a higher sensitivity for erosion detection at all joints (52% vs 30%). Specificity, NPV and PPV were comparable on both modalities. Sonography had greater site dependency, detecting more erosions at easily accessible joints like 2nd and 5th MCP and PIP joints while more erosions were missed on 2nd & 3rd MCP due to limited sonographic access. Inter-observer agreement for erosion detection on sonography was good (kappa 0.80).

Conclusion: Sonography is a reliable technique that detects more erosions than radiography. It has the potential to replace radiography as first line modality for erosive RA and is a likely to impact future practice of rheumatology.
Abstract ID: 745

**ABSTRACT TITLE**: 3D DUAL-ECHO STEADY-STATE (DESS) SEQUENCE IN ARTICULAR CARTILAGE EVALUATION OF GLENO-HUMERAL OSTEOARTHRITIS

**PRESENTING AUTHOR**: PRERANA

**CO-AUTHOR**: DR P BALAKRISHNA SHETTY, DR DHANANJAYA K V N, DR GURUSHANKAR G

**Purpose**: Significance of evaluation of articular cartilage in degenerative osteoarthritis of gleno-humeral joint in medical management.

**Materials and Methods**: All patients with degenerative osteoarthritis of gleno-humeral joint underwent MRI study with High-resolution 3-dimensional cartilage-specific magnetic resonance imaging (MRI). Pre and post treatment evaluation of articular cartilages done for comparison. Statistical analysis done with paired t test.

**Results**: There is significant thinning of articular cartilage noted in glenoid and humeral head surface. Thickness of articular cartilage in mild, moderate and severe osteoarthritis of gleno-humeral joint were compared in pre and post medical management.

**Conclusion**: High-resolution 3-dimensional cartilage-specific magnetic resonance imaging (MRI) gives valuable information of articular cartilage in degenerative osteoarthritis of gleno-humeral joint helping in medical management.

Abstract ID: 750

**ABSTRACT TITLE**: MRI EVALUATION OF LUMBAR DISC DEGENERATIVE DISEASE

**PRESENTING AUTHOR**: SOWMYA JAGADISH

**CO-AUTHOR**: DR. DENNIS TITUS, DR. M. R SHASHIKUMAR, DR. RAJENDRA KUMAR N L

**Title**: MRI Evaluation of Lumbar Disc Degenerative Disease

**Author**: Dr. Sowmya Jagadish

**Co-authors**: Dr. Dennis Titus, Dr. M. R Shashikumar, Dr. Rajendra Kumar N L

**Introduction**: Back pain is a common cause of disability in adults of working age. The most prevalent abnormalities of the spine are degenerative changes. MRI is the best imaging modality for detection and precise localization of lumbar disc degenerative disease.

**Objectives**: To evaluate the pattern of MRI findings in the study sample and to compare MRI findings of the lumbar spine with clinical symptoms.

**Materials and Methods**: 100 subjects who were referred to our department for MR imaging with clinical suspicion of lumbar disc degenerative disease were studied. Patient details and clinical history was obtained after informed consent. The MRI examination of the spine was studied for features of lumbar disc degenerative diseases.
Results and Discussion: Osteophytes were the most frequent degenerative change in the study followed by disc desiccation, diffuse disc bulge, neural foramen & lateral recess stenosis, annular tear, central canal stenosis, nerve root compression, Modic changes, disc protrusion, facet joint arthrosis, ligamentum flavum hypertrophy, spondylolisthesis, and vertebral collapse. Most cases of disc degeneration were observed in the 6th decade of life and at the L4 –L5 disc level followed by L5-S1 disc level. All subjects with paraesthesia and weakness had nerve root compression & subjects with radicular pain had nerve root compression.

Conclusion and Summary: Most of the degenerative changes were common in men and at L4 –L5 disc level in this study. MRI has resulted in an improved understanding of the frequency and spectrum of anatomic findings that can present as part of the degenerative process.

Abstract ID: 760

ABSTRACT TITLE: CAMURATI-ENDELKANN DISEASE (CED): A CASE REPORT.
PRESENTING AUTHOR: PURAN
CO-AUTHOR: ASHWANI KHANDEKAR

Learning Objective: To Diagnose this Rare disease.

Background: Camurati-Engelmann disease (CED) is a rare autosomal dominant hereditary disease affecting one in a million people. It is characterized by hyperostosis of the long bones, the skull and occasionally the pelvic bones. The symptoms depend on the extent of the affected bones and nerves and include proximal muscle weakness, severe limb pain, vertigo, a wide-based waddling gait and joint contractures. Facial features such as frontal bossing, enlargement of the mandible, proptosis, and cranial nerve impingement resulting in facial palsy are seen in severely affected individuals later in life.

Methods and Materials: A 47-year-old man was investigated using x-rays, CT and MRI presented with bilateral exophthalmus and mild deafness.

Results: The man showed heavily thickened bones on CT and MRI of the calvarium, especially in the area of the roof of the orbits and the petrous bone, causing exophthalmus and narrowing of the internal auditory canals.

Conclusion: CED presents correlative and complementary characteristics on x-rays, CT and MRI.

Abstract ID: 774

ABSTRACT TITLE: EVALUATION OF ANATOMICAL VARIATIONS OF STERNUM BY MDCT
PRESENTING AUTHOR: B. HAR HARA GUPTA
CO-AUTHOR: DR CH, MADHAVI, DR G S KEJRIWAL DR K.J.S.S, RAGHU TEJA, DR ANIL KUMAR

Purpose: The objective of our study is to evaluate the frequency of various anatomical variations of sternum and to demonstrate their appearance on MDCT. Knowledge of anatomical variants of sternum is important in the setting of biopsy, surgery and trauma.

Materials and methods: Two hundred and fifty patients who underwent thoracic MDCT examination were included in the study (prospectively and retrospectively over a period of 3 years).
All MDCT data including multiplanar, volume rendering and curved planar reconstructed images were evaluated for detection of sternal variations.

Various kinds of sternal variations such as xiphoid and sternal foramen, elongated xiphoid, ventral deviation of xiphoid, sterno-xiphoid fusion, manubrio-ster nal fusion, suprasternal ossicle, sternal tubercle, double & triple ending xiphoid and xiphoid ligament calcification were documented.

**Results:** in 250 subjects the frequency of main sternal variations were as follows:

- Xiphoid foramen - 13.2%
- Double ending xiphoid - 12%
- Sterno-xiphoid fusion - 7.6%
- Elongated xiphoid - 7.2%
- Manubrio-ster nal fusion - 5.6%
- Ventral deviation of xiphoid - 4.4%
- Sternal foramen - 2.4%

**Conclusion:** Sternal anatomical variants are of common occurrence on autopsy or on imaging. The most frequent variation in our study is sternal foramen followed by double ending xiphoid.

MDCT is the imaging modality of choice to depict the various forms anatomical variations, particularly with the assistance of multiplanar and curved planar reconstructed images.

The awareness of the frequency and imaging appearance of these variations can help in preventing misinterpretation of certain pathological conditions.

Before attempting any sternal invasive procedure, alerting the clinician regarding the presence of sternal foramen can help preventing catastrophic complications.

**Abstract ID:777**

**ABSTRACT TITLE** : ROLE OF ULTRASONOGRAPHY IN WRIST PATHOLOGIES IN OUR SETUP  
**PRESENTING AUTHOR** : NAKUL KARUNAKARAN  
**CO-AUTHOR** : DR.MONA SHASTRI, DR. EKTA DESAI, DR.NEHAL DIWANJI,DR NIPA .PATIDAR,DR ASHISH SACHDEVA  

**Coauthors:** Dr. Mona Shastri, Dr. Ekta Desai, Dr.nehal Diwanji, Dr Nipa .Patidar, Dr Ashish Sachdeva

**Purpose :**

- To subject wrist lesions suspected clinically or detected by radiography to ultrasound
- To study the ultrasound characteristics of lesions of, muscles, tendons, joints, bones of the wrist joint and their internal architecture.
- To study the incidence of age and sex with various wrist pathologies
- To highlight the superiority and inferiority of ultrasound in detection and characterisation of wrist disorders in comparison with other modalities.
- To study the cost effectiveness of ultrasound in various wrist lesions in comparison with CT and MRI
without compromising efficacy.

- To compare radiological diagnosis with histopathological diagnosis where applicable.

**Methodology:**

- **Inclusion criteria**: A prospective study of 40 patients presenting with a wrist complaint referred to the radiology OPD was carried out.
- **Exclusion criteria**: Any patient presenting with wrist pain secondary to a surgical procedure at or around the wrist joint.

Insertion of any surgical/orthopaedic/permanent implants at or around the wrist joint. Known case of diabetic neuropathy.

**Results and Conclusion:**

- Ultrasound helped in early detection of synovitis, erosions, tenosynovitis and synovial effusion.
- Compared to x-ray, ultrasound detected more patients with erosions in rheumatoid arthritis group. Statistically significant difference was found between detection of erosions by ultrasound and radiography in rheumatoid arthritis group. This was also observed in other pathologies.
- Calcifications are better seen with USG as compared to MRI
- Sonography is better for guiding therapeutic interventions
- High frequency ultrasound can be used as an alternative diagnostic tool with similar sensitivity and specificity.

**Abstract ID: 779**

**ABSTRACT TITLE**: ANKYLOSING SPONDYLITIS

**PRESENTING AUTHOR**: LUV DUGAD

**CO-AUTHOR**: DR. TEJAS YERMAL DR. ROHIT NANDAN

**Ankylosing Spondylitis Learning Objective**: The purpose of the study was to enumerate the imaging features of Ankylosing Spondylitis to prove the causative relationship between Ankylosing spondylitis and Anti-CCP antibodies to differentiate Ankylosing Spondylitis and other Seronegative Spondyloarthropathies.

**Background**: 24 year Male C/O Bilateral Knee Pain which started 6 years back, gradually progressive to bilateral Shoulder Pain after a month and subsequent progression to B/L Hands, Wrist and Hip Joint. No History of Trauma/Family History of Rheumatoid Arthritis.

**Findings and Procedure: On X-Ray & CT**: Loss of Joint space in Right Hip, secondary due to fusion of Right Femur Head with Acetabulum. Bilateral Sacroiliitis (Lt>>Rt) with erosion and sclerosis of Subchondral Region of iliac bone. Early Enesthopathic changes in lumbar vertebrae. Interspinous and supraspinous ligament ossification s/o Early Dagger Sign Disuse osteoporosis at Right Femur Head.

**Knee**: Bilateral decreased medial joint space with Erosion in Right lateral, Medial condyle of Tibia and in Medial Femoral Epicondyle.
MRI: There is Hyperintense signal in STIR and T2 Fat Saturated Sequence at Subchondral region of Left SI Joint with widened Joint space s/o Subchondral Marrow Edema.

Hyperintense Signal seen in T1 and Hypointensity on STIR & T2 Fat Saturated sequence suggestive of areas of Fatty Transformation of bone marrow near articular surfaces of the Sacral and iliac bones, with partial Sacroiliac Ankylosis on Right Side s/o Chronic Inflammation.

Conclusion: Above Feature suggestive of Ankylosing Spondylitis. Anti-CCP antibodies are occasionally present in Ankylosing Spondylitis, and their presence may be helpful as a serum marker for predicting Peripheral Arthritis.

Abstract ID:780

ABSTRACT TITLE: ULTRASOUND AND MRI CORRELATION IN MADURA FOOT

PRESENTING AUTHOR: MOHAMMAD NAUFAL BY

CO-AUTHOR: (None)

Madura foot is a chronic granulomatous disease that is more common in tropical than in temperate regions. The disease may be caused by a fungus (eumycetoma) or by bacteria (actinomycetoma). Mycetoma has been called a sinister disease. The infection painlessly burrows deeply until it reaches the bone.

Objectives: Evaluating the specific dot in circle sign in ultrasound and MRI in providing the definite diagnosis and to know the extent of disease than the time consuming biopsy and micro biological culture.

Background: Early diagnosis is important due to the therapeutic implications. Although biopsy and microbiological culture provide definitive diagnosis, they are time-consuming procedures and may not be able to provide a definite diagnosis in cases of fastidious organisms.

Imaging Findings: USG findings: USG grey scale image shows multiple hypoechoic lesions with hyperechoic focus center (dot in circle sign) and increased colour flow on doppler.

MRI findings: T2-weighted: discrete small round hyperintense lesions with peripheral hypointense rim and central hypointensities within (dot in circle sign)

Stir: Well-defined hyperintense lesions with hypointense rims.

Conclusion: ‘Dot in circle’ sign is a characteristic ultrasound and MR imaging finding for the diagnosis of mycetoma. Inclusion of MRI in the workup of patients with suspected mycetoma can aid in early diagnosis, as well as assess the extent of disease thereby aiding in the initiation of appropriate therapy.

References:
1. ‘Dot in circle sign’: a characteristic finding in ultrasound and MR imaging of soft tissue mycetomas. BMJ Case Reports 2016; doi:10.1136/bcr-2016-216502BMJ Case Reports 2016; Sankar Neelakantan, Arul Arokia Sensan Babu, Rakesh Anandarajan

Abstract ID:806

ABSTRACT TITLE : RARE CASES OF NEUROFIBROLIPOMA OF FOOT AND HAND
PRESENTING AUTHOR : ROHIT KUMAR SHARMA
CO-AUTHOR : DR. GANESH K

Clinical History: A 52-year-old female patient with a globular, smooth, mobile, non-tender swelling on the lateral malleolus of the left ankle since 15 years with a sudden increase in size since past 15 days and another patient with pain and swelling in the hand since 10 years. No history of fever/trauma.

Imaging: (xray) and MRI

MRI: Thickening of the superficial peroneal nerve on the lateral aspect of the distal which is hyperintense to the muscle on T1 weighted images and hypointense on T2 weighted images with surrounding cylindrical T1, T2 hyperintense substratum.

Discussion: Neurofibrolipoma are rare congenital lesions that can present as slow-growing masses formed by mature fat infiltrating the nerve, separating axonal bundles in the perineurium. The perineurial and endoneurial fibrosis thickens the axonal bundles which pass through the proliferated fat.

Common sites: Volar aspect of the hands, wrists, forearm, median nerve. Involvement of nerves of the lower extremities is very rare. (write incidence if you can find and write reference of that article)

Radiographs show macrodactyly due to soft tissue and bony overgrowth, bowing, secondary degenerative osteoarthritis. Ultrasound shows alternating hypoechoic nerve fascicles surrounded by hyperechoic substratum.

MRI shows longitudinally oriented cylindrical nerve fascicles with intermediate to low signal surrounded by adipose tissue showing high signal (on which weighted images)


Abstract ID:808

ABSTRACT TITLE : ULTRASOUND AND MAGNETIC RESONANCE IMAGING OF LIGAMENTOUS INJURIES OF ANKLE : A PICTORIAL REVIEW.
PRESENTING AUTHOR : GURPREET SINGH SANDHU
CO-AUTHOR : 2.DR MAHESH PRAKASH,PROFESSOR 3. DR ANINDITA SINHA,ADDITIONAL PROFESSOR 4.DR M .S. SANDHU,PROFESSOR 5.DR N .KHANDELWAL,PROFESSOR AND HEAD.

Learning objectives:
1. To familiarize with normal anatomy and imaging findings of ligaments around ankle joint.
2. To describe various injury patterns of ankle ligaments on USG and MRI.

Background: The injuries of the ankle ligament are common due to various sports injuries, occupational hazards and accidents. Imaging plays an important role to evaluate the status of these ligaments with high resolution USG and MRI aid in accurate diagnosis of these injuries and avoid the need for arthroscopy.
**Imaging Findings:** Ankle joint is supported by medial collateral ligament (deltoid ligament), lateral collateral ligament complex and syndesmotic ligaments. The ankle is commonly injured joint with anterior talofibular ligament being the weakest and most commonly affected ligament.

On USG the normal ligament appears echogenic with internal fibrillar structure with normal thickness ranging from 2-5mm. MRI appearance of normal ligament is due to collagen content within and shows Low Signal intensity on all conventional sequences.

The various grading of ligament injury has been done by AMA classification-Grade I – Ligament stretch / sprain Grade II – partial tear, Grade III – complete tear.

USG shows ligament tear appear as loss of fibrillar echotexture, thickening, surrounding fluid as few of the changes. MRI is the diagnostic modality of choice with ligament injuries appearing as thickening, thinning, irregularity, disruption of fibres and T2/STIR hyperintensity within. In addition it can detect associated abnormalities such as bone and soft tissue edema and joint effusion.

**Conclusion:** The imaging findings of ligamentous injuries of ankle joint on USG and MRI are important for the radiologist to know for accurate diagnosis which in turn will help to prevent long term complication such as instability and chronic pain in the ankle joint.

**Abstract ID:** 809

**ABSTRACT TITLE:** IMAGE GUIDED INJECTION TECHNIQUES OF WRIST JOINT

**PRESENTING AUTHOR:** USHA RANI (PGJR)

**CO-AUTHOR:** DR SUMAN KOCHHAR (PROF & HEAD) AND DR REKHA GUPTA (ASTT PROF)

**Learning objectives:** To assess usefulness of Multidetector Computed Tomographic Arthrography (MDCTA) and Magnetic Resonance Arthrography (MRA) over conventional MRI. To describe various techniques of wrist arthrography and their potential drawbacks.

**Background:** Arthrography is a useful technique in combination with CT and MRI for detailed assessment of articular structures.

MR arthrography extends the capabilities of MRI because intra-articular contrast injection (Direct MRA) allows selective examination of a joint, with controlled capsular distention and excellent depiction of the internal structures. Indirect MRA with intravenous gadolinium leads to enhancement effect of joint, but lacks capsular distention. MDCTA is recommended with MRA to increase diagnostic accuracy of foveal tears and associated bone fragments, like small bony flake from foveal area or ulnar styloid nonunion (pseudoarthrosis).

**Imaging Findings:** Ligaments are classified as normal (smooth, homogeneous) or torn (intrinsic deposition of liquid or contrast medium). Complete tears of scapholunate and lunotriquetral ligaments are tears involving the three portions (dorsal, proximal, and palmar) of ligament, while partial ruptures involve one or two portions. On MDCTA, full-thickness tears are communicating and manifest as interruption of ligament underlined by contrast. Partial-thickness tears are noncommunicating and require enhancement of both adjacent compartments for adequate depiction. They manifest as abnormal thinning, superficial fraying, or irregularities on one side of ligament. TFCC tears are classified according to Palmer system.

**Conclusion:** Multiple approaches exist for accessing major joints of body. The technique is chosen based on the comfort level of the person performing the procedure, available equipment, and the specific clinical indication. Imaging associated Arthrography facilitates the diagnosis and reduces number of diagnostic arthroscopic interventions.
Abstract ID: 810

**Abstract Title**: Correlation of Pain Score in Knee Osteoarthritis with Radiographic Finding.

**Presenting Author**: Abhay Pratap Singh

**Co-Author**: Dr. Sameer R Verma, Dr. Sonal Saran, Dr. Ravikant Kaushik

**Learning Objectives**: To assess usefulness of Multidetector Computed Tomographic Arthrography (MDCTA) and Magnetic Resonance Arthrography (MRA) over conventional MRI. To describe various techniques of wrist arthrography and their potential drawbacks.

**Background**: Arthrography is a useful technique in combination with CT and MRI for detailed assessment of articular structures.

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**Imaging Findings**: Ligaments are classified as normal (smooth, homogeneous) or torn (intrinsic deposition of liquid or contrast medium). Complete tears of scapholunate and lunotriquetral ligaments are tears involving the three portions (dorsal, proximal, and palmar) of ligament, while partial ruptures involve one or two portions. On MDCTA, full-thickness tears are communicating and manifest as interruption of ligament underlined by contrast.

Partial-thickness tears are noncommunicating and require enhancement of both adjacent compartments for adequate depiction. They manifest as abnormal thinning, superficial fraying, or irregularities on one side of ligament. TFCC tears are classified according to Palmer system.

**Conclusion**: Multiple approaches exist for accessing major joints of body. The technique is chosen based on the comfort level of the person performing the procedure, available equipment, and the specific clinical indication. Imaging associated Arthrography facilitates the diagnosis and reduces number of diagnostic arthroscopic interventions.

Abstract ID: 829

**Abstract Title**: MR Imaging of Kienböck’s Disease.

**Presenting Author**: Payal Lakhwani

**Co-Author**: Dr. Indiran Venkatraman, Dr. Rohit Aggarwal

**Purpose**: Evaluation of 27-year-old male with restricted wrist movement and pain in the radiolunate facet on activity since last 10 months with preceding history of trauma. No history of fever or any chronic illness.

**Materials and Methods**: MRI study of wrist was performed.

**Results**:  
1. Collapsed lunate bone and diffuse hypointense signal on T1 and T2 weighted sequences.
2. Mild STIR hyperintense signal also noted in the lunate bone.
3. Scar and volume loss in the subcutaneous fat in the distal forearm seen on T2 sequence.
4. Small degenerative osteophyte seen in the distal end of the radius.

Conclusion. Diagnosis of avascular necrosis of lunate bone with early osteoarthritis was made on the basis of MR imaging findings. Kienböck’s disease is also known as osteonecrosis, lunatomalacia, and aseptic or ischemic necrosis of the lunate. Kienböck’s disease most often involves the dominant hand in patients between 20 and 40 years of age.

MRI is most sensitive and specific in making the diagnosis mainly at the early stage of the disease (attenuation of lunate signal in T1-weighted images) and also help in staging and ruling out alternative diagnoses that mimic Kienböck disease (pseudo-Kienböck lesions).

References:

Abstract ID:830

ABSTRACT TITLE : ROLE OF RADIOLOGICAL MODALITY FOR EVALUATION OF ACHILLES TENDON DISORDERS
PRESENTING AUTHOR : SANJANA DOSHI
CO-AUTHOR : DR ASUTOSH DAVE

Aim: Role of radiological modality for evaluation of Achilles tendon disorders.

Introduction: Achilles tendon is strongest tendon in the body. Achilles tendon disorders are emerging as common disorder in active populations due to trauma and overuse. USG and MRI are promising tool for evaluation of Achilles tendon disorders. 30 patients (21 men and 9 women) had symptomatic Achilles tendons disorders clinically. USG and MRI examination was performed.

Ultrasonography Tendinopathy: Appeared as fusiform hypoechoic swelling of the tendon without disruption of the fibres.

Partial tears: Enlargement of tendon greater than 1 cm in the anterior–posterior dimension or marked intrinsic abnormalities such as hypo echoic or anechoic cleft indicated partial tear. Full-thickness tears: Characterized by complete tendon fibre disruption and tendon retraction.

Tendinitis: Thickening of the tendon with poorly defined margins and decreased echogenicity with focal or diffuse increase in vascularity.

Spectrum of appearances on MRI: Full thickness tear: Shows a tendinous gap filled with oedema / blood.

- Complete rupture shows retraction of tendon ends.
- T2: partial thickness may show high signal on long TR, and tendon swelling to >7 mm AP.
Tendinopathy: Show increased intratendinous signal and tendon enlargement, with oedema in Kager’s fat pad.

Tendinitis: Thickening of the tendon with poorly defined margins and decreased echogenicity.

Conclusion: In patient presenting with pain in the Achilles area, MRI is more sensitive but Ultrasonography examination should be included in the primary diagnostic protocol as it is cost effective.

Abstract ID: 842

ABSTRACT TITLE: RETROSPECTIVE EVALUATION OF DIABETIC MUSCLE INFARCTION WITH THE HELP OF MRI
PRESENTING AUTHOR: RAJAT SINGHAL
CO-AUTHOR: DR. ARCHANA REDDY, DR. R S PRASAD, DR. K JITENDER REDDY

Title: Diabetic Muscle Infarction: A Rare Complication And Mimics

Author: Dr. Rajat Singhal

Co-authors: Dr. Archana Reddy, Dr. R S Prasad, Dr. K Jitender Reddy

Institution: Apollo Hospital, Apollo Health City, Jubilee Hills, Hyderabad, Telangana

Presenting Author E-mail: rajat.pelu@gmail.com

Purpose: Retrospective evaluation of diabetic muscle infarction with the help of MRI findings and clinical correlation to help clinicians in making of correct diagnosis and not to confuse with its mimics.

Material and methods: Retrospective evaluation of diabetic muscle infarction with the help of MRI features & description regarding distribution of muscles and relative sparing. MRI report of lower extremity was reviewed and compared with the clinical parameters of patient with diabetic myonecrosis.

Clinical parameters (type of diabetes, HbA1c level, creatine kinase level and erythrocyte sedimentation rate and presence of complications including nephropathy, neuropathy and retinopathy were noted. The distribution of muscles involvement and imaging features were reviewed.

Result: MRI is the investigation of choice. T2W and STIR weighted images show areas of hyperintensity as compared to unaffected muscles. Contrast enhanced T1W images show a focus of central low signal surrounded by rim of high signal. Ultrasonography has some supportive role, it shows internal linear echogenic structure coursing through the lesion, absence of internal motion or SWirling of fluid with lack of predominantly anechoic areas.

Conclusion: Diagnosis mainly depends on clinico-radiological features. Lab investigations are non specific and have supportive role as USG findings. MRI is the investigation of choice (no contrast if nephropathy). Biopsy is contraindicated & may be complicated by seromas, haematomas, poor wound healing, infection & nerve palsies.
Abstract ID:852

ABSTRACT TITLE: LITTLE LEAGUER’S SHOULDER-THE INJURY OF YOUNG SPORTSMAN
PRESENTING AUTHOR: PRASAD JAWALKAR
CO-AUTHOR: DR SAPANA JAWALKAR, DR SRIDHAR DEVU, DR DHAWAL KAUSHAL, DR DEEPAK VARSHNEY

Discussion: A Salter Harris Type I physeal injury to proximal humerus. Excessive overhead throwing leads to widening and irregularity of the proximal humeral physis on radiographs and MR images.

It appears to be caused by the significant rotational stress applied to the proximal humeral physis during the act of throwing.

During the act of throwing, the shoulder is forcibly internally rotated and adducted from an externally rotated abducted position. Growing articular cartilage is more susceptible to both micro- and macrotrauma than is adult cartilage.

Differential diagnosis: MR imaging is extremely useful to differentiate stress fractures from inflammatory and neoplastic conditions without exposing the child to ionizing radiation.

Unlike stress injuries, in which the edema is confined primarily to the bone, the soft-tissue findings in infection may be just as prominent as the marrow abnormality.

Tumor often is characterized by a mass and may have little surrounding edema, whereas the signal intensity abnormality of a fracture tends to be more linear and is commonly associated with sclerosis on conventional radiographs.

Classic radiographic findings:
- Widening of the physis of the proximal humerus
- Associated lateral fragmentation
- Calcification, sclerosis
- Demineralization
- Cystic changes

Complications: Premature growth arrest of proximal humeral epiphysis causing
- Growth arrest
- Angular deformity

Treatment: Rest from any throwing for an average of 3 months (range from 1 to 12 months). The decision to allow the patient to begin throwing again is based on lack of symptoms, and not on a normal radiographic appearance.
Abstract ID:861

ABSTRACT TITLE: SIRENOMELIA THE MERMAID SYNDROME
PRESENTING AUTHOR: MOHAMMED MUZAFFAR HUSSAIN
CO-AUTHOR: DR SURESH MASIMADE (M.D RADIODIAGNOSIS)

Learning Objectives: Purpose to evaluate and enumerate the features of Sirenomelia:

Background: A gravid 2, nulliparous consanguineously married 24yrs old women referred to our hospital following an abnormal antenatal report. The women previously had 1 abortion at 4 months of pregnancy. The ultrasonography done at 34 weeks gestation showed severe oligohydrominos with live fetus with breech presentation. She delivered a 2.1kg stillborn baby at 35 weeks of gestation, breech presentation by normal vaginal delivery.

Findings and Procedure Infantogram

Antenatal Ultrasonography: The baby had Potter’s face, flat nose, hypertelorism, receding chin, low set crumpled ears, loose baggy skin, absent genetalia, imperforate anus and fused lower limbs. Ryles tube could be easily passed to stomach. Infantogram showed both femoral bones, two tibias, two fibulas, a sacrum which was concave and dorsally directed. The baby had thirteen pairs of ribs and no obvious vertebral anomalies. A diagnosis of sirenomelia was made on clinical examination of baby, prenatal diagnosis by ultrasound and postnatal x-ray findings.

Conclusion: Features suggestive of Sirenomelia The Mermaid Syndrome

Abstract ID:870

ABSTRACT TITLE: SPECTRUM OF RADIOLOGICAL FINDINGS IN SECONDARY HYPERPARATHYROIDISM
PRESENTING AUTHOR: VANDANA S
CO-AUTHOR: DR GEETHA M J, DR. RUDRESH HIREMATH

Learning objective:

• Diagnosis of secondary hyperparathyroidism using various imaging modalities.
• To get familiarize with spectrum of radiological findings in secondary hyperparathyroidism.

Background: Secondary hyperparathyroidism involves an increase in PTH levels as compensatory mechanism that may be due to chronic renal insufficiency or vitamin D deficiency. The diagnosis of hyperparathyroidism can be made on the basis of laboratory tests. The value of imaging lies not in initial diagnosis but in assessing the severity of the condition and in establishing a means of objective for management of the patient.

Imaging findings:

• Can be skeletal changes or non skeletal changes.
• Subperiosteal bone resorption, diffuse osteopenia, osteosclerosis of the vertebrae with characteristic rugger jersey spine, soft tissue calcification, superior and inferior rib notching. Multiple brown tumors is a rare manifestation associated with secondary hyperparathyroidism.
USG can detect parathyroid hyperplasia, ectopic parathyroids, renal parenchymal changes and renal calculi.

CT lower neck & thorax performed can be used to demonstrate the parathyroid adenomas and brown tumors in the ribs more precisely. Rib erosions can also be noted.

Conclusion: Correlation of clinical and laboratory findings associated with imaging studies are essential for correct diagnosis. Radiological findings of primary and secondary hyperparathyroidism often overlap with each other. Presence of multiple brown tumors, soft tissue calcifications and renal parenchymal changes are more commonly seen in secondary hyperparathyroidism.

Abstract ID:881

ABSTRACT TITLE : DUAL PHASE AND DIFFUSION WEIGHTED MRI IN CHARACTERIZATION OF BENIGN AND MALIGNANT VERTEBRAL BODY LESIONS.

PRESENTING AUTHOR : RAJAGOPAL KV

CO-AUTHOR : LAKSHMI SINDHURA, SATISH M

Aims and Objectives: To evaluate the value of Dual phase and Diffusion weighted MRI in characterizing the vertebral body lesions.

Methods and materials: Diffusion weighted and dual phase sequences were acquired and analyzed in 53 patients having 103 lesions on conventional MRI with HPE as gold standard. Signal intensity in in-phase and out-of-phase was obtained in the abnormal vertebra and percentage signal loss was calculated. ADC value of the abnormal vertebra was calculated and compared with adjacent normal vertebra.

Results: Mean percentage of signal loss was 42.00 % in benign lesions and 14.35 % in malignant lesions. In dual phase imaging, 20% signal loss was taken as cut-off. The sensitivity, specificity, positive predictive value and negative predictive value were 78.9 %, 95.6 %, 95.7% and 77.1 % respectively.

Mean ADC value for benign lesion was 1.03 x 10-3 mm2/sec and 0.38 x10-3 mm2/sec for malignant lesion. Sensitivity, specificity, positive predictive value, negative predictive value were 96.4%, 69.5%, 79.7% and 94.1% respectively.

Combination of conventional and dual phase has sensitivity, specificity of 78.9%, 95.6 % and combination of conventional with diffusion weighted imaging has sensitivity, specificity of 92.9% and 86.9%.

Conclusion: Our study concluded that diffusion weighted and dual phase imaging has adjunct role to conventional MRI. Combination of diffusion weighted and dual phase imaging has much stronger correlation with biopsy findings than conventional MRI alone.

Abstract ID:891

ABSTRACT TITLE : A RARE CASE OF PYKNODYSTOSIS

PRESENTING AUTHOR : SUSHMA H

CO-AUTHOR : DR. RAJENDRA KUMAR N L, DR. NANJARAJ C P, DR. DENNIS TITUS

Introduction and Purpose: Pyknodyostosis is a rare autosomal recessive bone dysplasia characterised by increased bone density, dwarfism and skeletal fragility. Pyknodyostosis has a number of characteristic
radiographic signs that differentiate it from other osteosclerotic conditions. Recognition of these radiological signs is important in order to make the diagnosis and prevent possible complications.

**Materials and Methods:** An 18 year old male patient with history of trivial fall presented with pain and swelling of right leg. Patient was referred to department of Radio diagnosis, Mysore Medical College and Research institute, Mysore for radiograph of right leg. The patient was subjected to skeletal survey with radiography and computed tomography imaging for further radiological evaluation.

**Results:** Radiographic evaluation revealed generalised increase in bone density with preservation of the medullary canal. Skull radiographs showed widely separated cranial sutures and widely open anterior and posterior fontanelles. The paranasal sinuses were non-pneumatised with angle of the mandible being obtuse. Dense vertebral bodies with characteristic sparing of the transverse processes and acro-osteolysis are noted.

**Conclusions:** Pyknodysostosis is a rare condition that is diagnosed primarily on its radiographic features and history of fractures of shaft of long bones with trivial trauma. The importance of recognition of these features in the diagnosis and prevention of future complications is stressed in this case report.

**Abstract ID:** 905

**ABSTRACT TITLE:** IMAGING FINDINGS OF MUCOPOLYSACCHARIDOSES

**PRESENTING AUTHOR:** HETA PATEL

**CO-AUTHOR:** DR. MONA SHASTRI, DR. EKTA DESAI, DR. NIPA PATIDAR, DR. MONA CHITARA, DR. KAUSHAL PATEL, DR. RONAK HAPANI

**Objectives:** The aim of this exhibit is to describe clinical features and imaging findings of mucopolysaccharidoses (MPS). We describe radiological and neuroradiological findings encountered in patients with MPS, to help radiologists in their diagnosis and management.

**Background:** The mucopolysaccharidoses constitute a group of hereditary disorders having in common an abnormality in glycoprotein or mucopolysaccharides metabolism secondary to deficiencies in specific enzymes leading to excessive accumulation of mucopolysaccharides. Types of MPS identified are MPS I-H (Hurler’s syndrome), MPS II (Hunter’s syndrome), MPS III (Sanfilippo’s syndrome), MPS IV (Morquio-Brailsford syndrome), MPS I-S (Scheie’s syndrome) and MPS VI (Maroteaux- Lamy syndrome).

**Imaging Findings:** Large skull with thickened calvarium, kyphosis, poorly formed pelvis, short, thickened and irregular clavicles, widening of diaphysis with shortening of the long bones, J shaped sella, oar-shaped ribs, bullet shaped phalanges, anterior beaking and wedging of vertebral body.

On MRI, narrowing of the craniocervical junction, vertebral bodies deformities and nucleus pulposus hypotrophy. Neuroradiological Imaging, Abnormal signal intensity in the white matter; Dilatation of periventricular spaces; Widening of cortical sulci, brain atrophy and enlargement of extraventricular spaces; Spinal cord compression

**Conclusion:** X-ray or CT/MRI show specific skeletal and neurologic features in MPS patients. Types of MPS are diagnosed using enzyme assay techniques but the evaluation of these imaging findings is useful for suggesting and supporting MPS as a possible diagnosis, for monitoring the chronic and progressive course of the disease, for surgical and medical planning and for assessing the impact of therapy.
Abstract ID:922

**ABSTRACT TITLE**: SCAPULOThoracic Bursitis: A CAUSE OF SNAPPING SCAPULA SYNDROME

**PRESENTING AUTHOR**: NEHA CHAUDHARY

**CO-AUTHOR**: (None)

**Learning objective**: MRI findings of scapulothoracic bursitis in patient presenting with snapping scapula syndrome.

**Background**: Snapping scapula is defined by grinding or popping sound or sensation secondary to abnormal scapulothoracic motion. There are two causes of snapping scapula – 1) Scapulothoracic crepitus; secondary to osseous lesion, such as osteochondroma in scapulothoracic space. 2) Soft tissue cause, such as Serratus anterior edema at the scapulothoracic interface or scapulothoracic bursitis.

We hereby present a case of scapulothoracic bursitis in a 16 yrs old male presenting with snapping scapula syndrome with grinding and popping sensation during scapulothoracic motion since last 6-7 yrs. There was no evidence of associated pain or tenderness. No history of fever or trauma was present.

**Imaging findings**: MRI revealed a well-defined lesion along the medial margin of right scapula between the right 2nd, 3rd & 4th ribs and intervening intercostal muscles and right Serratus anterior muscle, measuring 0.9 x 5.8 cm (AP x CC), appearing hyperintense on T2WI & PDFS & hypointense on T1WI, suggestive of Infraserratus bursitis. There was no evidence of edema in the adjacent soft tissues.

**Teaching points**: MRI plays an important role in finding the etiology in patients of snapping scapula syndrome such as scapulothoracic bursitis. There are two major and four minor bursae in the scapulothoracic articulation. Major bursae include infraserratus bursa (between serratus anterior muscle and chest wall) and supraserratus bursa (between subscapularis and serratus anterior muscles). Minor bursae include bursae at the superomedial and inferior angle of the scapula & trapzoid bursa.

Abstract ID:923

**ABSTRACT TITLE**: PSEUDOTUMOR DELTOIDEUS OF HUMERUS IN PATIENT PRESENTING WITH PAIN IN ARM

**PRESENTING AUTHOR**: NEHA CHAUDHARY

**CO-AUTHOR**: (None)

**Background**: Pseudotumor deltoideus is an uncommon entity and there are only two case reports so far in literature (2001 & 2015). It was described as benign in character, possessing anatomic variations. A 58 yrs old male, presented to our clinic with pain with tenderness in the lateral aspect of right arm since 10 days. The pain worsened with activity on raising the arm. There was no history of trauma in recent past, however history of fall from bike on right shoulder was present 15 years back. There was no soft tissue swelling at site of pain, no history of fever or any other significant history.

**Imaging findings**: The radiographs showed cortical sclerosis with intracortical radiolucency in the lateral aspect of mid shaft of humerus. CT confirmed the radiographic findings. MRI revealed cortical thickening at insertion of deltoid muscle, measuring approximately 4 cm in length & showed intracortical altered signal intensity, appearing hyperintense on T1WI & T2WI. There was no evidence of edema in the bone marrow or adjacent soft tissue.
Conclusion: The presence of cortical thickening with intracortical lucency and signal alteration at deltoid insertion without evidence of marrow edema or inflammation in surrounding soft tissue accompanied with history of pain suggests diagnosis of Pseudotumor deltoideus. It results due to chronic avulsion injury of deltoid, is benign in nature and shows indolent course. The knowledge of this entity will prevent misdiagnosis of infective or tumoral etiology and will prevent unnecessary further investigations.

Abstract ID:972

ABSTRACT TITLE: EFFICACY OF ULTRASOUND GUIDED TARGETED INJECTION OF PLATELET RICH PLASMA IN TRIANGULAR FIBROCARTILAGE COMPLEX TEAR: A PRELIMINARY REPORT

PRESENTING AUTHOR: DHARMENDRA KUMAR SINGH

CO-AUTHOR: PROF. (DR.) SHABNAM BHANDARI GROVER, DR. NISHTH KUMAR, COL. (DR.) BIBHU KALYAN NAYAK, DR. AMIT KATYAN, DR. SAGAR TOMAR, DR. SAURABH SUMAN, DR. MAHESH KUMAR, DR. ANURADHA SHARMA

Purpose: Triangular fibrocartilage complex (TFCC) tear is a commonly encountered non-osseous etiology of ulnar wrist pain and disability. The currently available conservative and surgical treatment options have variable outcomes. The purpose of our ongoing study is to evaluate efficacy of ultrasound guided targeted injection of platelet rich plasma (PRP) around TFCC tear using patient related wrist evaluation (PRWE) score.

Materials and Methods: The current preliminary report of this Institutional review board approved prospective interventional study comprises of 12 patients with TFCC tear diagnosed on MRI and providing informed consent. Under ultrasonographic guidance, 3-4 ml of PRP was injected at three defined targeted points around TFCC. The patients were subsequently evaluated using PRWE score at 4 and 8 weeks. Data analysis was done using SPSS version 21.0 using Wilcoxon Test for comparing quantitative variables and Mcnamer test for correlating qualitative variables, p <0.05 was considered statistically significant.

Results: PRWE score has shown significantly decreasing trend in present sample size having Mean ± SD at 4 weeks is 55.83 ± 9.96 with interquartile range of 50-60 and p value 0.003. Mean ± SD PRWE score at 8 weeks is 26.67± 7.78 with interquartile range of 20-30 and p value 0.003.

Conclusion: The clinical response of US guided targeted PRP injection around TFCC tear has shown extremely encouraging results in this preliminary study and has the potential to become an effective nonsurgical management for TFCC tear. Our ongoing study will widen the database to further substantiate our preliminary results.

Abstract ID:977

ABSTRACT TITLE: THE FLIPPED MENISCUS SIGN - MECHANISM, APPEARANCE AND SIGNIFICANCE.

PRESENTING AUTHOR: N NITYA

CO-AUTHOR: DR.M.VENKATESH, DR. (MAJ.) T.SAIKRISHNA, DR. V.N.NARVEKAR, DR. RAMAKRISHNA RAO BARU, DR.P.SUNEETHA.

Objective: Trauma to knee often results in tears in menisci with portion of the torn meniscus being displaced away from the meniscus. It is important to identify these displaced meniscal fragments since their removal results in clinical improvement. The reliability of MRI in detecting these meniscal tears is well recognised. The
flipped meniscus sign is seen when the displaced fragments rather than migrating towards the intercondylar notch, moves anteriorly/posteriorly to sit directly on the anterior/posterior horn of ipsilateral meniscus.

**Imaging findings:** On 3T MR imaging of the knee, the striking appearance is an abnormally enlarged anterior/posterior horn of meniscus in association with a tear of ipsilateral posterior/anterior horn. However, on T2 sagittal images the flipped meniscus should be differentiated from a torn redundant PCL lying over the posterior horn of meniscus which appears as wedge shaped soft tissue superior to the meniscus by looking at the coronal STIR images.

**Summary:** Bucket handle tears of menisci usually involve the medial meniscus and begin with a vertical or oblique orientation that starts in the posterior horn and propagates longitudinally and anteriorly. The central portion of torn meniscus usually migrates towards the intercondylar notch propelled by compressive forces. MR imaging is extremely useful in diagnosing displaced meniscal tears, particularly bucket handle tears. Flipped meniscus sign is a reliable indicator of bucket handle tears. However it should be differentiated from a torn redundant PCL lying over the posterior horn of the meniscus.

**Abstract ID:989**

**ABSTRACT TITLE**: MRI OF RARE CASE OF PIGMENTED VILLONODULAR SYNOVITIS OF ANKLE

**PRESENTING AUTHOR**: GEDA ANUSHA

**CO-AUTHOR**: DR.MAJ. SAI KRISHNA, DR.VEDA RAJU.

**Objective:** Pigmented villonodular synovitis is a rare, benign, idiopathic proliferative disorder of synovium that results in villous and or nodular formation that have been reported to manifest within joints, tendon sheaths and bursae. Patient presents with complaints of joint swelling, pain and joint dysfunction. The overall incidence includes 2% to 10% that occurs within foot and ankle joints. PVNS has high rate of recurrence and upto 45% recur inspite surgical intervention. The distinctive appearance of PVNS on MRI has proven to be useful in both diagnosis and treatment of this pathologic process. MRI is useful mostly to see extent of soft tissue involvement. It is useful in planning surgical intervention. Treatment generally consists of local resection of abnormal tissues.

**Imaging:**

MRI shows peri-articular or synovial nodular mass with varying degrees of bone erosion. Low signal intensity T1 and T2 images due to haemorrhage and haemosiderin deposition. MRI is helpful in determining extent of disease involvement.

**Summary:** Pigmented villonodular synovitis is a rare, benign, idiopathic proliferative disorder of synovium that results in villous and or nodular formation that have been reported to manifest within joints, tendon sheaths and bursae. Patient presents with complaints of joint swelling, pain and joint dysfunction. The overall incidence includes 2% to 10% that occurs within foot and ankle joints. The distinctive appearance of PVNS on MRI has proven to be useful in both diagnosis and treatment of this pathologic process. MRI is useful mostly to see extent of soft tissue involvement. It is useful in planning surgical intervention.
Abstract ID:1036

ABSTRACT TITLE: MRI OF PATELLAR MALTRACKING: LINES, ANGLES AND SHAPES REVISITED
PRESENTING AUTHOR: ANINDITA SINHA
CO-AUTHOR: SANTOSH DHUNGANA MAHESH PRAKASH LAXMIKANT GUPTA DEVENDER CHOUHAN NIRANJAN KHANDELWAL

Learning Objectives: 1. To acquaint the radiologist about the imaging features and measurements in the assessment of patellar maltracking. 2. To discuss the various morphological abnormalities in the patella and trochlea predisposing to patellar maltracking.

Background: Patellofemoral instability results in abnormal medio-lateral translation of the patella and predisposes to early osteoarthritis and chondromalacia patellae. Various anatomical variations like dysplasia of the trochlea, patella alta and laterisation of the tibial tubercle predisposes to the recurrent patellar instability.

Imaging findings: Trochlear depth, trochlear facet asymmetry ratio and sulcus angle had been used for the diagnosis of the trochlear dysplasia. A patella alta is the too high position of the patella beyond the trochlear groove and occurs due to the long patellar tendon. Various ratios like Insall-Salvati index, Modified Insall-Salvati index, Caton-Deschamps index, Blackburn-Peel index have been used to calculate patellar tendon height. Lateralization of the tibial tubercle is the incongruence between the axis of the trochlear groove and the tibial tubercle, predisposing to the lateral patellar dislocation. Lateralization of tibial tuberosity is calculated by measuring the distance between the tibial tuberosity and the deepest part of the trochlear groove.

Conclusion: Various measurements and techniques exist for assessing trochlear dysplasia, patellar tendon height and in assessment of tibial tuberosity as well as in assessing the shapes of the trochlea and patella. The radiologist must be conversant with the assessment techniques in order to diagnose this condition.

Abstract ID:1048

ABSTRACT TITLE: PRIMARY EWING’S SARCOMA PRESENT AS EXTRA PARENCHYMAL CHEST MASS
PRESENTING AUTHOR: B.JAGADEESH KUMAR
CO-AUTHOR: DR.V.BALA MURALI KRISHNA, DR.V.SANDEEP, DR.K.CHANDRASEKAHR

Learning Objectives: The incidence of Ewing’s sarcoma in the rib is 7%. Most common in 5-25 years of age. Primary Ewing’s tumour of rib usually presents with history of chest pain associated with palpable chest mass. The lateral portion of rib is most commonly involved. Whenever a young patient presents with pleural effusion along with chest wall mass, it is worthwhile to perform histopathological examination before starting ATT course.

Background: A 14 years girl presented with right sided chest pain & shortness of breath since 3 months, cough & fever usually at night since 10 days. She was initially given ATT sachets for a week by general practitioner thinking it to be tubercular etiology.

Imaging Findings:
- Blood investigations done.
- Chest X-ray shows soft tissue density lesion at the right lateral chest wall adjacent to 3rd rib & right sided pleural effusion.
USG abdomen & Pelvis shows moderate-gross right pleural effusion which appears to be exudative.
CT scan (Plain/contrast) & MRI shows features of extra parenchymal lesion, appears to be pleural (or) chest wall lesion adjacent to 3rd rib on right side with passive collapse of lung.

**Possibilities we considered are:**
1. Ewing’s sarcoma (or) any other round cell tumors.
2. Hematological malignancies (lymphoma)
3. Metastasis from unknown primary
4. Tuberculosis
5. Bone scan shows focal area of mild increased tracer uptake in right rib.
6. USG guided FNAC & Biopsy from right chest (or) pleural mass shows features suggestive of Ewing’s sarcoma.

**Conclusion:** EWING’S SARCOMA of rib with soft tissue mass & with haemorrhagic right pleural effusion.

**Abstract ID: 1069**

**ABSTRACT TITLE:** NAMED FINGERS IN RADIOLOGY
**PRESENTING AUTHOR:** PRIYANKA
**CO-AUTHOR:** DR ANKUR GOYAL

**Learning objectives:** To make the reader aware of named fingers in radiology To illustrate the radiological findings of these pathologies To formulate a clinico radiological approach for diagnosing these pathologies

**Background:** Though small in size, a vast spectrum of pathologies can affect the fingers. Many of these can be readily detected by imaging in which ultrasound plays a key role.

**Imaging findings:** The ultrasound anatomy, technique and findings of the following named finger pathologies will be discussed

- Trigger finger/notta’s nodule
- Mallet finger
- Jersey finger
- Gamekeeper’s thumb/stener lesion
- Hippocratic fingers

**Conclusion:** Finger pathologies are not uncommon in day to day practice. As ultrasound is a cheap, readily available and non ionizing modality, knowing the sonographic anatomy, technique and imaging findings of the above mentioned named finger pathologies can help in early diagnosis and treatment of patients and positively affect the outcome.
Abstract ID:1087

ABSTRACT TITLE : STRADDLE FRACTURE: UNSTABLE FRACTURE OF THE PELVIS WITH ITS COMPLICATION.
PRESENTING AUTHOR : NIKHIL DODAKE
CO-AUTHOR : DR SAURABH PATIL, DR SUSHILKUMAR KALE, DR ATUL TAYADE

Learning Objectives: Imaging finding and associated complication, mechanism and medicolegal importance of Straddle Fracture

Background: In straddle fractures, there is a 40% chance of injury to the genitourinary tract, especially the posterior urethra and the urinary bladder in men. They are usually due to strong vertical shear injuries such as a fall from a height or a motorcycle accident. There is frequently vertical offset of the pelvis, which requires stabilization. 95% of those with bladder injuries have gross hematuria. 1/3 of those with straddle fractures require laparotomy.

Imaging findings: Fractures of both superior and both inferior pubic rami. The anterior fracture fragment, owing to its characteristic appearance, is sometimes referred to as a butterfly fracture. Other associated findings are pneumoperitoneum, hemoperitonium, and other long bone fractures.

Teaching points: Straddle fracture of the pelvis is considered most common an unstable injury: early diagnosis and management should be done as it is associated with the genitourinary tract and abdominal visceral injury.

Abstract ID:1090

ABSTRACT TITLE : CAMURATI ENGELMANN DISEASE
PRESENTING AUTHOR : G SRUJANA
CO-AUTHOR : DR. NARVEKAR, DR. VEDARAJU

Objective: To discuss the morphological characteristics and pathology of camurati-Engelmann disease. To review the retrospective study done by Janssens et al. and describe the radiological features.

Background: Camurati-Engelmann disease is a progressive diaphyseal dysplasia. Autosomal dominant. Camurati was the first to suggest its hereditary nature. A single case of muscular wasting and marked bone involvement was reported by Engelmann. There is a progressive hyperostosis and predominant involvement of the diaphysis.

Patient usually present at puberty, before age 30 with limb pain, muscular weakness, waddling gait and easy fatigue. Systemic manifestations are hepatosplenomegaly, bone marrow dysfunction, and delayed sexual development.

Ten different mutations of the TGFB1 (Transforming growth factor B1) were identified associated with Camurati-Engelmann disease.

Hallmark of the disorder is bilateral symmetrical cortical thickening of the diaphysis of long bones on both the periosteal and endosteal sides of the diaphysis.

Imaging findings: Endosteal and periosteal thickening of diaphysis of long bones with narrowing of medullary cavity. The metaphyses can become affected, but typically the epiphysis are spared. Sclerosis of skull bones.
can be present owing to stenosis of external auditory canal.

**Conclusion:** Camurati -Engelmann disease is a rare sclerosing dysplasia where onset is usually during childhood. Differential diagnosis include endosteal hyperostosis, van buche, sclerosteosis, kenne-caffey disease and worth type.

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**Abstract ID:1120**

**ABSTRACT TITLE:** USG AND MRI EVALUATION OF PAINFUL HIP JOINT

**PRESENTING AUTHOR:** SOHAN LAL CHAUDHARY

**CO-AUTHOR:** DR. SATISH A. PANDE

**Introduction:** Imaging of the hip is done for patients presenting with hip pain. Hip USG and MRI are imaging modalities. USG is sensitive in the detection of soft tissue changes in the involved joints and joint effusion. MRI has excellent soft tissue resolution and is imaging modality of choice for studying the morphology and pathology of hip joints.

**Aims & Objectives:**
1. To determine the pathological spectrum in hip diseases using high resolution ultrasonography and magnetic resonance imaging.
2. To compare findings of high resolution ultrasonography and magnetic resonance imaging in all cases included in the study.

**Material and Methods** A observational study is done on a total of 50 patients including both the sexes and of all age groups who presented with hip joint pain and subsequently underwent USG followed by MRI of the hip joint. The data is analysed and the findings on USG correlated with that of MRI.

**Results:** Of the 50 cases, 16 cases (32%) AVN of femoral head, 12 cases (24%) joint effusion, 10 cases (20%) Osteoarthritis, 6 cases (12%) TB hip, 2 cases (4%) Perthes, 2 cases (4%) DDH, 2 cases (4%) metastatic disease. DDH and joint effusion are 100% diagnosed on both USG and MRI. Rest of the pathologies is detected 100% only on MRI, no one is detected on USG.

**Conclusion:** USG is excellent modality in detection of DDH, Joint effusion. MR imaging is a valuable tool for hip disorders because it enables assessment of articular cartilage, epiphyses, joint fluid, bone marrow and extraarticular soft tissues structures. MR imaging is the modality of choice when clinical examination is suspect for hip disease and USG is normal or equivocal.

**Key words:** USG- Ultrasonography, MRI- magnetic resonance imaging, DDH- Developmental dysplasia of hip, AVN-Avascular necrosis of hip

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**Abstract ID:1149**

**ABSTRACT TITLE:** “TO EVALUATE THE ROLE OF DIFFUSION TENSOR IMAGING IN PATIENTS WITH CERVICAL DISC LESION IN COMPARISON WITH CLINICAL AND NEUROLOGICAL CORRELATION”.

**PRESENTING AUTHOR:** SANDHYA SELVARAJ

**CO-AUTHOR:** PROF DR DEVANAND

**Purpose:** The purpose of this study was to evaluate the early detection of cervical disc lesion in patients
with cervical spondylotic myelopathy to reduce the morbidity and improve the surgical outcome after decompressive surgery.

**Method and Materials:** This study consisted of 30 patients with clinical and neurological manifestation of cervical myelopathy. FA and ADC values were taken from stenotic and non-stenotic areas of cervical spine were compared and evaluated.

**Results:** Our study showed significant reduction in FA value at stenotic site as compared to prestenoic level. DTI values obtained from the stenotic segment showed most significant correlation with the clinical stages. The correlation of DTI values with the width of the spinal canal proves the necessity of DTI in clinical setting in patients with signs and symptoms of CSM but without pathological T2 signal alterations.

**Conclusion:** DTI is an useful tool for evaluation and early detection of cervical spondylotic myelopathy.

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**Abstract ID: 1161**

**ABSTRACT TITLE:** EPITHELOID SARCOMA OF THE MEDIAN NERVE: AN UNCOMMON ENTITY

**PRESENTING AUTHOR:** ANINDITA SINHA

**CO-AUTHOR:** ENIAVEL RAMAMOORTHY MAHESH PRAKASH JERRY JOHN

**Learning Objectives:**
1. To acquaint the radiologist with the imaging findings of epitheloid sarcoma of the median nerve.
2. To discuss the differential diagnosis and prognosis of this condition

**Background:** Epithelioid sarcoma is an uncommon, malignant slow-growing soft tissue tumour that can mimic chronic inflammatory processes and squamous cell carcinoma. Peripheral nerve involvement by epitheloid sarcoma is extremely uncommon.

**Imaging findings:** Ultrasonography the course of the median nerve, showed hypoechoic fusiform enlargement of the left median nerve in the distal arm and the possibility of neuroma in continuity vs. peripheral nerve sheath tumor was suggested. Contrast-enhanced magnetic resonance imaging (MRI) showed focal enlargement of the left median nerve with increased T2 signal and peripheral enhancement suggestive of a nerve sheath tumour. Histopathology and immunohistochemistry was diagnostic for epitheloid sarcoma.

**Conclusion:** Epitheloid sarcoma of the median nerve is a rare tumor with nonenhancing central area (target sign) mimicking the more common peripheral nerve sheath tumors.

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**Abstract ID: 1166**

**ABSTRACT TITLE:** A RARE CASE OF ONCOGENIC OSTEOMALACIA

**PRESENTING AUTHOR:** AMIT SINGLA

**CO-AUTHOR:** DR N DEEP BAG, DR FALGUNI HOTA

A 58 year old male presented with pain in multiple bones with mild breathlessness. On lab investigations, serum Phosphorus is low, serum Ca is normal, alkaline phosphatase is raised and Vitamin D level is normal. This is suggestive of osteomalacia. On skeletal survey, fracture of left humerus, right ulna, and bilateral neck of femurs is seen. Multiple rib fractures, with pseudoarthroses is also seen. On bone scan, it was suggestive
of superscan. On Tc-99m HYNIC-TOC scan, focal tracer uptake was seen in the dense sclerotic lesion located in the head of femur, which is the site of primary.

Abstract ID:1175

ABSTRACT TITLE: A CASE OF OSTEOPETROSIS PRESENTING WITH CHRONIC OSTEOMYELITIS OF MAXILLA

PRESENTING AUTHOR: T RANI

CO-AUTHOR: DR.V.BALAMURALI KRISHNA MD RD ASST.PROF DR.PSIMS&RF
DR.K.CHANDRASEKHAR,MD RD, PROF&HOD,DR.PSIMS&RF. DR.K.PRAFUL KUMAR MD RD ASSOC.PROF DR.PSIMS &RF

Learning Objectives: Osteopetrosis (also called Albers-Schönberg disease or marble-bone disease) is a rare hereditary bone disorder characterized by overgrowth and sclerosis of bone due to faulty bone remodelling. Clinical features include severe anemia, repeated infections and fractures, hepatosplenomegaly, and cranial neuropathies due to entrapment. On X-ray there is generalized increased in density of the bones, which are devoid of trabeculations and appreciable medullary cavity.

Background: A 15 year old female patient presents with swelling in left cheek with discharging sinus and fever since 10 days.

Imaging Findings: Blood investigations shows pancytopenia Ultrasound abdomen and pelvis shows splenomegaly. Skeletal survey with X ray showed generalized sclerosis of all bones. CT scan of para nasal sinuses shows Diffusely sclerotic visualized bones with diffusely sclerotic medullary cavity. Lytic lesions are seen involving the maxillae on left side. Erosions noted in the floor of the nasal cavity with formation of oro-nasal fistula on left side.

Conclusion: Features are in favour of osteopetrosis with chronic osteomyelitis of left maxilla with oro nasal fistula.

Abstract ID:1235

ABSTRACT TITLE: MAGNETIC RESONANCE SPECTROSCOPY OF GIANT CELL TUMOR OF BONE

PRESENTING AUTHOR: SIDHARTH SHARMA

CO-AUTHOR: DR CHETANA RATNAPARKHI

Purpose: Usefulness of proton magnetic resonance spectroscopy in evaluating and differentiating benign from malignant bone tumors is well known. Role of magnetic resonance spectroscopy in Giant Cell Tumor of bone is still not well established.

Aim: To evaluate the magnetic resonance spectroscopy features of Giant Cell Tumor and assess whether choline peak occurs frequently in these tumors and whether magnetic resonance spectroscopy appearance can be correlated with clinical, radiologic and histopathological findings.

Material and Method: 10 Patients with suspected Giant Cell Tumor of bone on clinical history and radiograph were subjected to magnetic resonance imaging and multivoxel magnetic resonance spectroscopy on 1.5T MR machine. Patients were grouped into two categories, one with demonstrable choline peak and another without choline peak. Clinical and radiologic findings viz. are Campanacci grading and magnetic resonance imaging features were compared. Preoperative and postoperative histopathology was done.
Results: All 10 patients belonged to Campanacci grade III i.e. showing aggressive radiographic appearance. Of these 10 patients, only four showed elevated choline level (40%). Soft tissue component was seen in one patient and cystic component was seen in three patients showing choline peak. Fluid-fluid levels were seen in only one patient with demonstrable choline peak. On histopathology all of them turned out to be benign.

Conclusion: This study indicates that even if Giant Cell Tumor of bone showed elevated choline level on magnetic resonance spectroscopy, it is not a predictor of malignant transformation. There is no linear correlation between aggressive radiological features and occurrence of choline peak.

Abstract ID: 1249

ABSTRACT TITLE: ATYPICAL PRESENTATION OF GOUT
PRESENTING AUTHOR: RISHABH AGGARWAL
CO-AUTHOR: DR AMIT KUMAR SAHU, DR PRASAN DEEP RATH, DR ANKUSH JAJODIA

Background: Gout typically affects the peripheral joints of hand and feet, and rarely involves the axial joints. The literature on axial gout involving the spine and sacroiliac joint is limited to few case reports. These patients can present with backache due to involvement of the lumbar spine or asymmetrical sacroilitis.

Imaging findings: Ultrasound can depict tophaceous deposits in soft tissues, joints, cartilage, juxta-articular erosions, synovial proliferation and joint effusion.

Ultrasound is most sensitive in deposition of monosodium urate monohydrate crystals on the surface of articular cartilage giving “double contour sign” which helps to differentiate gout from calcium pyrophosphate dihydrate crystal disease. Dual energy CT has an upcoming and promising role in diagnosis of gout, unlike conventional CT which is sensitive for erosions and tophi it can distinguish urate crystals from hydroxyapatite. MRI is accurate in assessing bone marrow edema, soft tissue complications with internal derangement of joints, such as tenosynovitis or tendon rupture.

Conclusion and/or Teaching points: Axial gout may be a commoner feature than recognised due to infrequent correlation with ultrasound of peripheral joints and lab parameters in patients with sacroilitis, which is asymmetrical.

References:

Abstract ID: 1272

ABSTRACT TITLE: SONOGRAPHIC EVALUATION OF HAMSTRING ANATOMY, INJURIES AND GUIDED THERAPEUTIC INTERVENTIONS
Learning Objectives:

- To describe landmark based sonographic anatomy of hamstring tendons and muscles.
- To illustrate ultrasound imaging appearances of various tears involving hamstring tendon and muscles.
- To discuss the mimickers of hamstring tendinosis / tear.
- To depict the ultrasound findings in associated sciatic nerve injury in patients with hamstring tear.
- To discuss and illustrate the approaches of ultrasound guided interventions in hamstring tear.

Background: Currently sports professional face aggressive competition and repetitive demands for peak performance, which often results in injuries to hamstring injury. The hamstring injuries are often recalcitrant to rehabilitation and a significant contributor to athletic morbidity. The role of the radiologist is critical in obtaining an early diagnosis, identifying close clinical mimics and determining appropriate management.

Imaging Findings:

- Sonographic anatomy of hamstring tendon attachment at ischial tuberosity and individual recognition of semimembranosus, semitendinosus and long head of biceps tendon. Differentiation of hamstring tendon from obturator internus and adductors at ischial tuberosity level based on imaging appearances.
- Sonographic evaluation of avulsion versus longitudinal tear of hamstring tendon at ischial tuberosity level; partial thickness versus full thickness tear of hamstring musculotendinous junction; Longitudinal versus transverse, partial thickness versus full thickness tear of hamstring muscles; Tear versus tendinosis of hamstring tendon at knee level.
- Sonographic evaluation of ischiogluteal bursitis which is a close mimic of hamstring tendon tear at ischial tuberosity level; Sciatic nerve diameter and echopattern to rule out sciatic nerve stretching injury; pes anserinus bursitis mimicking semitendinosus tendinosis; semimembranosus bursitis mimicking semimembranosus tendinosis, fibular collateral ligament tear mimicking biceps tendinosis.
- Appropriate sonographic guided platelet rich plasma injection, prolotherapy, steroid injections.

Conclusion: Ultrasound is an accurate diagnostic method to assess hamstring tendon / muscle injury and to rule out its close mimickers. Ultrasound guided interventions and meticulous rehabilitation is the treatment of choice in the management of hamstring injuries.
Learning Objectives:

- To sonographically evaluate various patterns of tear involving Achilles tendon
- To discuss the mimickers of Achilles tendon pathology
- To discuss the appropriate Ultrasound guided interventions in hamstring tear.

Background: The evolving demands placed on athletes often results in injuries to Achilles tendon / muscle in sports. The Achilles tendon injury is often recalcitrant to rehabilitation, making a significant contributor to athletic morbidity. There are various clinical mimickers of Achilles tendon pathology; Thus Early, reliable, precise diagnosis and appropriate management is critical for the professional athlete’s career.

Imaging Findings:

- Sonographic anatomy of Achilles tendon
- Sonographic evaluation of retro calcaneal bursitis and Achilles paratenonitis which mimics Achilles tendon tear.
- Indications and techniques of sonographic guided platelet rich plasma injection and Prolotherapy. Role and limitations of steroid injections.

Conclusion: Sonographic evaluation is increasingly being used to assess Achilles tendon / muscle injury and to rule out its close mimickers. Sonographic guided platelet rich plasma injection and Prolotherapy with meticulous rehabilitation have shown promising results with reduced pain, morbidity and by promoting regeneration.

Abstract ID:1283

ABSTRACT TITLE: TRAUMATIC FINGER INJURIES : MECHANISM, RADIOLOGICAL FINDINGS AND CLINICAL CORRELATION

PRESENTING AUTHOR: AMAN KUMAR
CO-AUTHOR: DR AMIT KUMAR SAHU; DR GYANEESH AGGARWAL; DR BHARAT AGARWAL

Learning Objectives:

1. To discuss various biomechanics of traumatic finger injury.
2. To demonstrate spectrum of radiological findings of different components of finger injury.
4. Highlight the radiological findings so as to guide the surgeons for appropriate management.
5. Post treatment follow-up imaging with emphasis on the possible complications.

Background: Fingers being very important entity of body in terms of day to day activities, it is debilitating if they are traumatized. Radiologists should be prompt in diagnosing and providing proper guidance to the clinicians for appropriate treatment.

Imaging findings: Mallet finger resulting from disruption of the extensor tendon at its insertion site at
the dorsal aspect of the distal phalanx base with flexion deformity. Comminuted fracture of the distal tuft because of crush injuries. Dislocations at inter-phalangeal joints due to forced hyperextension with axial loading.

**Teaching points:**

1. Making aware of the vast array of biomechanics involved in traumatic finger injury.
2. Correlating the biomechanism of injury with radiological findings involving different anatomical components of finger.
3. Few of the findings worth mentioning are undisplaced to displaced fractures, avulsion fracture, complete articular dislocation without fracture and crush injuries.
4. Discussing treatment options which are unique to each radiological findings.
5. Appropriate post treatment follow-up imaging and detection of associated complications.

**Abstract ID: 1297**

**ABSTRACT TITLE**: "ROLE OF MRI IN EVALUATION OF TMJ DISC DISPLACEMENT AND DEGENERATIVE DISEASES WITH USG CORRELATION" [A CROSS-SECTIONAL STUDY]

**PRESENTING AUTHOR**: HARISH BABURAO PAWAR

**CO-AUTHOR**: DR RUPALI KADAM

**Purpose**: Dysfunction of temporomandibular joint (TMJ) is common affecting up to 28% of the population worldwide. Dynamic high-resolution Sonography can be used as an effective tool in diagnosing TMJ disc displacement and degenerative diseases. MRI is commonly used for diagnosis of TMJ disc displacement and degenerative diseases. However, due to its high cost, low availability, its use as a screening method too inconvenient therefore an inexpensive and quick imaging diagnostic method that is widely available and easily accessible would make improvement in diagnosis of TMJ diseases is needed.

**Aim**: To diagnose of TMJ disc displacement and degenerative diseases on MRI and High Resolution UltraSonography and compare their findings in all clinically symptomatic TMJ patients referred to the Department of Radio-diagnosis, NKP SIMS and LMH hospital, Nagpur with positive history of TMJ disorders and patients with fractured TM-joint in 30 patients.

**Methods and Materials**: In the clinically symptomatic patients with TMJ disorders referred to Radio-Diagnosis Department and evaluation will be done with the help of MRI 16 channel GE 1.5 Tesla HDXT machine and High Frequency Ultrasonography machine (7.5 to 18 MHz probe).

**Result**: Sensitivity 75.6%; specificity 69.1%; accuracy 76.1%; positive predictive value 72.2%; negative predictive value 65.6%.

**Conclusion**: Dynamic high-resolution sonography is a potential imaging method for diagnosis of TMJ disc displacement and degenerative diseases. Further studies are needed to make dynamic high-resolution sonography the first-line test for diagnosis of TMJ disk displacement.
Neuroradiology

Abstract ID: 54

ABSTRACT TITLE: ROLE OF MRI/MRI VENOGRAPHY IN CEREBRAL VENOUS SINUS THROMBOSIS
PRESENTING AUTHOR: ANKITA BORICHA
CO-AUTHOR: DR. MAULIK JETHVA

Introduction: Cerebral venous sinus thrombosis is caused by clots in the Dural venous sinuses and accounts for 0.5% to 1% of all strokes. MRI/MRI Venography can directly visualize thrombus within a vessel and secondary venous infarctions and foci of hemorrhage with gradient-echo images.

Purpose: To do retrospective analysis of its epidemiological profile, clinical feature, radiological finding.

Materials and method: Study was done on 50 patients of Cerebral venous sinus thrombosis using 1.5 T MRI machine at Sahyog imaging center at PDU medical college.

Result: Superior sagittal sinus involvement is 43%, Transverse sinus 70%, sigmoid sinus 53%, Straight sinus 16%. Among study, involvement of female is 72% and among them CVT due to OC Pills is 52% and due to pregnancy and post partum is 18%

Presentations include isolated headache in 80% of cases, seizures in 40%, hemi paresis in 40%, altered consciousness in 15-20% and papilledema in 20-30% cases. Mode of onset of symptoms with approximately 28% acute (<48 hour), 42% sub acute (between 48 hours and 30 days) and 30% chronic (>30 days) cases.

Conclusion: The clinical presentation of CVT is nonspecific. This presentation reviews the radiologic findings and diagnostic pitfalls of cerebral venous thrombosis to improve ability to diagnose cerebral venous thrombosis accurately, using MRI/MRI Venography.

Keywords: Cerebral venous sinus thrombosis, MRI/MRI Venography

References

Abstract ID: 63

ABSTRACT TITLE: CLASSIC X LINKED ADRENOLEUKODYSTROPHY - A RARE CASE MANIFESTATION IN MALE SIBLINGS
PRESENTING AUTHOR: RITI MELISSA DSILVA
CO-AUTHOR: DR RAM SHENOY BASTI, DR SUDEEP

Learning objectives: Leukodystrophies comprise broad group of progressive inherited disorders affecting mainly myelin. Distinctive features unique to them aid in diagnosis, treatment and prognostication. Patients
with childhood cerebral X-linked ALD may present with varied symptoms which may lead to a wrong
diagnosis if not evaluated appropriately. Familiarity with clinical-pathologic manifestations and progressive
MR imaging features will be helpful in the follow-up evaluation of affected patients.

**Background:** Here we present cases of 2 male siblings with X Linked adrenoleukodystrophy who presented
with discoloration of skin and with history of previous hospital admissions for seizures. They also had a
strong family history with male individuals of the maternal family being affected by related central nervous
system disorder and the female members of the family being unaffected.

**Imaging findings:** The two siblings showed features of adrenal insufficiency and on Magnetic Resonance
Imaging, Classical findings of T2 / FLAIR hyperintense signal in splenium of corpus callosum extending into
adjacent periventricular occipital deep white matter was noted in both the cases with evidence of peripheral
enhancement suggestive of classic x linked adrenoleukodystrophy.

**Conclusion and teaching points:** When X Linked Adrenoleukodystrophy presents in classic age and sex (5 –
12 years old boys) and with typical posterior predominance on imaging studies, the differential diagnosis is
very limited. The incidence of the case being 1 in 20,000 – 50,000 individuals worldwide as quoted by U.S.
department of health and human services, this case is presented for its rarity.

**Abstract ID: 68**

**ABSTRACT TITLE:** UNLIKE THE TEXTBOOK TRIAD: A RARE CASE OF AICARDI SYNDROME

**PRESENTING AUTHOR:** NIHARIKA PRASAD

**CO-AUTHOR:** SANJAY PURUSHOTHAMA

**Learning Objectives:** The purpose of this case report is to demonstrate the spectrum of MRI findings and
follow up in the course of Aicardi syndrome.

**Background:** Aicardi syndrome (AS) is an X-linked inherited disorder characterized by infantile spasms,
chorioretinal lacunae, and agenesis or hypogenesis of the corpus callosum. Since the description of the
first case of Aicardi syndrome in 1965, not many have contributed to the list, hence preserving its rarity.
We suspected the same in a female infant who was referred with anophthalmia, microcephaly and global
developmental delay.

**Imaging Findings:** Magnetic resonance imaging findings included classical signs of partial agenesis of corpus
callosum, left anophthalmia and left optic nerve hypoplasia.

**Teaching Points:** Corpus callosum dysgenesis is associated with classical MR features and could have
associated abnormalities like polymicrogyria and heterotopia. Identifying multiple anomalies in brain
and spine could point to particular syndromes, encourage genetic counselling where necessary and avoid
secondary complications.
Abstract ID: 70

**ABSTRACT TITLE**: CORPUS CALLOSUM DYSGENESIS: CLINICAL AND RADIOLOGICAL SPECTRUM

**PRESENTING AUTHOR**: AYUSH KHANDELWAL

**CO-AUTHOR**: DR GEETIKA SINDHWANI, DR AANCHAL BHAYANA SEHGAL, DR BB THUKRAL

**Learning Objective:**
- To study the spectrum of MRI findings in corpus callosum dysgenesis.
- To look for additional associated findings in corpus callosum dysgenesis.

**Background**: Agenesis of the corpus callosum (ACC) is among the most frequent human brain malformations with an incidence of 0.5–70 in 10,000.

Agenesis of the corpus callosum (ACC) is characterised by partial or complete absence of transverse fibres connecting the two cerebral hemispheres. It may occur in isolation, in association with other central nervous system (CNS) or systemic malformations or as part of a syndrome. Patients may present during early infancy with seizures, hydrocephalus, delayed appearance of milestones or in later years with seizures, speech disorders or headaches. Magnetic resonance imaging (MRI) is currently the imaging procedure of choice in infants and children with ACC.

**Imaging Findings**: Here we present cases of corpus callosum dysgenesis. The findings included parallel non converging lateral ventricles, Probst bundles, dorsal interhemispheric cyst, colpocephaly, high riding third ventricle and upward pointing lateral ventricle. Apart from these routine findings, some associated findings were azygous Anterior cerebral artery, pericallosal lipoma, band heterotopia with dysmorphic cortex.

**Conclusion**: Based on our imaging findings, associated findings are quite common in cases of corpus callosum dysgenesis. Hence, it is important to look for these in such cases.

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Abstract ID: 86

**ABSTRACT TITLE**: EVALUATION OF TRAUMATIC SPINE BY MAGNETIC RESONANCE IMAGING

**PRESENTING AUTHOR**: SARITA MAGU

**CO-AUTHOR**: DEEPAK PHOGAT, ROOP SINGH

**Purpose**: Evaluation of the role of Magnetic Resonance Imaging (MRI) in Spinal Trauma Patients and to compare MRI findings with clinical profile and neurological status of the patients. To correlate the MRI findings with neurological recovery of the patient and predict the outcome.

**Material and methods**: Neurological status of patients with neurological deficits presenting within 72 hours of injury in patients of spine injury on radiographs or radiographically normal patients was assessed at the time of admission and discharge in all the 57 patients as per American spine injury association classification (ASIA). Mean stay in hospital was 14.11 ± 5.74 days. On MRI cord injury was categorized into cord hemorrhage, cord contusion, cord edema only and normal cord. Quantitative assessment of injury on MRI was done calculating mean canal compromise (MCC), mean spinal cord compression (MSCC) and lesion length of cord. Neurological status at admission and neurological recovery at discharge was compared with various qualitative cord findings and quantitative parameters on MRI.

**Results**: Cord edema and normal cord was associated with favorable neurological outcome. Cord contusion show lesser neurological recovery as compared to cord edema. Cord hemorrhage was associated with worst
neurological status at admission and poor neurological recovery. Mean MCC, MSCC and lesion length values were higher in patients presenting with ASIA A grade injury and showed decreasing trends towards ASIA E grade injury. Patients showing neurological recovery over the period of hospital stay had lower mean MCC, MSCC and lesion length as compared to patients showing no neurological recovery. The data was statistically significant with p value <.05.

**Conclusion:** Cord hemorrhage and higher MCC, MSCC and lesion length values have poor prognostic value in spine injury patients.

**Abstract ID: 92**

**ABSTRACT TITLE**: MISME – RARE SYNDROMIC MANIFESTATION OF NF2 IN A YOUNG FEMALE

**PRESENTING AUTHOR**: H B SURESH

**CO-AUTHOR**: DR RITHI D’ SILVA

**Learning objective**: This case report demonstrates the findings of Neurofibromatosis type 2 (NF2) which is a rare inherited syndrome in a young individual who presented with multiple central nervous system tumours.

**Background**: Young female who presented with history of chronic headache and hearing difficulty was evaluated to rule out intracranial pathology.

**Imaging findings**: CT revealed space occupying lesions in bilateral cerebellopontine angles and MRI was advised which revealed bilateral acoustic schwannomas. Spine screening showed multiple dural based lesions as well as intramedullary lesions which would likely represent meningioma and ependymoma respectively. Also a large cystic schwannoma was seen to extend from one of the cervical neural foramina into left hemithorax occupying almost upper zone of left hemithorax mimicking a lung mass.

**Conclusion**: The term MISME proposed to NF2 syndrome due to multiple inherited schwannomas (MIS), Meningiomas (M) and ependymoma (E) was manifested in our patient.

**Abstract ID: 108**

**ABSTRACT TITLE**: MRI FINDINGS IN SPINAL TRAUMA - A 10 YEAR RETROSPECTIVE STUDY

**PRESENTING AUTHOR**: VINAY MAURYA

**CO-AUTHOR**: PANKAJ SHARMA

**Background**: Spinal Injuries produce considerable morbidity among young population. An accurate assessment of the spinal injury by MRI is essential for managing these cases.

**Material & Methods**: All cases who underwent MRI for spinal trauma during the ten-year period formed the study group.

**Results**: 260 cases of spinal trauma were studied. Age ranged from 18-58 years with maximum number of cases in 31-40 yr (39.6%) followed by 21-30 yr (32%) age group. Fall from height was the leading cause of spinal trauma affecting 132 (50.7%) cases, followed by road traffic accident (RTA) 115 (44.2%). Lumbar spine injury was seen in 108 (41.5%) cases, Dorsal 74 (28.5%) and cervical spine in 66 (25.4%) cases. Commonest injury was wedge compression fracture seen in 57.3% cases, followed by burst fracture 25%.
Conclusion: MRI is the investigation of choice in not only delineating the bony, ligamentous and cord injury but also helps in planning the surgical management.

Abstract ID: 109

ABSTRACT TITLE : NEURORADIOLOGICAL SPECTRUM IN ACUTE TRAUMATIC BRAIN INJURIES - NCCT HEAD. OUR EXPERIENCE AT A TRAUMA CENTRE OF A TERTIARY CARE ARMED FORCES HOSPITAL, NEW DELHI

PRESENTING AUTHOR : SATYENDRA NARAYAN SINGH

CO-AUTHOR : (None)

Purpose: Non contrast Computed Tomography (NCCT) head provides clinically and surgically important information in brain trauma. It can depict the severity, level and prognosis of head injuries.

Aim: To depict the spectrum of NCCT- findings in cases Acute traumatic brain injuries at Base Hospital Delhi Cantt. New Delhi.

Material and methods: A retrospective study on 518 patients, who had history of head injury as well as NCCT evidence of head injuries and in whom surgical/clinical follow-up for final diagnosis was available. The study population were patient who reported between 2015-17. Post-operative patients and patients associated with other body parts injuries were excluded as the clinical outcomes of these patients could not be judged due to multiple system involvement.

Result: A total 518 patients were taken, among whom 355 were male and 163 were female with age varies from 1 month to 92 years with total number of deaths noticed in the study were 13. The road traffic accident was the commonest mode of injury. The cases associated with > 4 radiological findings have more associated fatal outcomes than the cases with < 4 radiological findings (p value =0.0001).

Conclusion: The study enlightens the significant positive findings on the NCCT which is fast, easily available procedure and can be used for early diagnoses and management. Thus NCCT head helped in decreasing the mortality. The more radiological findings showed a significant relation with mortality in the study.

Abstract ID: 115

ABSTRACT TITLE : NEURORADIOLOGICAL SPECTRUM IN ACUTE TRAUMATIC BRAIN INJURIES - NCCT HEAD. OUR EXPERIENCE AT A TRAUMA CENTRE OF A TERTIARY CARE ARMED FORCES HOSPITAL, NEW DELHI

PRESENTING AUTHOR : SATYENDRA NARAYAN SINGH

CO-AUTHOR : (None)

Purpose: Pilomyxoid Astrocytoma (Pma) Was Thought To Be Related To Pilocytic Astrocytoma But Is A Relatively Newly Described And Histopathologically Different Variant Of Glioma That However, Have A More Variable Clinical Course And It Tends To Behave More Aggressively As Compared To Pilocytic Astrocytoma (Pa).

Material and Methods: Imaging Characterstics Of 5 Histopathologically Proven Pma’s Were Reterospectively Reviewed. 5 Patients (4 Males And 1 Female) In The Age Group 5 To 35 Years Were Identified From Hospital Case Records. MRI Studies Were Performed After Taking Written Consent On A 1.5 T Mr Scanner (Siemens Magnetom Essenza) . Preoperative Ct Was Performed Where MRI Was Not Available Preoperatively Then
Post Operative MRI Was Performed. (Case 2) Along With T1wi,T2wi,Flair And Gre/SWI The Six Direction Dti And Post Contrast T1wi Images Were Acquired.

**Results:** Most Common Symptom Observed Was Headache In 3 Cases And In Two Cases Predominant Symptoms Was Increasing Head Circumference With Diminished Of Vision. Along With Location And Clinical Features, The Various MRI Characteristics Are Tabulated And Well Discussed In This Lietrature.

**Conclusion:** As Pma Is More Aggressively progressed Than Pilocytic Astrocytoma Then It Become Essential To Diagnose It At Early Stage And Also To Differentiate From Pa. Although There Is Overlapping Of MRI Features But Still MRI Can Differentiate Between These Two That Can Be Correlated With The Histopathology Reports.

**Abstract ID: 120**

**ABSTRACT TITLE:** PRIMARY SPINAL GLIOBLASTOMA MULTIFORME: A RARE ENTITY

**PRESENTING AUTHOR:** ROHIT AGGARWAL

**CO-AUTHOR:** DR. PRABAKARAN MADURAIMUTHU, MDRD

**Aims and objective:** To describe the Magnetic resonance imaging features of primary spinal glioblastoma multiformae.

**Materials and methods:** We present a case of 34-year-old male with 6 weeks of progressive weakness in both lower limbs, difficulty in urination and back pain since 2 weeks.

**Results:** Magnetic resonance imaging (MRI) revealed a long segment expansile intramedullary T2 heterogenous lesion extending from D6 to L1 levels with possible involvement of conus medullaris. Lesion shows inhomogeneous enhancement on gadolinium administration. Syrinx noted from C6 to D6 levels. Diagnosis of glioblastoma multiforme (GBM) was made on the basis of findings on MRI and histopathological examination.

**Conclusion:** Intramedullary GBM is a rare disease entity with less than 200 cases reported so far in literature. It develops primarily from the spinal cord or as a secondary metastasis from the brain. GBM progresses rapidly with a very poor prognosis and a short survival time despite aggressive management.

**Abstract ID: 145**

**ABSTRACT TITLE:** Multiple System Atrophy (MSA)

**PRESENTING AUTHOR:** Dr Vishal Kumar Jain

**CO-AUTHOR:** Dr Satya Bhuvan Singh Netam

**College:** Department Of Radiodiagnosis, Pt.j.n.m.medical College & Dr.b.r.a.m.hospital Raipur C.g.

**Introduction:** Multiple System Atrophy (MSA) is a rare neurodegenerative disorder with varying degree of cerebellar ataxia, autonomic dysfunction, parkinsonism and corticospinal dysfunction.

**Clinical Feature:** We present a similar case of a 55 year old Male came with c/o flaccid quadriparesis under evaluation. He has history of progressive weakness in bilateral lower limbs and difficulty in walking with swelling since 1 year. He was unable to stand since 4-5 months. He also complaints of slurring of speech since 2 months. Clinical and Neurological examination showed a concious, oriented patient with stable vitals, he was unable to stand by himself, Slurred speech, Unable to perform heel- shin and finger-
nose test, Romberg test positive, Muscle tone decreased in bilateral upper and lower limbs, Power 3/5 in bilateral upper & lower limbs.

**Imaging Features**: MRI Brain shows marked volume loss in the Pons and Medulla (gives Pons a ‘beaked’ appearance), Symmetric Cerebellar Atrophy, Small concave appearing Middle Cerebellar Peduncle, Enlarged IV ventricle, T2/FLAIR cruciform hyper-intensity in the pons termed “Hot-Cross Bun” sign. Based on imaging findings patient was diagnosed with MSA type – C.

**Treatment & Prognosis**: Unfortunately no effective treatment is currently available. Death within 10 years of diagnosis.

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**Abstract ID: 159**

**ABSTRACT TITLE**: IMAGING SPECTRUM OF CVT

**PRESENTING AUTHOR**: SHIJITH KP

**CO-AUTHOR**: (none)

**Learning Objectives**: To demonstrate the commonly encountered imaging features of Cerebral Venous Thrombosis (CVT)

**Background & Materials**: and Methods Representative images from the available literature and from a tertiary care multispecialty referral hospital of Indian Armed Forces, which manages many cases of CVT that occurs in high altitude areas were included.

**Imaging findings**: Various imaging features of CVT are demonstrated using representative images. Various signs of CVT in NCCT like cord sign, as well as in CECT & CEMRI will be demonstrated.

Conclusion: VT is a relatively uncommon but serious neurologic disorder. MR imaging, TOF MR venography, contrast-enhanced MR venography, and CT venography are the most useful techniques. Knowledge of normal venous variations and potential pitfalls related to image interpretation are important for achieving an accurate diagnosis and early and correct management.

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**Abstract ID: 166**

**ABSTRACT TITLE**: MRI EVALUATION OF ISCHAEMIC CHANGES IN BRAIN IN CKD PATIENTS AND ITS CORRELATION WITH DEGREE OF SEVERITY OF CKD.

**PRESENTING AUTHOR**: SHISHIR KUMAR PANSARI

**CO-AUTHOR**: DR. B.B THUKRAL, DR. NEHA BAGRI

**Purpose**: MRI evaluation of ischaemic changes in brain in CKD patients and its correlation with degree of severity of CKD.

**Materials and Methods**: Cross sectional study was conducted on 65 CKD patients (55-Non dialysis patients, 10-Dialysis patients) whose eGFR was <60ml//min/1.73m2 and age >18years. Statistical analysis was done using Statistical Package for Social Sciences (SPSS) version 2.1.0. A p value of <0.05 was considered statistically significant. Chi square test was used for quantitative variables.

**Results**: Periventricular white matter hyperintensities (PWMH) were seen in 60% patients, deep white matter hyperintensities (DWMH) are seen in 52.3% cases, lacunar infarcts in 38.4% and cerebral microbleeds (CMBs) were seen in 20% cases.
Prevalence of PWMH increased as stage of CKD advanced from 36.36% people in stage 3A to 100% cases in stage 5. Prevalence of DWMH also increased as stage of CKD advanced from 9.09% in stage 3A to 100% in stage 5. Prevalence of lacunar infarct also increased as stage of CKD advanced from 9.09% in stage 3A to 100% in stage 5. 90% of patients with dialysis showed PWMH as compared to 54.55% of predialysis patients. 90% of patients with dialysis showed DWMH as compared to 45.45% of predialysis patients. 80% of patients with dialysis showed lacunar infarcts as compared to 30.89% of predialysis patients. All the above mentioned findings were statistically significant (P value<0.05). 30% of patients with dialysis showed CMBs as compared to 18.18% of predialysis patients but this result was statistically insignificant. Prevalence of CMBs also increased as stage of CKD advanced from 0.00% in stage 3A to 50% in stage 5, however the result was statistically insignificant.

**Conclusion:** Our study concludes that ischaemic changes in MRI brain are in correlation with degree of severity of chronic kidney disease likely due to hemodynamic similarities in vascular beds of brain and kidney.

**Abstract ID: 167**

**ABSTRACT TITLE:** IMAGING OF CONGENITAL CAUSES OF EPILEPSY- A PICTORIAL ESSAY

**PRESENTING AUTHOR:** VIKASH RUSTAGI

**CO-AUTHOR:** DR AAKASH RAMTEKE

**Learning Objectives:** To evaluate the spectrum of congenital causes of epilepsy, and to describe their CT and MRI imaging findings.

**Background:** Epilepsy is a condition characterised by recurrent seizures unprovoked by an acute systemic or neurologic insult. Following are the various congenital causes of epilepsy

1. Developmental malformations
2. Neurocutaneous syndrome
3. Ischemia
4. Tumors
5. Vascular malformations

Neuroimaging including both CT and MRI becomes important and mandatory in the work up for epilepsy in localisation and lateralisation of the seizure focus. This chapter highlights neuroimaging characteristics and provides a comprehensive overview of congenital causes of epilepsy which will help in diagnosis and indirectly improve the care and management of patients.

**Imaging findings:** Developmental causes like focal cortical dysplasia will appear as subcortical white matter hyperintensities with focal cortical thickening. Heterotopia presents as nonenhancing foci of grey matter intensity on all sequences. Multiple small gyri with derangement of the normal lamination and sulcation are features of polymicrogyria. Paucity of sulci and gyri are seen in pachygyria whereas complete absence of sulci are present in agryria.

Schizencephaly will appear as a cleft lined by dysplastic grey matter that connects the lateral ventricle to the subarachnoid space. Abnormal sizes of cerebrum as in microcephaly, hemimegalencephaly can also be
a cause of epilepsy. We can also evaluate intracranial epileptogenic tumours based on their morphology and location, ischemic causes like gliosis, encephalomalacia and hypoxic ischemic encephalopathy and vascular malformation like cavernoma. Neurocutaneous syndrome like Sturge Weber is characterized by pial angioma, gyral calcification and hemiatrophy. Tuberous sclerosis present as subependymal nodules and cortical tubers. In TORCH infections periventricular calcification are seen in CMV infection whereas parenchymal calcifications are seen in toxoplasma.

Teaching points: Multimodality neuroimaging plays an essential role in noninvasively localising epileptogenic foci. A thorough knowledge of various causes and their imaging characteristics is essential.

Abstract ID: 168

ABSTRACT TITLE: TO DISCUSS NEUROIMAGING FINDINGS OF ARNOLD-CHIARI MALFORMATION.

PRESENTING AUTHOR: VIKASH RUSTAGI

CO-AUTHOR: DR AAKASH RAMTEKE

Learning objectives: To discuss neuroimaging findings of Arnold-Chiari malformation.

Background: Arnold-Chiari malformation is a spectrum of congenital hindbrain abnormalities affecting structural relationship between cerebellum, brain stem, upper cervical cord and bony cranial base. Austrian pathologist Hans Chiari divided them into three types: Chiari 1-3. The frequency and importance of the evaluation of the posterior fossa have increased significantly over the past 20 years owing to advances in neuroimaging. Neuroimaging techniques allow detailed evaluation of the complex anatomic structures within the posterior fossa and hindbrain malformation. In this review, we discuss the neuroimaging findings of chiari 1-3 malformation.

Imaging findings: The hallmark in Chairi 1 malformation is caudal displacement (>5mm) of pointed peg like cerebellum tonsils below the level of foramen magnum with angled cerebellar folia. There will be crowding of foramen magnum, effaced CSF spaces and diminished CSF flow at posterior foramen magnum.

Chairi 2: is hindbrain malformation with myelomeningocele. Imaging findings include lacunar skull, myelomeningocele, small posterior fossa, abnormal dura, inferiorly displaced medulla and vermis, cervicomедullary kink, medullary spur, towering cerebellum, hydrocephalus and callosal dysgenesis.

Chairi 3: is rarest of chiari malformation. Small posterior fossa with causally displaced brain stem is seen on neuroimaging. Also, there is low occipital or upper cervical bony defect through which there is herniation of meninges, dysplastic brain and ventricles.

Conclusion: The interpretation of Arnold-chiari malformation is challenging. Neuroimaging is often the initial and mandatory step in order to obtain a diagnosis when an abnormality is suspected, and this is when an imaging anatomical approach aids the interpretation.
Abstract ID: 183

**ABSTRACT TITLE**: GRADING OF INTRACRANIAL NEOPLASMS WITH MR PERFUSION AND MR SPECTROSCOPY

**PRESENTING AUTHOR**: UDDANDAM RAJESH

**CO-AUTHOR**: BRIG SAMAR CHATTERJEE, COL PANKAJ SHARMA, COL K UDAYSBHANU, DR NIHARIKA GUPTA

**Purpose**: To compare findings of conventional magnetic resonance (MR) imaging, MR perfusion and MR spectroscopy in the differentiation of the primary intra-cranial neoplasms and to provide a pre-operative grading.

**Materials and Methods**: This prospective observational, comparative study was conducted in a tertiary care military hospital. 37 consecutive patients with freshly detected primary intracranial intra-axial neoplasms who underwent MR imaging were included in the study. T1 axial, T2 axial, FLAIR axial, diffusion-weighted images, Coronal T2 weighted, T1-weighted, dynamic contrast enhanced (DCE) MR perfusion, MR spectroscopy and post contrast T1-weighted 3D images were obtained. Grading of the intracranial neoplasms was done on the basis of MR imaging. Histology specimen was obtained by surgical resection and graded as high-grade glioma (HGG) and low-grade glioma (LGG).

**Results**: On histopathological examination, 24 cases were proven to be HGG and 13 to be LGG. The mean Cho/NAA ratio for HGG was 7.3 and for LGG it was 1.7. The mean rCBV for HGG was 2.95 and for LGG was 0.92. Out of 37 intra-axial tumors, 24 histologically proven HGG were all correctly diagnosed with spectroscopy imaging, however 2 LGG were over diagnosed to be HGG. The sensitivity, specificity, PPV, and NPV for determination of a high-grade glioma with MR Perfusion imaging were 100%, 84.6%, 92.3%, and 100%, respectively. AUC measured 0.92.

**Conclusion**: Advanced neuroimaging using DCE MR perfusion and MR Spectroscopy allows accurate grading of tumor which enables surgical planning and guiding accurate stereotactic biopsy from the most malignant part of the tumor.

Abstract ID: 186

**ABSTRACT TITLE**: ROLE OF MRI IN THE EVALUATION OF ACUTE FEBRILE ENCEPHALOPATHY

**PRESENTING AUTHOR**: MANJUSHREE B M

**CO-AUTHOR**: SACHIN BAGALE

**Role of MRI in the evaluation of Acute febrile encephalopathy Manjushree.B.M, Sachin Bagale**

**Purpose**: Acute febrile encephalopathy(AFE) is a clinical term used to an altered mental state that either accompanies or follows a short febrile illness and is characterized by a diffuse and nonspecific brain insult manifested by a combination of coma, seizures, and decerebration. The various etiologies are virus, bacteria or parasite. The purpose of this study was:

- To evaluate the role of magnetic resonance imaging in AFE.
- To demonstrate the different patterns of MRI findings in various etiologies of AFE.
- To establish an etiological diagnosis and to narrow down the differential diagnosis in AFE, based on MRI findings.
Materials and Methods: Descriptive study of total 80 patients was done. Patients, irrespective of age and sex were randomly selected and subjected for MRI after taking informed written consent. Imaging was done with 1.5 Tesla MRI Machine HDxt Signa from Wipro GE. Ethical clearance was obtained from the institutional ethical committee of BJGMC Pune.

Results:

- Our study demonstrated different patterns of MRI findings in various etiologies causing AFE, most common being meningitis.
- Our study demonstrated typical patterns of changes in the specific locations in the infections like Herpes, Dengue, Cryptococcus etc thus helping to narrow down the differential based on MRI findings.

Conclusion: MRI plays an important role in the evaluation of AFE and helps to narrow down the differential diagnosis.

Abstract ID: 192

ABSTRACT TITLE : A RARE PRESENTATION OF ISOLATED RHOMBENCEPHALOSYNAPSIS
PRESENTING AUTHOR : PRANAV KUMAR SANTHALIA
CO-AUTHOR : UPASNA SINHA, PREM KUMAR

Learning objective: Here we report an unusual case of rhombencephalosynapsis (RES) with mild neurological, behavioral and cognitive impairments. RES is a rare congenital malformation of posterior fossa characterized by agenesis of vermis, dorsal fusion of cerebellar hemisphere and fusion of dentate nuclei and superior cerebellar peduncles leading to the characteristic keyhole-shaped appearance of the fourth ventricle

Background: We report a case of 5 year old child referred to AIIMS Patna with developmental delay. There was no history of seizure, ultrasonography of abdomen and Electroencephalography (EEG) was normal. MRI brain was advised to look for any structural abnormality.

Imaging findings: The MRI brain done showed fusion of cerebellar hemisphere, fused transverse cerebellar folia and partial agenesis of cerebellar vermis. The corpus callosum was normal, lateral ventricles were not dilated and the gyration was normal. Hence a diagnosis of RES was made. RES can manifest as an isolated malformation of the posterior fossa or in association with other abnormalities. In our case RES was seen as isolated malformation of posterior fossa with no associated abnormalities.

Conclusion: The radiological findings confirmed the diagnosis of rhombencephalosynapsis in our case. Radiological imaging specially MRI can be used as a problem solving tool in unspecified developmental delay. In conclusion RES is a rare abnormality that can be identified by MRI.

Abstract ID: 223

ABSTRACT TITLE : ANTENATAL DIAGNOSIS OF LISSENCEPHALY
PRESENTING AUTHOR : MEGHANA BALWANTRAO KULKARNI
CO-AUTHOR : (None)

A girl child of 1 yr age referred for MRI brain scan from dept of pediatrics to evaluate for delayed motor milestones. Lissencephaly type I with Dandy walker continuum findings noted on MRI. Mother has undergone three ante natal scans and she was told that all three scans are normal.
Learning objectives: Lissencephaly can be diagnosed antenatally on USG done between 24 weeks to 34 weeks. Diagnosis can be confirmed by fetal MRI.

Background: No family h/o lissencephaly. Antenatal scans are normal.

Imaging findings Antenatal USG: Biparietal diameter is normal. Poor operculization of sylvian fissure noted bilaterally. Cisterna magna is large. Lateral ventricles are mildly dilated.

MRI findings at 1 year of age: Thick cerebral cortex, thin white matter, dilated lateral and third ventricles, sparse sulci and gyri. Absence of insular lobe and sylvian fissure. 4th ventricle communicating with cisterna magna, cerebellar and vermian hypoplasia.

Conclusion: Lissencephaly can be diagnosed by ultra sound scan antenatally from 24 weeks to 34 weeks if looked for operculization of sylvian fissure and measurements of insular lobe and sylvian fissure studied on 2D USG study. Diagnosis can be confirmed by fetal MRI scan.

Reference:
1. Nomograms of the Fetal Sylvian Fissure and Insular Lobe throughout Gestation: A Multicentric, Ultrasonographic Cross-Sectional Study. Spinelli M.a • Sica C.b • Ghezzi F.c • Cromi A.d • Surbek D.d • Raio L.d
2. Focus on the fetal Sylvian fissure Article in Ultrasound in Obstetrics and Gynecology 32(1):3-4 • July 2008 DOI: 10.1002/uog.5398
3. Antenatal diagnosis of isolated lissencephaly by ultrasound and magnetic resonance imaging Dr P. Greco M. Resta A. Vimercati F. Dicuonzo G. Loverro M. Vicino L. Selvaggi

Abstract ID: 237

ABSTRACT TITLE: ROLE OF MRI AND MRV IN EARLY DIAGNOSIS OF CVST AND ITS NORMAL VARIANTS

PRESENTING AUTHOR: REVATHY PRADEEP

CO-AUTHOR: (None)

Role of MRI and MRV in early diagnosis of CVST and its normal variants: Dr Revathy Pradeep III Yr, MDRD resident Sree Balaji Medical College and Hospital, Chrompet, Chennai.

Purpose: Cerebral Venous Sinus Thrombosis (CVST) is relatively an uncommon neurological disorder presenting with a wide spectrum of symptoms which makes early diagnosis and prognosis difficult. This study is to establish the role of MRV in the early diagnosis of CVST and its normal variants and to detect the changes in brain parenchyma.

Materials and Methods: I conducted a study on 100 cases in the age group of 10 to 50 years. They presented with complaints of headache, visual disturbances, loss of consciousness, seizure and neurological deficits. Images were obtained using 3 Tesla MRI. MRI sequences of T1W, T2W, T2Flair, 2D TOF and MRV (MIP) were studied with and without contrast.

Results: Out of 100 cases 58% were female and 42% were male. In 90% of cases major dural sinuses were involved, deep sinus were involved in 8% and cortical vein were involved in 2%. Brain parenchyma were normal in 70% of cases and 10% had non-hemorrhagic infarct whereas 20% had hemorrhagic infarct. Hypoplastic
left transverse sinus were the most common anatomical variation in 42% of cases. Right transverse sinus were hypoplastic in 25%. Hypoplasic left sigmoid sinus were observed in 20% of cases.

**Conclusion:** MRI brain and MRV are sensitive in detecting both direct sign (thrombus in the vein) and indirect sign (parenchymal changes) of CVST. Involvement of deep sinus and cortical veins as observed enabled precise diagnosis of the condition and rendered accurate prognosis of its effects and thus aided more effective treatment of the patient.

**Abstract ID: 240**

**ABSTRACT TITLE:** ORBITAL LYMPHOMA- A CASE PRESENTATION

**PRESENTING AUTHOR:** ADITI A. PATEL

**CO-AUTHOR:** DR. HARSHAD SHAH, DR. NIRMALA CHUDASAMA, DR. RASESH VYAS

**(A) Learning Objective:** To study the imaging findings in Orbital Lymphoma and differentiating it from other look alike conditions

**(B) Case Summary:** A 65 years old female complaining of gradual diminishing of vision in right eye along with a focal swelling on lateral aspect of right eye and right temporal region since 6 months Patient also had mild proptosis in right eye There was no H/O trauma or fever or any significant past illness

**(C) Imaging Findings:** USG study shows a well defined focal hypoechoic lesion lateral to right globe encasing lateral rectus muscle

**CT:** On non-contrast CT, the mass is usually homogeneous in density, either isodense or slightly hyperdense when compared to the extraocular muscles with homogenous enhancement.

**MRI:** Plain study shows well defined homogenous hypointense lesion noted in lateral aspect of right globe encasing lateral rectus muscle and in right temporal region in T1 and hyperintense on T2-weighted images which enhances homogenously after contrast administration as shown in post contrast saggital and axial images.

**(D) Conclusion:** USG, CT and MRI plays crucial role in diagnosis of Orbital Lymphoma.


**Abstract ID: 250**

**ABSTRACT TITLE:** CAN POSTCONTRAST-T2FLAIR BE A BOON OVER POSTCONTRAST-T1GRE IMAGES IN MR BRAIN IMAGING?

**PRESENTING AUTHOR:** RAJUL RASTOGI

**CO-AUTHOR:** RAJUL RASTOGI*, SUJEET KUMAR JAIN, YUKTIKA GUPTA, PAWAN JOON, ASIF MAJID WANI AND VIJAI PRATAP

We are all familiar with the role of postcontrast-T1GRE images in MR brain imaging especially in the presence of space occupying lesions. But very few are aware of the role of postcontrast-T2FLAIR images in similar circumstances. Though T2-effect of gadolinium and T1-effect of T2FLAIR has been established for long yet it has not been utilized intensively and extensively in practice. However, there have been few isolated studies
establishing the role of postcontrast-T2FLAIR images in variety of brain pathologies. In this study, we aim to evaluate the role of postcontrast-T2FLAIR images in various pathological conditions of brain in wider spectrum and evaluate its usefulness in comparison with postcontrast T1GRE images in clinical practice.

Conclusions: Based on the systematic analysis of the imaging findings in the above study group following conclusions can be drawn:

Postcontrast-T1GRE images are superior to postcontrast-T2FLAIR images in delineating degenerating cysts of cysticerci, in demonstrating internal air and perilesional edema simultaneously in addition to wall enhancement with greater mural thickness in patients with pyogenic abscesses, determining the extent of meningeal enhancement especially in sulcal spaces (especially in tubercular meningitis) and dural sinuses due to presence of luminal signal void of sinus lumen on T2FLAIR images, determining the nature of internal contents and number of lesions in cases of tuberculoma with an additional advantage of demonstrating edema, determining the nature of internal contents and mural characteristics in cases of intracranial tumors and finally, postcontrast-T2FLAIR images may obviate the need for noncontrast-T2FLAIR images.

To summarize, postcontrast-T2FLAIR images may be routinely used as an additional tool to postcontrast-T1GRE scans in MRI examination of a variety of brain pathological conditions as it provides additional clinically useful information that may be helpful in management and predicting prognosis except in cases of neurocysticercosis.

Abstract ID: 258

ABSTRACT TITLE : EFFECTIVENESS OF MRI IN DIFFERENTIATING INTRADURAL EXTRAMEDULLARY SPINAL SCHWANNOMAS AND MENINGIOMAS & ITS CHARACTERISTICS

PRESENTING AUTHOR : SWAPNIL S GAIKWAD

CO-AUTHOR : DR ANIL U MADURWAR

Aims and objectives : To evaluate the effectiveness of MRI in differentiating intradural extramedullary schwannomas and meningiomas. To analyze tumor location, morphological characteristics and enhancement pattern.

Methods and materials : Inclusion criteria: All patients who are surgically treated and histopathologically proven as meningiomas and schwannomas at our institution were included.

Exclusion criteria: Tumors with extra spinal location like dumbbell schwannomas were excluded. -Paediatric patients with age less than 18 years of age were excluded.

Protocol for MRI: Axial T2 FLAIR, Axial T2 Propellar, T2, Sagittal sequences

Results: -The frequency of schwannomas are more than meningiomas in both sexes. -The occurrence of meningiomas are more in thoracic region and schwannomas are more in lumbar region. -Overall, Meningiomas are larger in size compared to schwannomas. -Meningiomas and schwannomas shows isointensity on T1W
Both meningiomas and schwannomas show enhancement in equal frequency. Meningiomas show more diffuse enhancement pattern compared to schwannomas and schwannomas show more rim enhancement compared to meningiomas. Heterogenous enhancement pattern is more in schwannomas than meningiomas and similarly homogenous enhancement pattern is more in meningiomas compared to schwannomas.

Conclusion: Tumors with lumbar locations, widening of neural foramina, fluid signal intensity on T2W images, rim enhancement on MR proved statistically significant predictors of Schwannoma. Tumors located at thoracic region in females and dural tail proved statistically significant predictors of Meningioma.

Abstract ID: 282

**ABSTRACT TITLE**: EFFECTIVITY OF DIFFUSION TENSOR IMAGING IN CHARACTERIZATION OF INTRACRANIAL NEOPLASM ASSUMING HISTOPATHOLOGY AS GOLD STANDARD

**PRESENTING AUTHOR**: ANIL KUMAR VERMA

**CO-AUTHOR**: DR CHATURBHUJ PRASAD SWARNKAR

**Purpose**: Purpose of our study was to evaluate the role of DTI for characterization of intra-cranial neoplasm based on the pattern of involvement of white matter tracts and to find out the correlation between fractional anisotropy (FA) and mean diffusivity (MD) in the intracranial neoplasms with DTI.

**Methods**: DTI was performed on 60 patients of intracranial neoplasm for characterization of neoplasm as a part of preoperative assessment, based on the involvement of white matter tracts, after taking written and informed consent. Sensitivity and specificity was calculated assuming histopathology as gold standard.

**Results**: White matter involvement by tumor was determined using the criteria of displacement, infiltration, disruption or edema of fibres. Patients were classified into two main groups according to the tumor type: benign and malignant. Prevalence of tract displacement was higher in the benign group, while prevalence of disruption was higher in the malignant group. Majority of patients included in the study were 50 years and above. As per DTI 28 patients had benign pathology and 32 had malignant pathology. Out of 35 patients with malignant neoplasm on histopathology, 91.4% (n=32) were correctly diagnosed by DTI and out of 25 patients with benign neoplasm on histopathology follow up, 88% (n=22) were correctly diagnosed by DTI.

**Conclusion**: We conclude from the present study that DTI can diagnose and distinguish malignant from benign intracranial neoplasm. It is a non-invasive method which may be useful in deciding the surgical strategy or selecting site of stereotactic biopsy which helps in reducing the post-operative morbidity and mortality in the patients.

Abstract ID: 288

**ABSTRACT TITLE**: KALLMANN SYNDROME ASSESSMENT - CASE SERIES

**PRESENTING AUTHOR**: DHAWAL KAUSHAL

**CO-AUTHOR**: DR AKASH RAMTEKE, DR MANISHA JOSHI

**Introduction**: Kallmann Syndrome was described by Maestre de San Juan in 1856 and was characterized as a hereditary condition by Franz Josef Kallmann in 1944. It comprises of congenital hypogonadotropic hypogonadism accompanied by hyposmia or anosmia. Its reported incidence is on the order of 1 in 10,000 men and 1 in 50,000 women. We hereby present 3 young patients who came for MRI BRAIN
with clinical complaints of hypogonadotropic hypogonadism for which clinicians had a strong suspicion of KALLMANN syndrome.

**Purpose:** To describe MRI findings of KALLMANN SYNDROME and how to assess it using qualitative and quantitative parameters.

**Results and Conclusion:** MR examination, especially with high-resolution T2-weighted imaging in the coronal plane, can aid in evaluation of the olfactory sulci and visualization of the olfactory tracts. Hypoplasia of the olfactory sulci or nonvisualization of the olfactory tracts and hypoplasia of pituitary along with the clinical findings of hypogonadotropic hypogonadism, anosmia, short stature or heredity is consistent with the presence of Kallmann syndrome.

**References:**

**Abstract ID: 290**

**ABSTRACT TITLE:** TWO LARGE CALVARIAL LESIONS – BIGGER THAN LIFE

**PRESENTING AUTHOR:** DHAWAL KAUSHAL

**CO-AUTHOR:** (None)

**Introduction:** Skull vault lesions are rare and are usually incidentally discovered. They may present initially as a benign finding during initial stage however sudden, significant increase in size are warning signs. The mineralized component is best assessed on CT whereas MR because of its excellent soft tissue resolution helps in characterization, infiltration and intra/extra cranial extension.1

**Purpose:** To describe Imaging findings in two calvarial lesions which grew to significantly large sizes due to lack of timely management affecting the prognosis.

**Results and Conclusion:** CT findings shows two large calvarial lesions. First being the histopathologically proven case of round cell tumor (Ewing’s sarcoma) showing significant periosteal reaction with intra as well extracranial soft tissue components. Second case being Osteosarcoma showing classical sunray periosteal reaction, codman s triangle and soft tissue components. Cross section imaging were done in both the tumors for determining the extent of lesion, Intracranial involvement and surgical planning which would have been a challenging task for the operating neurosurgeon.

**References:**
Abstract ID: 296

ABSTRACT TITLE: A CASE REPORT OF LATERAL THORACIC MENINGOCOELE
PRESENTING AUTHOR: MUSHINI DEEPTHI
CO-AUTHOR: (None)

Learning Objective: A Case Report of Lateral Thoracic Meningocoele

Background: A 25 year old female came with complaints of fever and shortness of breath, On examination she is febrile, conscious, coherent, vitals are stable, and she has kyphoscoliosis.

Imaging Findings: CHEST XRAY-It revealed scoliosis, multiple rib and vertebral segmentation anomalies, homogenous radio opacity noted on right side of chest causing displacement of mediastinum towards left side CT THORAX PLAIN AND CONTRAST-It showed 14x12x13cm sized large fluid density lesion in thorax on right side causing collapse of underlying lung. On caudal sections it revealed the lesion is extending into spinal canal through a defect in lateral elements of D9 vertebra. Multiple ribs and vertebral segmentation anomalies, defect in neural foramina at D9 on right side.

Kyphoscoliosis:
- No enhancement on contrast.
- MRI-On T1WI-large hypointense lesion in contiguity with thecal sac on right side of hemithorax.
- On T2WI- hyperintense lesion in contiguity with thecal sac.
- On T2 FLAIR, hypointense lesion noted

Conclusion: Above features suggestive of lateral thoracic meningocoele Etiology-Meningocoele secondary to primary meningeal dysplasia-meningeal weakness permits dural sac to focally stretch in response to repetitive CSF pulsation-enlarged neural foramina, secondary osseous remodelling permits further herniation.Gross features- scalloping of pedicles,laminae and vertebral bodies adjacent to meningocele Enlarged central spinal canal, neural foramina, spinal cord displaced away from meningocele, scoliosis convex toward meningocele.

Clinical presentation -asymptomatic, non specific motor or sensory symptoms referable to cord/nerve root compression Respiratory embarrassment(very large) Cutaneous café au lait spots, cutaneous, subcutaneous neurofibromas,Kyphoscoliosis, in connective tissue disorder- tall, joint hypermobility ,lens dislocation Age -4th -5th decades, M=F.

Prognosis -remain asymptomatic unless very large, static or slow growth in size, excellent prognosis after surgical resection.

Abstract ID: 299

ABSTRACT TITLE: USUAL AND UNUSUAL PRESENTATION OF NONKETOTIC HYPERGLYCEMIA WITH BRAIN PARENCHYMAL FINDINGS
PRESENTING AUTHOR: DHAWAL KAUSHAL
CO-AUTHOR: (None)

Introduction: Glucose is essential for normal functioning of the brain however the extreme (high or low) levels
in blood can lead to various complications. We hereby present a case of non-ketotic hyperglycaemia (NKH) who presented to us with history of long term uncontrolled diabetes.

**Purpose:** To describe typical and atypical MRI findings in two patients with non-ketotic hyperglycaemia (NKH).

**Results and Conclusion:** We describe two cases with uncontrolled diabetes who presented to us. The First case presenting with abnormal body movements (hemiballismus and hemichorea) showing classical unilateral T1 hyperintensity involving the basal ganglia. The second case who was a known case of Diabetes mellitus, Rheumatoid Arthritis, Sjogren’s Syndrome presented with chief complaints of high grade fever with headache, fluctuating behaviour, visual hallucinations with 2 episodes of convulsion. MRI Brain showed cortical areas of T2 hyperintensities and subcortical T2 hypointensities involving the left parieto-occipital region attributed to cell edema caused by NKH and seizures, but however brain parenchymal changes were reversible when hyperglycemia and seizures were well managed by hypoglycaemic agents and anticonvulsants. The diagnosis was not straight forward however radiologist should be aware of the variable presentations of hyperglycemia so to clinch the diagnosis.

**Abstract ID: 301**

**ABSTRACT TITLE**: MAGNETIC RESONANCE ANGIOGRAPHIC EVALUATION OF CIRCLE OF WILLIS: A MORPHOLOGIC STUDY OF NORMAL VARIANTS.

**PRESENTING AUTHOR**: CHINMAYA KUDARI

**CO-AUTHOR**: DR. HARINI BOPAIAH, DR. SANDEEP BALLAL, DR. SANJAY SC

Magnetic resonance angiographic evaluation of circle of Willis: A morphologic study of normal variants.

Dr. Chinmaya S Kudari, Dr. Harini Bopaiah, Dr. Sandeep Ballal, Dr. Sanjay SC  Department of Radiodiagnosis, Kempegowda Institute of Medical Sciences, Bengaluru.

**Purpose:** Anatomy of circle of Willis shows wide variation in different individuals, population groups, and has vital clinical significance in causation and presentation of clinical disease.

This study evaluates the anatomical variations, incidence of various common anomalies of circle of Willis in a hospital set up. The study helps in predicting target area of brain in case of cerebrovascular accident involving variant vessel and in prevention of labeling a physiological variant as a pathological entity. This study also gives road map for neurovascular interventions.

**Materials and Methods:** A retrospective study of 100 patients referred for neuroimaging study were included in the analysis. Patients underwent MR angiogram of brain using GE 1.5-T SIGNA MR scanner. Images were reviewed for anatomical configuration of the circle of Willis using 3D Time of Flight (TOF) with Maximum intensity projections (MIP).

**Results:** The mean age group of study was 42 years. Male predominance of 57.1% was seen. The complete configuration of the circle was seen in 31.6% of population.

**Conclusion:** The circle of Willis variation is a common phenomenon. Magnetic Resonance Angiogram (MRA) could enable reflecting physiological morphology of circle of Willis in a comprehensive manner.

**References:**


Abstract ID: 311

ABSTRACT TITLE: IMPACT OF IMAGING IN EARLY DIAGNOSIS OF WILSON’S DISEASE

PRESENTING AUTHOR: ASHUTOSH SHARMA

CO-AUTHOR: DEBI SANKAR GHOSH HAJRA, NARAYAN PANDIT

Learning Objective: Apparently unexplained persistent jaundice in a young nonalcoholic patient should undergo slit lamp examination and MRI brain to rule out uncommon cause like Wilson’s disease.

Background: Wilson’s disease is an autosomal recessive multisystem disorder of copper metabolism caused by mutation in ATP7B gene which encode membrane bound copper transporting ATPase. Frequency is 1:30000-40000. Primarily involves liver and brain. Because effective treatment is available early diagnosis is important.

Patient presented in our institute a nonalcoholic hepatitis seronegative young male patient without any neuropsychiatric manifestations with persistent hyperbilirubinemia (almost equal level of conjugated and unconjugated bilirubin) with constitutional symptoms which suggest chronic liver disease has undergone USG & CECT whole abdomen, slit lamp examination (shows bilateral Kayser-Fleischer ring), necessary biochemical test like serum ceruloplasmin, 24 hr urinary copper level and MRI brain, came out to be a case of Wilson’s disease. Biopsy was not possible due to high PT/INR, being the limitation of this study.

Imaging Findings: USG whole abdomen-coarse parenchyma with multiple hyperechoic nodules of varying sizes in both lobe liver, splenomegaly, portal venous pressure mildly raised without any flow reversal. CECT whole abdomen-cirrhotic liver, splenomegaly. MRI brain- bilateral basal ganglia shows hyperintensity on T1WI, T2WI & T2/FLAIR Restriction seen in bilateral basal ganglia on DWI.

Conclusion/Teaching Points: A young patient with unexplained persistent hyperbilirubinemia and sign symptoms of chronic liver disease should undergo MRI brain and slit lamp examination to rule out uncommon entity like Wilson’s disease. Imaging finding of brain can precede clinical neurological deficit.

Abstract ID: 328

ABSTRACT TITLE: NORMAL LOOKING ABNORMAL BRAIN: REVIEW AREAS IN ROUTINE PRACTICE.

PRESENTING AUTHOR: PRAVIN KUMAR M

CO-AUTHOR: SRIRAM PATWARI

Learning Objectives:

- To understand the anatomy of the review areas where pathological findings are commonly missed.
- To illustrate the subtle radiological findings commonly misinterpreted by junior doctors and registers.
- To discuss the appropriate steps in systematic evaluation of CT and MR images of brain to avoid these common misinterpretations.
Background: We reviewed approximately 200 CT scans and 100 MR scans of brain over a period of ~4 years in a tertiary centre and found out the most commonly missed pathologies by the reporting junior doctors and residents.

Imaging Findings: Most commonly missed pathologies by the reporting junior doctors and residents in decreasing order of frequencies were:

- Traumatic (Subtle subarachnoid hemorrhage, subacute subdural hemorrhage, non-hemorrhagic contusion, diffuse axonal injury and fractures particularly at the base of the skull, nasal bones, and orbital blow out);
- Ischemic (hyperacute MCA infarct, watershed infarcts, infarcts in brainstem and cerebellum particularly in plain CT, diffuse hypoxic / ischemic injury, cerebral venous thrombosis, cervical spinal cord infarct visualised in brain MRI);
- Infective (meningitis, skull base osteomyelitis, small granulomas particularly extra-cranial neurocysticercosis);
- Demyelinating lesions (particularly in spinal cord, brain stem and posterior fossa);
- Neoplastic (glomus jugulare tumor, clival/ convexity meningioma, small vestibular schwannoma, trigeminal schwannoma, small tectal plate lipoma),
- Vascular (small aneurysm, particularly contra lateral aneurysm in bilateral/multiple aneurysms, vertebral/ carotid artery dissection, acute internal carotid artery thrombosis).

Conclusion: Findings commonly missed and misinterpreted by the novice radiologist or radiology residents in brain imaging are highlighted. Developing a comprehensive checklist to consciously search for these commonly overlooked findings will help in improving the accuracy.

Reference: Nov 1 2009https://doi.org/10.1148/rg.297095123

Abstract ID: 370

ABSTRACT TITLE: MRI IMAGING OF LISSENCEPHALY
PRESENTING AUTHOR: POOJA PATIL
CO-AUTHOR: DR NAVEEN PAWAR DR ABDUL REHMAN

Learning objectives: to emphasize the role of MRI as the method of choice that helps in detection, classification of lissencephaly and differentiation from other types of cortical malformations. to describe and illustrate the MR imaging findings in patients with lissencephaly.

Background: The incidence of cortical malformations has increasing tendencies as a result of improving imaging techniques and awareness, so their presence should be ruled out in pediatric patients with developmental delay or epilepsy. Lissencephaly disorders is a common group of malformations due to abnormal neuronal migration. The term lissencephaly refers to smooth surface of the brain. Various genes interfere in normal neuronal migration but 40 - 75% of classical lissencephaly patients have gene mutations on chromosomal loci 17p13.3 (LIS1) gene and/or Xq22.3-23 (XLIS) gene.

Image Findings: 6 month old female child presented with delayed mile stones and many episodes of seizures since birth was subjected to MRI. On T1W1 images small number of shallow sulci with broad intervening gyri are noted suggesting smooth cortical surface. Cerebral configuration is oval or hourglass with shallow
sylvian fissures. Mildly enlarged bilateral ventricles. Corpus callosum appears normal. On T2W1 a thin outer layer isointense to gray matter suggestive of cellular layer, underlying circumferential band of hyperintense cell sparse layer. Innermost white matter is volume reduced and smooth. Prominent vessels are seen in shallow sylvian fissures.

**Conclusion:** MR imaging with high-resolution sequences has very important role in valid diagnostics of lissencephaly and cortical malformations, therefore helping the clinicians in further diagnostics, patient care and planning the genetic disorders examinations.

**Abstract ID: 386**

**ABSTRACT TITLE:** IMAGING SPECTRUM OF PITUITARY GLAND IN HYPERPROLACTINEMIA

**PRESENTING AUTHOR:** JYOTI.G.DULLI

**CO-AUTHOR:** DR.SRINIVAS M R, DR.ARUL DASAN

**Aim:** To study the causes and association between hyperprolactinemia and pituitary gland pathologies on dynamic CEMRI of pituitary gland.

**Materials and methods:** A prospective study of 20 patients done in the Department of Radio diagnosis, Bangalore Medical College and Research Institute. Patients from all groups whose serum prolactin levels were high for their age, gender and pregnant status were included. The hyperprolactinemia patients were subjected to CEMRI brain and dynamic pituitary contrast studies were done in suspected cases of microadenoma. Statistics were expressed in terms of percentiles.

**Results:** Among 20 patients, 8 patients had macroadenoma, 6 patients had microadenoma, 4 patients had empty sella and 2 patients had normal pituitary gland on MRI. The patients with empty sella were subjected for complete pituitary gland hormonal assay and was found to have isolated hyperprolactinemia in the absence of any other hormonal abnormality. In one of the patients having empty sella and persistent hyperprolactinemia, the sella was explored and a chunk of tissue was obtained, which turned out to be lymphocytic hypophysitis on histopathology. The rest of the hyperprolactinemia patients were to be treated for hyperprolactinemia by medications rather than surgical intervention and the cause has not yet been established in these patients.

**Conclusion:** Imaging of pituitary gland in hyperprolactinemia patients revealed macroadenoma, microadenoma, empty sella and normal pituitary gland on MRI. Surprisingly in empty sella patients, isolated hyperprolactinemia in the absence of any other hormonal abnormality was found. The cause of this association between empty sella and hyperprolactinemia still remains undiagnosed. Hence this association should be studied in large cohort to establish this association. Henceforth getting serum prolactin levels done, in empty sella patients found on imaging, might help in early detection and treatment of hyperprolactinemia. Thus imaging plays an important role in treatment of hyperprolactinemia patients.

**Abstract ID: 387**

**ABSTRACT TITLE:** MRI AS AN ADJUNCT PROGNOSTIC TOOL IN EPIDEMIC ACUTE VIRAL ENCEPHALITIS IN WESTERN U.P REGION

**PRESENTING AUTHOR:** MANISH KUMAR

**CO-AUTHOR:** HIMANI SHARMA, JUNIOR RESIDENT

**Authors:** 1.Dr. Manish Kumar, MD, DNB, Assistant Professor 2.Dr. Himani Sharma, Junior Resident, Rohilkhand Medical College, Bareilly
Introduction: Western U.P is one of the favoured regions for the epidemic outbreak of viral encephalitis. The region also witnessed one of the severe outbreaks of epidemic viral encephalitis last year, in 2017 with a considerable mortality rate. A microbiologic diagnosis is often delayed in epidemics of viral encephalitis. Imaging, particularly MRI, though not needed in all cases, is a life-saving tool for patients in whom an etiologic diagnosis is delayed as abnormal MRI findings are commonly seen in these patients. Severe patterns of involvement on imaging portend a poor prognosis.

Aims & Objectives: The present study was aimed to characterize the imaging findings in acute epidemic viral encephalitis, develop a pattern-recognition approach for early imaging diagnosis of possible etiologic agent and to assess the prognostic value of MR imaging findings in management of such patients.

Materials & methods: The study was conducted in the Department of Radiology, Rohilkhand Medical College Hospital, Bareilly. 40 patients with clinically suspected encephalitis were included in the study over a period of 6 months from June-September 2017 & June-July 2018. MRI Brain was done for these patients and imaging findings were correlated with clinical & laboratory investigations.

Results & conclusions: MRI brain can reliably diagnose viral encephalitis in association with clinical findings. Japanese encephalitis & Dengue were the most common etiologic agents & dengue encephalitis often presents similar imaging features as JE. Imaging improved the prognosis in a subset of patients as specific antiviral therapy could be introduced early based on characteristic imaging features. Severe patterns of involvement of the brain parenchyma had high incidence of mortality.

References:

Abstract ID: 421

Clinical History: 2 year old male child complaining of seizures, two episodes in the last two months, born of premature preterm cesarean delivery at 36 weeks, had NICU admission for 4 months. The patient underwent MRI brain advised antenatally due to consistent B/L occipital horn prominence with no associated gross anomaly.

Imaging Findings: Antenatal neurosonography of the patient axial and coronal views showed persistent bilateral occipital horn prominence (right 15mm and left 14mm).

Sagittal T1W and T2W images of the brain MRI showed complete corpus callosal agenesis. MRI brain T2W images axial and coronal sections suggestive of colpocephaly that is non-obstructive bilateral dilated occipital horns.

Conclusion: So, the present child had diagnosed as complete corpus callosal agenesis with colpocephaly. He underwent only symptomatic – anticonvulsant treatment. So, it is concluded that Neuro-Imaging leads to appropriate diagnosis and treatment in such patients, as surgical shunting is avoided, associated interventional risk can also be avoided if diagnosed correctly.
Abstract ID: 423

ABSTRACT TITLE: MRI FINDINGS IN TWO CASES OF LEIGH SYNDROME

PRESENTING AUTHOR: ANIKET M ZOPE

CO-AUTHOR: SUHAS S GHULE, SUSHIL G KACHEWAR, DILIP L LAKHKAR, VINOD M MARATHE

Clinical History: Case A: A 2 Y old female child, born to second degree consanguineous marriage, with an uneventful perinatal history presented to our hospital with 3-4 episodes of seizures, delayed developmental milestones and regression of the achieved milestones. On examination child was afebrile.

All preliminary laboratory investigation are normal except elevated serum and CSF lactate levels.

Case: B: A 16 month old male child, born to a non-consanguineous married couple, with an uneventful perinatal history presented to our hospital with delayed developmental milestones and failure to thrive.

All laboratory investigation showed elevated serum lactate and decreased hemoglobin level (8mmHg) and however CSF analysis was not done in this child. Further MR imaging was performed.

Imaging Findings: Patient A showed T2 and FLAIR hyperintense signals with restricted diffusion and low ADC values with upright doublet of lactate at 1.3ppm on short TE of 35ms in B/L putamen and cerebellar nuclei.

Patient B showed T2 and FLAIR hyperintense signals with restricted diffusion and low ADC values with elevated lactate at 1.3ppm on short TE of 35ms in B/L centrum semiovale, parieto-occipital white matter, basal ganglia.

Conclusion: The diagnosis of Leigh’s disease should be considered in appropriate clinical and laboratory settings whenever symmetrical hypodensities are encountered in the putamina and midbrain on CT and further investigated with MRI, which is more sensitive than CT in establishing the ante mortem diagnosis of Leigh’s disease. With appropriate investigations, accurate diagnosis and prompt institution of adequate supportive therapy, symptomatic amelioration can be achieved, thereby adding life to the limited years of survival of these children. Thus serving the purpose of the radiology for the man kind.

Abstract ID: 440

ABSTRACT TITLE: COMPARISON OF EXTRACRANIAL CAROTID DUPLEX DOPPLER IN ANTERIOR CIRCULATION STROKE AND NON STROKE PATIENTS

PRESENTING AUTHOR: JITHU SUBASH BABU

CO-AUTHOR: DR. NITA HUBERT DR. SEBASTIN VARGHESE

Purpose: To compare the CCA intima media thickness in patients with CT/ MRI proven anterior circulation stroke with non-stroke patients and to describe the carotid artery plaque morphology. To assess proportion of CCA and ICA stenosis using carotid duplex Doppler.

Materials and Methods Study design: Cross sectional study 50 patients with CT/MRI proven ischemic stroke were taken during the time period January 2017 to October 2018 and retrospectively CIMT, plaque characterization, site and severity of stenosis were assessed using ultrasound and color Doppler. Peak systolic velocity and end diastolic velocity and carotid artery stenosis with area percentage were calculated. All these findings were correlated with clinical presentation and risk factors. The collected data was statistically analyzed using SPSS 16.0 version software.
Results: ICA/CCA PSV ratio on carotid Doppler was a good predictor of stenosis and ratio above two indicates significant stenosis (>60%). Carotid bulb and bifurcation were the most common locations of plaque formation.

Conclusion: The current study highlights the importance of extracranial carotid duplex doppler in the evaluation of stroke patients through surveillance of various risk factors that predisposes a person to cerebral ischemia. Routine screening of high risk patients is very much essential to prevent the occurrence of stroke in future.

Abstract ID: 464

**ABSTRACT TITLE**: EPIDURAL ANGIOLIPOMA

**PRESENTING AUTHOR**: SWAPNIL S GAIKWAD

**CO-AUTHOR**: (None)

**Learning Objectives**: A case report of Epidural Angiolipoma

**Background**: CASE A 50 year old female patient came to medicine OPD with chief complaint of progressive weakness of both lowerlimbs since 1 year

**Imaging Findings**: Fat containing lesions in epidural space include lipoma is non enhancing which supress on STIR Lipomatous meningioma liposarcoma is irregular and contain thickened septa angiolipoma is hyperintense on T1and T2 which shows enhancement on contrast MR and CT features are in favour of angiolipoma/lipomatous meningioma

**Conclusion**: Histopathology Report Angiolipoma T6-T8 extradural mass from spinal cord

Abstract ID: 465

**ABSTRACT TITLE**: LIPOMYELOMENINGOCELE

**PRESENTING AUTHOR**: SWAPNIL S GAIKWAD

**CO-AUTHOR**: (None)

**Learning Objectives**: A case report of lipomyelomeningocele

**Background**: A 4 month old baby came with presentation of mass just above the intergluteal cleft since birth.

**Imaging Findings**: MRI findings 1. Defect noted in posterior and lateral elements on left side at L3,L4 and L5 vertebral levels with herniation of cerebrospinal spinal fluid, meninges and fat into paraspinal region

2. Approx. 32 x 20 x 18 mm sized another T2 hypointense lesion / component with pulsation/ cerebrospinal fluid flow artefacts noted in subcutaneous tissues in left lumbar region partially extending into left gluteal region seen communicating with left paraspinal component through narrow neck/ pedicle 3 spinal cord is seen stretched partially extending into subcutaneous component

**Conclusion**: findings are consistent with lipomyelomeningocele
Abstract ID: 499

**ABSTRACT TITLE**: NEUROIMAGING IN PEOPLE LIVING WITH HIV AND AIDS

**PRESENTING AUTHOR**: RAYALA VIKASH BABU

**CO-AUTHOR**: DR. T. RAJESWARA RAO MD, DR. RAJANI GORANTLA, MD, FRCR, DR. YEVVARI SAMEERA, FINAL YEAR PG

**Objectives**: Neurological manifestations of retrospective patients is not uncommon. We present case series of People living with HIV and AIDS (PLHA) who presented with common and unusual neurological manifestations with varied imaging features.

**Material and methods**: All the MRI sequences were obtained on 1.5 Tesla MRI machine ‘GE Signa’ 1.5T Signa Excite system (General electrical medical systems, Milwaukee, USA). A dedicated eight channel high resolution head coil was used. Detailed clinical history was taken, clinical examination was done, CD-4 cell counts were obtained and correlated with the imaging features.

**Results and conclusion**: Of the cases studied, majority were opportunistic infections, predominantly granulomatous infections, like TB, followed by toxoplasmosis. One case of concomitant TB and CNS cryptococcosis was identified. Other cases were Progressive Multifocal Leukoencephalopathy, Primary CNS lymphoma and HIV encephalopathy.

Nervous system is commonly involved due to HIV infection. It is paramount to distinguish whether the neurologic deterioration is due to opportunistic infection or immune reconstitution or the effect of virus itself. MRI imaging greatly helps in narrowing the differential diagnosis and thereby aids proper patient management to reduce morbidity and improve the quality in PLHA.

Abstract ID: 524

**ABSTRACT TITLE**: ROLE OF MAGNETIC RESONANCE IMAGING IN EVALUATION OF SPINAL DYSRAPHISM

**PRESENTING AUTHOR**: SRIKALYAN DUDUKURI

**CO-AUTHOR**: DR. BHUSHAN LAKHKAR DR SUHAS C N

**Introduction**: Congenital anomalies of the spine and spinal cord are referred to as spinal dysraphism. Spinal dysraphism or neural tube defect is a broad term encompassing a heterogeneous group of congenital spinal anomalies that result from defective closure of the neural tube early in fetal life.

It is one of the most common congenital disorders associated with significant morbidity and mortality. There is a need for accurate and noninvasive evaluation of the spine in children suspected to have spinal dysraphisms.

**Aims and Objectives**:

- To assess the various radiological findings detected on MRI of the spine & brain.
- To identify and classify the different spectrum of lesions of spinal dysraphism.
- To assess the frequency of each radiological finding on MRI in a given clinical scenario and hence chart out an algorithm for a sequential radiological differential diagnosis.

**Methods and Material**: A single institutional prospective cross sectional study was conducted. Twenty two
(22) patients with clinically suspected spinal dysraphism were included in the study. All the patients were made to undergo MRI spine using 1.5 Tesla MRI, manufactured by Philips Achieva 1.5 tesla. The findings of MRI spine were assessed and analyzed.

Results: In a series of 22 cases, 12 were female and 10 were male (male-to-female = 1.2:1). Majority of the patients were younger than 1 year. Commonest clinical presentation was swelling in the back. Open spinal dysraphism was observed in 12 and closed spinal dysraphism in 10. The lumbar region was the most common site of occurrence (59.09%), followed by the sacral region (27.27%). Lumbosacral myelomeningocele was most common anomaly (45.45%). Associated abnormalities like hydrocephalus, Arnold–Chiari, syrinx, hydronephrosis were more commonly encountered in open defects.

Conclusion Magnetic resonance imaging (MRI) is “gold standard” in the investigation of spinal dysraphism because of its multiplanar imaging and tissue characterization capabilities, lack of ionizing radiation, no known biological risks, its superior soft tissue contrast and being noninvasive.

Abstract ID: 526

ABSTRACT TITLE: OPTIC NERVE GLIOMA
PRESENTING AUTHOR: PURMA SINDHURA PRIYANKA
CO-AUTHOR: DR. ANIL U MADURWAR HOD AND PROFESSOR IN DEPARTMENT OF RADIODIAGNOSIS

Learning Objectives: A Case report of OPTIC NERVE GLIOMA

Background: A 68 Year old female came with complaints of headache, nausea, vomiting & vision disturbances. On examination there is diffuse swelling of right eye.

Imaging Features: MRI – ORBITS PLAIN & CONTRAST

Technique: T2, T1, FLAIR - AXIAL T2 – Sagittal FLAIR - CORONAL

FINDINGS; RIGHT ORBIT:
E/o Approximately 17.5 x 16mm sized altered signal intensity (T1 hypointense and T2/STIR hyperintense) lesion noted in retro orbital space closely abutting / encircling right optic nerve with loss of fat planes.

The mass lesion is abutting and displacing right medial rectus muscle. The lesion is extending anteriorly up to the optic nerve head and partly abutting posterior glob. The mass lesion superiorly abutting superior oblique muscle.

Left Orbit: Globe, lens and recti muscles are normal Retro orbital contents are normal Optic nerve appears normal

Conclusion & Teaching Points: Neoplastic etiology in right retro orbital space closely abutting / encircling right optic nerve. On IV contrast e/o moderate heterogeneous enhancement noted within the lesion. – A/F/S/O.- Optic nerve glioma
Abstract ID: 547

**ABSTRACT TITLE**: CASE REPORT ON RARE CASE OF HYPOTHALAMIC ASTROCYTOMA

**PRESENTING AUTHOR**: SIVA PRADEEP KUMAR

**CO-AUTHOR**: DR. DEEPAK JAIN, DR. VINAY GOEL

**Case Report on Hypothalamic Astrocytoma**: ABSTRACT- Case report on rare case of (hypothalamic astrocytoma)

**Introduction**: There are only few reported cases of a patient with typical symptomatic gelastic seizures due to a hypothalamic astrocytoma. Typically, gelastic seizures are characteristic of hypothalamic hamartomas which are benign non-neoplastic heterotopias typically occurring in hypothalamus arising from hypothalamus. Here in our case we are reporting a rare case of hypothalamic astrocytoma diagnosed provisionally on MRI study and post contrast differentiation from hamartomas and later proved on histopathological study.

**Purpose**: Gelastic seizure are seen characteristically in hamartomatous lesion of brain, however it may be the presenting feature in atypical variant of astrocytoma based on location. So differential of astrocytoma should be considered when dealing with gelastic seizure cases which can be differentiated on the basis of post contrast behaviour of lesion on MRI study.

**Findings**: A well defined mass lesion in hypothalamic region showing heterogenous post contrast enhancement which was later on confirmed after histopathological correlation as Astrocytoma.

**References**:

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Abstract ID: 552

**ABSTRACT TITLE**: “COMPARISON OF CEREBRAL CROSS SECTIONAL IMAGING AND ELECTROENCEPHALOGRAM FINDINGS IN POSTPARTUM HEADACHE AND SEIZURES”

**PRESENTING AUTHOR**: PRASHANTH K S

**CO-AUTHOR**: DR. RAVI N, DR. ARUL T DASAN, DR. RAKSHITH R N

**Aims & Objectives**: To evaluate spectrum of causes & their characteristic findings in postpartum headache and seizures on magnetic resonance imaging. To compare the cerebral cross sectional imaging and electroencephalogram (EEG) findings in postpartum headache and seizures

**Materials And Methods**: Forty patients with complaints of postpartum headache and seizures with history of preeclampsia underwent cross sectional imaging (CT/MRI) and electroencephalogram (EEG) during period of June 2017 to May 2018. Intravenous contrast was administered in cases with diagnostic dilemma. Age group of subjects in this study was 18 to 35 y. Subjects with complaints of headache and seizures after
six weeks of delivery were excluded from the study. All results were reported and informed to the referring physicians on priority bases.

**Results:** Eight patients with postpartum headache and seizures revealed no brain parenchymal or cerebral vascular abnormalities on imaging. Twelve patients showed features of eclamptic encephalopathy. Out 40 patients, 18 patients revealed cortical venous thrombosis with 12 patients showing parenchymal changes. One patient each showed features of meningoencephalitis, ischemic watershed territory infarct & region of gliosis. EEG was abnormal in 83% of patients and the most common EEG abnormality was spike discharge. All results were analysed & tabulated.

**Conclusion:** Eclamptic encephalopathy and cortical venous thrombosis are the major causes for postpartum headache and seizures. A correlation between EEG abnormalities and MR findings was found in this study. Rational use of MRI and EEG in the early course of the disease helps in characterizing the lesion and providing the appropriate treatment.

**Abstract ID: 566**

**ABSTRACT TITLE:** COMPUTED TOMOGRAPHY QUANTIFICATION OF DIAMETER OF VERTEBRAL ARTERY AND ITS RELATIONSHIP WITH RESPECT TO TRANSVERSE FORAMINA

**PRESENTING AUTHOR:** CHANDANA UDAYAKUMAR

**CO-AUTHOR:** DR VEDARAJU K S, DR ARUL T DASAN, DR SAMARTH S GOWDA

**Aim** To quantify the anatomical relationship between vertebral artery and transverse foramina in lower cervical spine by computed tomographic angiography

**Materials and Methods:** A cross sectional study was done on 70 patients who underwent CT angiography of neck between June 2017 to May 2018. On axial sections, the diameter of vertebral artery and the shortest distance between vertebral artery and medial, lateral, anterior and posterior walls of transverse foramina were measured at each cervical spinal level. A safe zone was defined based on all lateral pedicle to vertebral artery measurements. Data obtained from the study was analysed using descriptive statistics (mean and standard deviations)

**Results:** Vertebral artery diameter was largest at C6 level bilaterally, measuring 3.1 +/-0.8mm on the right and 3.3 +/-0.6mm on the left.

The lateral distance was greater than other parameters (medial, anterior and posterior) at the same level. The distance between vertebral artery and pedicle was greatest at C6 level and shortest at C5 level. The safe zone increased from C2 level (1.0mm) to C6 level (1.5mm)

**Conclusion:** Computed tomography angiography is a valuable tool that can help determine the relationships between vertebral artery and its occupational ratio in the transverse foramen and distance from cervical pedicles. These measurements can help determine the safe zone and know the variation at all levels to avoid injury to vertebral artery before undertaking any posterior instrumentation procedures of the cervical spine. Maximum risk according to this study was at C5 level and minimum at C6-C7 level.
Abstract ID: 571

ABSTRACT TITLE: DELINEATING THE DILEMMA OF INTRACRANIAL RING ENHANCING LESIONS- ROLE OF MR SPECTROSCOPY

PRESENTING AUTHOR: ASTHA SINGH
CO-AUTHOR: DR. USHA JAIPAL, DR. KULDEEP MENDIRATTA

Purpose: Difficulty is faced frequently in characterising single ring enhancing lesion of brain via conventional MRI. Hence this study aims at assessing the role of MR spectroscopy in diagnosing ring enhancing lesions.

Materials and Methods: A hospital based observational study was conducted on 35 patients with intracranial ring enhancing lesions on CT or MRI. All cases underwent 3T MRI with TE of 35 and 144. The lesions were classified according to various metabolites peaks and were correlated with the final diagnosis via follow-up (response to treatment or histopathologically proven).

Results: Out of the 30 patients evaluated, tuberculomas (43%) was the most common pathology followed by abscess (26%). Sensitivity and specificity of MRS in diagnosing tuberculomas came out to be 78.5% and 85.7%, respectively. Lactate peak in all 8 cases of abscess suggested anaerobic glycolysis with 87.5% of cases showing lipid peak. MRS may shed light on which organism is responsible for abscess as absence of succinate and acetate signals are more likely with obligate aerobes as opposed to raised acetate and succinate peaks in anaerobic bacterial abscess. The choline/creatine ratio was less than one in all of neurocysticerci. Raised choline peak in perilesional area on MRS favoured necrotic gliomas while all cases of metastasis were accurately diagnosed demonstrating normal choline in the perilesional area.

Conclusion: MR Spectroscopy compliments conventional MRI and is significantly useful in accurately differentiating and characterising ring enhancing lesions in brain. Furthermore, it may also point towards the type of infective agent in pyogenic abscess which will help in rational antibiotic use.

Abstract ID: 572

ABSTRACT TITLE: NEUROIMAGING IN PREGNANCY AND POSTPARTUM PERIOD: A PICTORIAL REVIEW

PRESENTING AUTHOR: ROYCE DSA
CO-AUTHOR: DR. KRISHNA PRIYA RAJ, DR. PARTHASARATHY KR, DR. AISHA MANSOOR

Introduction: Diverse pathological conditions affect the CNS during pregnancy. Imaging has an important role in differentiating, excluding sometimes diagnosing various neurological conditions. Early imaging can avoid the consequences of the delayed diagnosis.

Background: Various physiological, hormonal and hemodynamic changes take place during pregnancy to support its normal course. However these changes may also cause acute or chronic pathological conditions in the mother. Most of the times the symptoms of these conditions are either non-specific or overlapping, making its diagnosis clinically very challenging.

Conclusion: It is important to make the distinction between the benign and more serious neurologic signs, symptoms, and complications seen in pregnant women. Recognition of the characteristic imaging findings of a certain disease entity, allow confident exclusion of other disorders. The decision of which neurologic signs and symptoms will require further evaluation with imaging is mainly a clinical determination. However, imaging has an important role in helping the clinician differentiate benign from serious conditions.
Abstract ID: 580

ABSTRACT TITLE: IMAGING SPECTRUM OF OPPORTUNISTIC NEUROINFECTIONS IN ACQUIRED IMMUNO DEFICIENCY SYNDROME – CASE SERIES IN BMCRI

PRESENTING AUTHOR: KAMESH G
CO-AUTHOR: DR VIJAY KUMAR K R , DR ARUL T DASAN, DR LOHITH YADAV R

Learning Objectives:
- Illustrate the different causes of intracranial infections and in HIV infected patients.
- Highlight the classical imaging features of intracranial infections in patients with HIV infections.
- Discuss the differential diagnosis of CNS infections in HIV infected patients.

Background: Neurologic complications in HIV infections arise from HIV infection itself, from secondary opportunistic infections and neoplasms. The opportunistic infections are varied and include progressive multifocal leukoencephalopathy (PML), cytomegalovirus (CMV), Toxoplasmosis, Cryptococcosis, Tuberculosis, neurosyphilis etc. Patients become vulnerable to these infections when their CD4 count falls below 200 cells/cumm. Knowledge of the imaging findings of various opportunistic infection is important in guiding therapy and thus improving the quality of life of HIV infected patients.

Imaging Findings:
- Toxoplasmosis: T2 / FLAIR hypointense lesion in basal ganglia with surrounding vasogenic edema showing peripheral enhancement on post contrast study.
- Cryptococcosis: Enhancing basal cisterns with T1 hypointense / T2 hyper intense in basal ganglia showing no enhancement on post contrast enhancement.
- Tuberculosis: Enhancing basal cisterns with ring enhancing tuberculomas and surrounding edema.
- Cytomegalovirus: Non specific T2 / FLAIR white matter hyper intensities with enhancement of ependymal surface of fourth and lateral ventricles – ependymitis.
- Progressive multifocal leukoencephalopathy: T1 hypointense / T2 hyperintense lesions in subcortical U fibres in parieto occipital lobes, showing peripheral patchy diffusion restriction and no enhancement on post contrast study.

Conclusion: Imaging continues to play a critical role in initial detection of intracranial infections, although serologic, CSF and ultimate tissue biopsy remain the most specific diagnostic evidence for etiology. As MRI techniques have evolved and new methods have emerged, imaging findings in neuroinfection have become more specific.

Abstract ID: 589

ABSTRACT TITLE: CORRELATION OF ROTTERDAM CT SCORE WITH GLASGOW COMA SCALE IN PREDICTING THE PROGNOSIS OF TRAUMATIC BRAIN INJURY PATIENTS.

PRESENTING AUTHOR: KAMESH G
CO-AUTHOR: DR VIJAY KUMAR K R , DR ARUL T DASAN, DR LOHITH YADAV R

Purpose: Traumatic head injury affects up to 2% of population per year and constitutes major cause of death. The present prospective study was undertaken to evaluate craniocerebral trauma using MDCT and to correlate Rotterdam CT score with Glasgow coma scale.
**Materials and Methods:** This prospective study was conducted on 30 traumatic brain injury patients. All patients were subjected to CT brain plain imaging using 128 Slice Phillips Ct machine. They were clinically evaluated for Glasgow coma scale and severity of head injury was classified into three groups; mild degree (GCS = >13), moderate degree (GCS = 9-12) and severe degree (GCS = < 9). Rotterdam CT criteria which includes degree of basal cistern compression, degree of midline shift, epidural hematomas and intraventricular or subarachnoid hemorrhage was calculated for all patients. Both GCS and Rotterdam CT criteria were compared to predict the clinical outcome of Traumatic brain injury patients.

**Results:** Cerebral contusion was the most common CT scan finding irrespective of GCS score, followed by subdural hematoma, subarachnoid hemorrhage and epidural hematoma. There was a linear correlation between Rotterdam CT score and GCS.

In majority of the patients with GCS <9, Rotterdam CT score corresponded to 4-6. In majority of patients with GCS 9-12, Rotterdam CT score corresponded to 2-4. In majority of the patients with GCS >12, Rotterdam CT score corresponded to <2.

**Conclusion:** MDCT plays an important role in imaging of traumatic brain injury patients. Rotterdam CT score correlates with GCS score and thus helps in predicting the clinical outcome of patients more accurately.

**Abstract ID: 597**

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<td>PRESENTING AUTHOR</td>
<td>SOURAW SINGH</td>
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<td>CO-AUTHOR</td>
<td>KULDEEP MENDIRATTA</td>
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**Learning Objective:** To demonstrate imaging findings in different types of diastematomyelia. To elaborate the diagnostic classification along with associated anomalies.

**Background:** Diastematomyelia is a rare form of spinal dysraphism of unknown embryogenesis which can lead to various degrees of neurological impairment depending upon its location. This condition occurs more commonly in girls and consists of partial or complete sagittal clefting of the spinal cord which is usually located in the lumbar and thoracic regions. Segmentation anomalies of the vertebral bodies (hemivertebra, butterfly vertebra and block vertebra) along with spina bifida extending over several vertebral levels and fusion of the intersegmental laminae are the commonly associated anomalies.

**Imaging Findings:** This condition usually presents in childhood, however, asymptomatic milder cases may reach adulthood undiagnosed. Ultrasound, as the preliminary tool of diagnosis, shows the split spinal cord with or without split dural sacs. MR imaging not only helps in confirmation, but also helps in determining the type of diastematomyelia. CT scan can more easily identify the spur, whether fibrous or bony however, cord anomalies are better identified on MR scans. Ultrasound can show split spinal cord.

**Conclusion:** Diastematomyelia, which is classified into 3 types, can be a disabling condition with significant morbidity when symptomatic. Recognition of this condition is possible by careful antenatal scans. Ultrasound can be used as a preliminary diagnostic tool while MRI remains the investigation of choice. Given the paucity of literature on this condition, treatment criteria are poorly established.
Learning object: To Diagnose Pantothenate kinase associated neurodegeneration (PKAN) confidently on the basis of the classical triad (involuntary movements, cognitive impairment and the ‘tiger-eye-sign’ on MRI brain).

Background: Pantothenate kinase associated neurodegeneration (PKAN), previously known as Hallervorden-Spatz syndrome (extrapyramidal disorder) associated with increased amount of brain iron, known as neurodegeneration with brain iron accumulation (NBIA) with Incidence of 1:1,000,000. It is a rare autosomal recessive disorder, which was first described by Hallervorden and Spatz in 1922.

We report a 10 year old female child presented with a one month history of abnormal involuntary body movements and progressive dysarthria.

Imaging findings:

MRI: T2W MRI findings- Bilateral diffuse low signal intensity in the globus pallidus with a focus of high signal intensity: eye-of-the-tiger appearance (virtually pathognomonic). Diffusion MRI- presence of low signal intensity changes with lower ADC values and decreased NAA in the globus pallidi on Proton MR spectroscopy.

Conclusion: To conclude, Clinical assessment and MRI findings for facilitation of definitive diagnosis and to distinguish PKAN from other subtypes of NBIA.

Aims & Objectives: Hemifacial spasm (HFS) is defined as involuntary unilateral contractions of facial muscles innervated by ipsilateral facial nerve. It starts as painless spasms of orbicularis muscle that may progress to involve all facial muscles. Its prevalence is 9.8 per 100,000 persons with an average age of onset of 44 years. HFS is usually considered a disease process of nerve root entry zone of facial nerve. Primary HFS is caused by vascular compression whereas secondary HFS is due to other causes of facial nerve damage. Here we present a case of 40 year old who presented with left hemifacial spasm.

Material & Methods: A 40-year-old woman presented with sudden onset twitching of the left eyelid and facial muscles for 1 week. She did not have pain or abnormal sensation in the left half of face. She was not a diabetic or hypertensive. Radiological investigation and findings Magnetic resonance imaging (MRI) brain without contrast revealed:

Vascular compression of the left hemi-medulla and left VII-VIII nerve complex close to root entry zone by a mildly tortuous medially deviated normal calibre left vertebral artery
Results: Diagnosis of primary HFS was made using T2-weighed MRI sequences and high resolution fast imaging employing thin section steady-state free precession MR images to display vascular compression of left hemi-medulla and VII-VIII nerve complex.

Conclusion: Neurovascular contact, which is the most common cause of HFS, is exquisitely demonstrated by MRI. Hence, it should be offered as the one-stop screening procedure in assessment of patients with hemifacial spasm.

Abstract ID: 627

ABSTRACT TITLE: SCALPEL SIGN IN DORSAL ARACHNOID WEB
PRESENTING AUTHOR: NADEZHDAALEMAO NIYARAH GLORIA
CO-AUTHOR: DR. SRIKAR C, DR. N. KUDVA, DR. KUMAR V

Learning Objectives: Arachnoid webs are intradural extramedullary bands of arachnoid tissue that can extend to the pial surface of the spinal cord, causing a focal dorsal indentation of the cord. The recognition of a reliable secondary imaging finding, the scalpel sign, can suggest the presence of an arachnoid web, allowing proper neurosurgical referral and potentially curative treatment.

Background: We describe a case of a 25 year old, male patient with history of low back pain and 1 year of intermittent midback pain and bilateral shoulder pain. He did not have numbness, and there was no history of trauma or spinal surgery.

Imaging findings: MR imaging demonstrated a focal anterior displacement of the upper thoracic spinal cord at the T3–T4 level with positive scalpel sign—suggestive of Dorsal thoracic arachnoid web.

Conclusion: Spinal arachnoid webs are rarely discussed entities. The extramedullary transverse band of arachnoid tissue tend to occur in the upper thoracic spine and extends to the dorsal surface of the spinal cord, resulting in mass effect and dorsal indentation, known as the scalpel sign because of its apparent resemblance to a scalpel on sagittal imaging. Failure to recognize this new radiographic sign may result in delay of treatment and worsening of spinal cord function. The presence of an arachnoid web in the dorsal subarachnoid space can result in progressive alterations of the CSF flow dynamics and eventually lead to syringomyelia. Early diagnosis with early intervention may greatly benefit patients.

Abstract ID: 629

ABSTRACT TITLE: ROLE OF MAGNETIC RESONANCE IMAGING IN BIOMETRIC EVALUATION OF CORPUS CALLOSUM IN HYPOXIC ISCHAEMIC ENCEPHALOPATHY PATIENTS - A HOSPITAL BASED CROSS SECTIONAL STUDY.
PRESENTING AUTHOR: NADEZHDAALEMAO NIYARAH GLORIA
CO-AUTHOR: DR. N. KUDVA, DR. KUMAR V

Purpose: To analyze the effect of Hypoxic ischaemic encephalopathy on corpus callosum (CC) morphometry by assessing various diameters of corpus callosum.

Materials and Methods: 54 patients with history of hypoxic ischaemic injury referred to the department of Radiodiagnosis were included in the study. All the patients were made to undergo MRI of the brain using Siemens Symphony Magnetom 1.5 Tesla scanner after taking informed consent for the same. The findings of MRI brain were assessed and analyzed.
Data analysis was done using percentages of different diagnosis and outcomes made by MRI brain, were computed and compiled.

**Results:** In present study male predominance is seen, 77.78 % patients were males and 22.22 % were females. In the present study, maximum numbers of patients were < 1 year of age (37.04 %). In the present study, we see that the isthmus was the most commonly affected portion of CC. Children who did not cry at birth, born with low birth weight, low APGAR score were positively correlated with severity of damage to CC.

**Conclusion:** From the present study it was noted that MRI is very efficient tool in evaluating morphometry of corpus callosum in hypoxic ischaemic encephalopathy. Its non-invasiveness and no exposure to ionizing radiation is an added advantage. However, experience and understanding of the principles are essential for accurate diagnosis.

**Abstract ID: 630**

**Abstract Title:** JOUBERT SYNDROME – A RARE CONDITION WITH VIRTUALLY DIAGNOSTIC IMAGING FEATURES

**Presenting Author:** SURAJ GOWDA

**Co-Author:** DR. KUMAR V, DR. N. KUDVA.

**Learning Objectives:** Joubert Syndrome (JS) is a rare neurological disorder with agenesis or hypoplasia of the cerebellar vermis and a distorted brain stem. The condition has certain specific imaging findings, which if identified can profoundly improve the prognosis of the patient. The following case depicts the specific imaging features that are virtually diagnostic of the condition.

**Background:** A 14-year-old male child, born to a non-consanguineously married couple with negative family history, presented with difficulty in breathing and episodes snoring during sleep for 3 years. On Physical examination, cyclo-rotational nystagmus, dysdiadochokinesia, past pointing, gait ataxia was noted suggestive of a cerebellar pathology.

**Imaging findings:** Axial T1 and T2 weighted MRI sections at the level of midbrain showed prominence and elongation of superior cerebellar peduncles ("Molar tooth sign"). No evidence of a cyst in the posterior fossa. Coronal T1 and T2 weighted MRI images showed dysplastic changes of the cerebellar vermis. In addition, the fourth ventricle had a “bat wing appearance”.

**Conclusion and Teaching points:** MRI is the main imaging and diagnostic tool for Joubert Syndrome. The main imaging findings are partial or complete absence of the vermis, hypoplastic cerebellar peduncles, and the fourth ventricular deformity. These abnormalities give rise to the classical "Molar tooth sign", “Bat wing shaped fourth ventricles” and a midline cleft between the cerebellar hemispheres. Awareness of the possibility of Joubert Syndrome in the right clinical setting aided by findings in an MRI study will lead to earlier diagnosis, appropriate counselling and proper rehabilitation.

**Abstract ID: 634**

**Abstract Title:** SPECTRUM OF NEUROIMAGING FINDINGS IN EPILESPY PATIENTS

**Presenting Author:** DHAWAL KAUSHAL

**Co-Author:** (None)

A seizure is a paroxysmal alteration in neurologic function resulting from abnormal excessive neuronal
electrical activity. The pathophysiologic basis of seizures is loss of normal regulation of neuronal excitation and inhibition, resulting in a state of relative hyperexcitability. Epilepsy was defined conceptually in 2005 which by definition is usually practically applied as having two unprovoked seizures >24 hours apart. The International League Against Epilepsy (ILAE) accepted recommendations of a task force altering the practical definition for special circumstances that do not meet the two unprovoked seizures criteria. The task force proposed that epilepsy be considered to be a disease of the brain defined by any of the following conditions: (1) At least two unprovoked (or reflex) seizures occurring >24 hours apart; (2) one unprovoked (or reflex) seizure and a probability of further seizures similar to the general recurrence risk (at least 60%) after two unprovoked seizures, occurring over the next 10 years; (3) diagnosis of an epilepsy syndrome.

Purpose: 1) To assess the role of magnetic resonance imaging in identifying the cause of epilepsy and categorizing the causes whether congenital, infectious, tumors, vascular malformation, neuro-cutaneous syndrome or any other. 2) To localize and characterize various intracranial lesions on conventional MR sequences.

Materials and Methods: All the patients referred to the department of radiology for evaluation of the Epilepsy were incorporated into the study as per the inclusion and exclusion criteria. A total of 100 patients were included. Routine MR Brain with contrast and seizure protocol were also done where needed.

Results and Conclusion: Intractable epilepsy in paediatric and adult patients represent a challenging clinical population, although advances in neuroimaging continue to improve diagnosis and treatment in these patients. MR imaging plays an essential role in noninvasively localizing epileptogenic foci for possible surgical resection.

Abstract ID: 647

ABSTRACT TITLE: CT ANGIOGRAPHIC ASSESSMENT OF INTRACRANIAL ANEURYSMS
PRESENTING AUTHOR: GORLI DIVYA RANI
CO-AUTHOR: DR.V.KARUNA MD, ASST.PROFESSOR, DR.T.NAGESWARA RAO MD, PROFESSOR, DR.D.ANKAMMA RAO DMRDDNB PROFESSOR

Objective: To evaluate the intracranial aneurysms by CT angiography and decide the treatment options

Methods: A retrospective study of 25 cases who underwent CT COW angiography and diagnosed as having aneurysms was performed.

Results: Of 25 patients who were evaluated, under age group 20-60 years, 19 (76%) were females, 6 (24%) were males. Of the 19 cases present in females, 14 (56%) are present in anterior circulation, 5 (20%) are present in posterior circulation. Of the 6 cases present in males, 3 (12%) are present in anterior circulation, 3 (12%) are present in posterior circulation.

Conclusion: CT angiography of the circle of Willis is a useful technique for evaluation of suspected acute subarachnoid hemorrhage and intracranial aneurysm.

It provides anatomic display of intracranial aneurysms, allowing for planning of conventional angiography and surgical approach.

The choice of treatment depends upon the anatomical characteristic of the aneurysm, mainly the size, location, neck width, and the clinical condition of the patients.
The dome/neck ratio should be also measured, since it significantly affects the ability to completely coil the aneurysm.

**Abstract ID: 664**

**ABSTRACT TITLE**: NEUROIMAGING IN HIGH VOLTAGE ELECTRIC BURN PATIENT

**PRESENTING AUTHOR**: NEHA CHAUDHARY

**CO-AUTHOR**: DR TUSHAR KAPOOR

**Learning objective**: Neuroimaging findings in high voltage electric burn patient

**Background**: There are very few case reports of neuroimaging findings in high voltage electric burn patients. We hereby present a case of high voltage electric burn to head in a 12 year old male 1 month back followed by loss of consciousness for few hours, now presenting with mild headache. On physical and clinical examination there was a scalp defect in the bilateral parieto-occipital regions. Neurological status of the patient was within normal limits.

**Imaging finding**: On NCCT, there were finger like hypodensities involving subcortical region of bilateral parieto-occipital regions. MRI revealed finger like T2 & FLAIR hyperintesities involving subcortical white matter of bilateral posterior parieto-occipital lobes with swelling of the overlying gyri and obliteration of sulcal spaces. There was focal encephalomalacia in right posterior parietal lobe. The overlying pachymeninges of the involved areas appeared wavy and thickened and showed susceptibility artefacts on SWI. On post contrast studies, there was intense enhancement of the thickened pachymeninges along with peripherally enhancing epidural collections.

**Conclusion**: MR imaging is important for initial evaluation of electrical injuries involving the CNS and for follow-up. The findings include finger like white matter signal alteration on T2WI; strong band-like meningeal enhancement on post contrast study, indicating meningeal hyperemia & epidural collections. Chronic stages show encephalomalacic changes in the involved parenchyma. The mechanisms by which electricity causes injury include thermal pathway resulting into external and internal burns & electroporation pathway in which membrane proteins permanently change conformation and can no longer maintain transmembrane ion gradients, resulting in cell death.

**Abstract ID: 666**

**ABSTRACT TITLE**: THREE TESLA MRI EVALUATION OF INTRASPINAL EXTRAMEDULLARY NON-OSSEOUS NEOPLASTIC LESIONS WITH THEIR POST-SURGICAL AND HISTOPATHOLOGICAL CORRELATION

**PRESENTING AUTHOR**: TANUSRI DEBBARMA

**CO-AUTHOR**: (None)

Spinal cord tumors are wide-ranging in their histologic appearance and have an even wider range of clinical symptoms and prognostic features. They are relatively rare, but if left untreated, can cause serious neurological deficits and disability. A variety of imaging modalities are widely available. MR images are often used as the primary diagnostic imaging tool and are the preoperative study of choice. We studied the characteristics of MR images in patients with spinal cord tumors.

**Methods**: This was a descriptive study with 40 cases carried out in the Department of Radiodiagnosis and Imaging at AGMC and GBP hospital, Agartala. The patients with a suspected clinical history of Neurological...
symptoms were subjected to MRI scan. Acquired images were evaluated based on location into Extradural / Intradural, level of lesion (cervical, thoracic and lumbar), severity of cord compression, signal intensities of the neoplasms, vertebral involvement with cord edema. The patients were chosen for study by a process of purposive sampling and data were analyzed by descriptive analysis.

**Results**: The total number of patients was 30 and male-to female ratio was 25 : 5; the age ranged between 3 and 75 years. In our study, vertebral bone involvement was in more than half of the patients [18 cases (72%)], homogeneous enhancement after contrast injection was in 7 cases (28%), and the commonest association was cystic degeneration in 5 cases (20%).

**Interpretation and conclusion**: MRI is the definitive modality in assessing spinal soft tissue characterisation, especially in evaluation of spinal cord edema, intervertebral discs, subarachnoid space and ligaments involvement. MRI is very sensitive modality to detect, characterize and grade spinal tumor, the final diagnosis still relies on biopsy till date and MRI is the only modality to directly image the spinal cord.

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**Abstract ID:675**

**ABSTRACT TITLE**: SPECTRUM OF NEUROIMAGING FEATURES IN PATIENTS WITH COGNITIVE DECLINE

**PRESENTING AUTHOR**: SATYAPRAVEEN SAMANTULA

**CO-AUTHOR**: DR GS KEJRIWAL, DR K ANIL KUMAR, DR. RAGHU TEJA, DR. SANGRAM PANDA

**Objectives**: To learn about the imaging findings in the diagnosis & differential diagnosis of neurocognitive diseases. To understand about the imaging features and comorbidities of Alzheimer’s dementia.

**Details**: The frequent causes of altered mental status range from neurological and psychiatric conditions, as well as pharmacological, toxic, infectious, metabolic, or even traumatic disorders. Neuroimaging aids in the diagnosis of neurocognitive disorders by positively predicting the diagnosis rather than just excluding mimics of dementia. This is possible by visually assessing the extent, pattern and severity of brain volume loss and cerebrovascular pathology. Functional neuroimaging techniques like arterial spin labelling further helps in the differentials. Challenges in imaging of psychiatric disorders like Schizophrenia is subtle microscopic abnormalities involving functional brain networks. In clinical practice, diagnosis of Alzheimer’s disease remains probabilistic without pathological proofs, relying on clinical and neuropsychological examinations, CSF biomarkers, and brain imaging. Imaging features include symmetrically enlarged sulci in high convexity area, focal atrophic change in medial temporal lobe, volume loss of hippocampus & parahippocampal gyrus, enlargement of perihippocampal fissures, smooth periventricular halo of hyperintensity. Cerebral amyloid angiopathy (CAA) is a leading cause of hemorrhagic stroke and cognitive deterioration in the elderly. CAA can be recognised on imaging studies especially by MRI showing multiple foci of marked signal loss on GRE.

**Conclusion**: The growing role of neuroimaging and ever expanding imaging modalities especially in MRI can assist the clinicians in accurately predicting and planning the management of neurocognitive disorders.
Abstract ID: 677

**ABSTRACT TITLE**: IMAGING SPECTRUM IN EPILEPSY IN PEDIATRIC AGE GROUP ABOVE 5 YEARS.

**PRESENTING AUTHOR**: ROYCE DSA

**CO-AUTHOR**: DR. PARTHASARATHY KR, DR. CHANDAN GIRIYAPAPA, DR.KRISHNAPRIYA RAJ, DR VEERESH PURAD

**AIM**: To study the imaging spectrum of etiology of epilepsy in paediatric age group above 5 years

**Objectives**: The objectives of our study was to study the cross sectional MR imaging profile in children and to analyze the etiology of early onset epilepsy.

**Materials and Methods**: The study was performed from November 2016 to December 2017 on 46 children who presented with epilepsy to SSIMS &RC, DAVANGERE

They were evaluated clinically and underwent MRI of the brain using a 1.5 Tesla MRI scanner Signa GE, Children with any known contraindication to MRI were excluded.

**Results**: In our study 46 children who were diagnosed with epilepsy underwent MR imaging of brain. 36% of them had normal findings and 64% showed spectrum of abnormal findings with infections (26%), sequelae of old vascular insult 15%, Mesial temporal sclerosis (8%), phakomatoses (4%), arachnoid cyst (4%),congenital malformation (2%),tumour (2%),leukoencephalopathy (2%) and post traumatic (1%). In our study neuro-infections was found to be the most important etiological factor followed by mesial temporal sclerosis.

**Conclusion**: MRI plays a vital role in early diagnosis of the cause of epilepsy thus helping in planning early and appropriate treatment in paediatric age group.MRI is the modality of choice since there is excellent resolution and multiplanar imaging capability and no radiation hazard.

Abstract ID: 709

**ABSTRACT TITLE**: ROLE OF MRI IN ACUTE TRAUMATIC BRAIN INJURY

**PRESENTING AUTHOR**: SOWMIYA

**CO-AUTHOR**: DR. E.A. PARTHASARATHY

**Objectives**: To evaluate the role of MRI in acute traumatic brain injury

**Materials & Methods**: MR findings of 50 patients with acute traumatic brain injury were evaluated prospectively using 1.5 Tesla MR unit and compared with plain CT images obtained by 64-slice CT scanner. The structural imaging included T1W images (1.05 minutes), T2-weighted images (1.05 minutes), susceptibility-weighted images (4 minutes), diffusion weighted imaging (1 minute) and T2 fluid-attenuated inversion recovery (3.24 minutes) images. Total imaging time was 10 minutes.

**Results**: Of these 50 patients, findings were seen in both CT and MRI in 26 patients. Few additional findings were observed more clearly in MRI among these 26 patients. MRI detected lesions like diffuse axonal injury, contusional haemorrhages, subtle sub arachnoid hemorrhage in 13 patients in whom CT was normal. Fractures were better detected with CT. In 11 patients, both CT and MRI were normal.

**Conclusion**: MRI is more sensitive than CT for many types of traumatic brain injuries and plays a complementary role. Using SWI, DWI and FLAIR sequences, contusions, microhaemorrhages or subtle SAH can easily be
detected. It is most indicated in the acute setting when a patient’s symptoms and/or neurologic exam are not explained by CT findings.

**Abstract ID: 710**

**ABSTRACT TITLE**: A RARE CASE OF AICARDI SYNDROME  
**PRESENTING AUTHOR**: ANANTH DHOTRE  
**CO-AUTHOR**: (None)

**Objectives:**  
- AICARDI SYNDROME is a rare severe developmental disorder with ocular, brain and spine involvement.  
- This study highlights the findings related to the brain and ocular imaging findings.

**Clinical Background:**  
- 7 day old female child was referred for evaluation of left sided microphthalmia and focal seizures  
- The antenatal and delivery was uneventful.  
- The neurological examination did not show pathological finding.  
- Routine blood and urine examination did not reveal any abnormality.  
- Fundoscopy: left side microphthalmia and chorioretinal lacunae.

**Description of Findings:**  
- Corpus callosum agenesis  
- High riding 3rd ventricle communicating with interhemispheric fissure.  
- Colpocephaly  
- Multiple cysts in the occipital horns and trigone of the lateral ventricles.  
- Dandy walker variant.  
- Left side microphthalmia

**Diagnosis**: Aicardi Syndrome

**Discussion**: Aicardi syndrome, one of the congenital syndromes associated with Agenesis of Corpus Callosum, was initially described by Aicardi et al in 1965 1 and is characterized by agenesis of the corpus callosum, chorioretinopathy and infantile spasms.2-4  

The mutation likely occurs as a dominant X-linked inheritance with early lethality, resulting in spontaneous abortion of male fetuses. All cases have been reported in girls, with the exception of 2 XXY boys.5  

In addition to Agenesis of Corpus Callosum, additional neurologic findings are commonly seen on MRI, including cortical dysplasia, periventricular gray matter heterotopias, cystic formations, vermian anomalies, and choroid plexus papillomas.6  

Can manifest with additional clinical findings of mental retardation, costovertebral defects in the spine and ribs, and eye findings of colobomata and microphthalmia.
Abstract ID: 726

ABSTRACT TITLE: CORRELATION OF PLAIN RADIOGRAPHY AND MRI SPINE EVALUATION IN SPINAL TUBERCULOSIS

PRESENTING AUTHOR: KARTIKEY TYAGI

CO-AUTHOR: DR. SURESH A. (ASSO. PROF)

Title of The Topic: Correlation of plain radiography and MRI spine evaluation in spinal tuberculosis

Authors: Dr. Kartikey Tyagi (Post graduate), Dr. Suresh A. (Asso. Prof)

Type: Original scientific research

Purpose: To evaluate the sensitivity, specificity and correlational efficiency of plain radiography with MRI findings in clinically suspected/proven cases of spinal tuberculosis.

Material and Methods: Ethnical permission was given by the VIMS &RC ethics committee, and informed written consent was obtained from 30 patients.

All patients are subjected to-

- For cervical and thoracolumbar spine antero-posterior and lateral projections X-ray images are taken for evaluation of spine.
- Whole body MRI using Philips Achieva 1.5 tesla MRI scanner. The following sequences will be acquired.
  - T1W and T2W-sagittal and axial, T1W and T2W- sagittal and axial post gadolinium contrast, ADC and diffusion weighted sequences.

Type of study: Cross-sectional study. Statistical analysis: Done by sensitivity and specificity test along with positive predictive and negative predictive values.

Results: On X-Ray-A reduction in vertebral height of the involved vertebra is seen with the irregularity of the anterosuperior end plate and paraspinal collections are seen in advanced stages.

On MRI-Spondylodiscitis of the vertebral segment with subligamentus spread of infection and psoas abscess may be seen in advanced stages. The mean ADC value of tubercular vertebrae was found out to be 1.47 ± 0.25 x 10-3 mm2/sec, of adjacent soft tissue collection (abscess) was 1.94 ± 0.30 x 10-3 mm2/sec and normal vertebrae was 0.48 ± 0.16 x 10-3 mm2/sec.

Conclusion: Magnetic resonance imaging (MRI) is the imaging modality of choice for Pott’s spine and is more sensitive than X-ray, and is the best in identifying the different patterns, the soft tissue involvement, associated complications and cord abnormalities.
Abstract ID: 730

**ABSTRACT TITLE**: COMPARISON OF TRIGEMINAL NEURALGIA ON IMAGING WITH CLINICAL FEATURES. CAN DIFFUSION TENSOR IMAGING DIFFERENTIATE REFRACTORY FROM NON-REFRACTORY CASES?

**PRESENTING AUTHOR**: SHALINI AGARWAL

**CO-AUTHOR**: AMBIKA GUPTA SUMAN BISLA

**Introduction**: Diagnosis of Trigeminal neuralgia is mainly clinical, however imaging is performed to rule out secondary causes. With the advent of treatment options alcohol injection, botox injection, etc, imaging is becoming even more important. Aim of our study was to analyze the scope of MRI in the diagnosis of trigeminal neuralgia.

**Material and Methods**: Over a period of 01 year all clinically diagnosed patients of trigeminal neuralgia were included. They were all initially treated with a dosage of 100mg twice a day of carbamazepine and followed up. MRI) was performed to analyze the site of nerve involvement, whether, central or peripheral. The dosage of the drug was increased as per requirement. Beyond 400mg twice a day, either the dosage was further increased or second line of drugs, alcohol injection, and surgery were instituted. These patients considered refractory cases. Follow up was performed at 06 months or till the resolution of symptoms.

**Results**: Seventeen patients were studied. The age range was 28- 95 years (Mean 55 yrs). Nine patients were non-refractory, while 08 were refractory. The MRI findings were consistent with the clinical picture in all patients except 02. In the refractory category two patients responded to further treatment by second line of drugs, alcohol injection, and surgery were instituted. These patients considered refractory cases. Follow up was performed at 06 months or till the resolution of symptoms.

**Conclusion**: Magnetic resonance imaging is the modality of choice for the diagnosis of trigeminal neuralgia. It has the potential to differentiate refractory from non-refractory patients. The authors could not find any study comparing clinical features with imaging features. Further studies are needed firmly establish the role of MRI in the diagnosis of trigeminal neuralgia.

Abstract ID: 733

**ABSTRACT TITLE**: ALEXANDER DISEASE E POSTER

**PRESENTING AUTHOR**: RAJESH KUMAR SINGH

**CO-AUTHOR**: DR. VISHAL JAIN DR. ANURANJANA MINJ

**Introduction**: Alexander disease (AD), also known as fibrinoid leukodystrophy, is a rare progressive neurodegenerative disorder occurring primarily in infants and children. The most distinctive histologic feature of AD is presence of countless Rosenthal fibres throughout the CNS. The genetic basis is presence of mutations in glial fibrillary acidic protein gene located on chromosome 17q21.

**Clinical presentation**: Young child with macrocephaly, mental retardation, seizures and delayed milestones.

**Diagnosis**: The diagnosis of Alexander disease is made on the basis of a combination of macrocephaly, clinical findings, and imaging findings, but definite diagnosis requires brain biopsy.

**Conclusion**: Alexander disease should be kept in mind in a young macrocephalic child with developmental delay and MRI throws the light for the diagnosis.
Abstract ID:741

**ABSTRACT TITLE**: A RARE CASE OF GIANT TUMEFACTIVE PERIVASCULAR SPACE

**PRESENTING AUTHOR**: SHREYAS KP

**CO-AUTHOR**: DR GANESH

**Learning Objectives**: Virchow-Robin spaces (VRS) or the perivascular spaces are small pial lined, cystic structures in the brain and are filled with interstitial fluid. They are normal spaces, identified in all age groups and are common in places where the penetrating vessels enter into the substance of brain. Occasionally, these spaces can be enlarged and are termed as giant tumefactive perivascular spaces (GTPVS). When enlarged, these cysts are commonly confused with other lesions such as cystic neoplasms. The pathognomonic imaging appearance helps in the diagnosis of this condition in most instances and invasive management is unwarranted.

**Background**: A 42 Year Old Female Patient Presented With Chief Complaints Of Headache And Left Sided Weakness Since One Year. Imaging Findings-A Large Oval Lesion In The Thalamus On The Right Side Extending Into The Midbrain And Causing Mild Mass Effect.

**Conclusion**: The appearance of the normal PVS (perivascular space) in the MRI of the brain is typical. They are round or oval in shape, have smooth margins, are generally less than 2 mm (some authors considered less than 5 mm as normal) in diameter and are located along the path of penetrating blood vessels. Occasionally the PVS can expand and mimic a cystic neoplasm. Various names such as GTPVS, “cavernous dilatation” or Poirier’s Type IIIb “expanding lacunae” are given for these enlargements. Authors define GTPVS as PVS equal to or greater than 1.5 cm, occurring as either a solitary lesion or in clusters of multiple contiguous cysts. The most common site for the GTPVS is along the penetrating vessels of the mesencephalothalamic region. The differential diagnosis includes cystic neoplasms, parasitic cysts, ventricular diverticula, cystic infarction, non-neoplastic neuroepithelial cysts, and deposition disorders such as mucopolysaccharidosis.

Abstract ID:752

**ABSTRACT TITLE**: DENGUE ENCEPHALITIS: A RARE PRESENTATION OF DENGUE FEVER

**PRESENTING AUTHOR**: SHIKHA AWASTHI

**CO-AUTHOR**: DR PANKAJ SHARMA, DR SAMAR CHATTERJEE, DR U RAJESH

**Background**: Dengue fever is a disease caused by a RNA virus of flavivirus family. Approximately 2.5 billion people are at risk annually in endemic counties. As per WHO, India falls under endemic category A. Dengue virus is considered a non-neurotropic virus. However, increasing number of studies and case reports suggest otherwise. Recently, there have been a few case reports detailing radiological findings in dengue encephalitis.

**Aim**: The purpose of the report is to present a case of dengue encephalitis and discuss its radiological findings.

**Material & Methods**: This study was conducted at the Department of Radio-diagnosis, Armed Forces Medical College, Pune. The patient was a 34 years old male who presented to the emergency department with altered sensorium. This was preceded by a history of fever with chills and positive Dengue serology. He underwent an urgent CECT for evaluation.

**Results**: There was diffuse cerebral edema with hypodensity in bilateral thalami, midbrain, pons and medulla along with tonsillar herniation.
Conclusion: Dengue encephalitis is a rare complication of Dengue fever. One should have a high index of suspicion for this entity, for rapid clinical diagnosis and management.

Abstract ID: 754

ABSTRACT TITLE: CEREBRAL VENOUS THROMBOSIS ORAL PRESENTATION

PRESENTING AUTHOR: SANJAY AGRAWAL

CO-AUTHOR: DR. RAJESH KUMAR SINGH, DR. VISHAL KUMAR JAIN

Pt. J.N.M. Medical College & Dr. BRAM Hospital Raipur, Chhattisgarh Department of Radiodiagnosis

Topic: Evaluation of Value of C.T. attenuation (H.U. value) measured along the dural venous sinuses on non-contrast computed tomography scan in diagnosing cerebral venous thrombosis.

Aims and Objectives: The purpose of this study was to determine the cut-off HU value along the dural venous sinuses on NCCT scan in predicting cerebral venous thrombosis and its predictive value comparing to other available gold standard diagnostic modalities, which are potentially reversible with prompt diagnosis and appropriate medical management. To evaluate whether standardizing venous sinus Hounsfield Unit (H.U.) value measurements to those of the corresponding Internal Cerebral Artery would improve diagnostic accuracy.

Methods and Materials: Institutional review board approval was obtained and informed consent taken prior to commencing this study. Over a two-year period, we measured Hounsfield Units (HUs) in a region of interest within the dural venous sinus of thrombus when present as well as that of normal dural venous sinuses were measured. HU of thrombus was compared to that of normal vessels with and without standardisation to the average HU of the internal carotid arteries.

Results: A statistically significant relationship was noted. Both raw and standardised HU measurements were significantly higher in CVT compared to normal vessels. Both raw and standardised HUs are good predictors of CVT. A HU of ≥68+1.5 and a standardised measurement of ≥1.5 are associated with high probability of CVT on NCCT.

Conclusions: Superior sagittal sinus followed by transverse sinus was the most common blood vessels involved. Cerebral venous sinus HU measurements may help improve sensitivity and specificity of NCCT for venous sinus thrombosis and avoid potentially unnecessary follow-up examinations.

Abbreviations:
- NCCT Non-Contrast Computed Tomography
- CVT Cerebral Venous Thrombosis
- HU Hounsfield Unit
Abstract ID:773

Aims and Objectives: To identify the internal characterization of the intracranial pathologies (hemorrhage, calcifications, abnormal mineral deposits etc) using susceptibility weighted imaging.

Materials and methods

Inclusion criteria:
1. Patients with various neurological symptoms undergoing MRI.
2. Patients giving consent.

Exclusion criteria: Patients with metallic implants, pacemakers and claustrophobic patients. MR imaging was performed with a 3.0-T MR system by using an head coil and the following pulse sequences are performed for each patient: T1 W axials, T2 W axials, T2 FLAIR, DWI, T2* GRE, SWI. The parameters for SWI include flip angle of 15 degrees, TE1 20 msec, TR 28 msec and a resolution of 0.8x0.8x0.2 mm3.

Conclusion: Susceptibility-weighted imaging (SWI) is a magnetic resonance imaging (MRI) technique that enhances image contrast by using the susceptibility differences between tissues. It is created by combining both magnitude and phase in the gradient echo data.

Abnormal mineral deposition exists in many neurological diseases. SWI is sensitive for detecting all these abnormal accumulation of molecules containing minerals (including, for example, iron, copper, and calcium).

SWI is especially sensitive to deoxygenated blood and intracranial mineral deposition and, for that reason, has been applied to image various pathologies including intracranial hemorrhage, traumatic brain injury, stroke, neoplasm, and multiple sclerosis. Ischemic and hemorrhagic stroke can both be visualized by SWI.

In acute infarctions, SWI is more sensitive than T2* GRE for the detection of hemorrhage, a finding that would preclude the patient from undergoing thrombolysis.

Abstract ID:778

Adam Oliver Syndrome Learning Objective: To recognize the imaging characteristics of the syndrome. To look for the associated anomaly related to the syndrome.

Background: A two day old male baby presented with chief complaint of lethargy and poor feeding. The baby had brachydactyly and syndactyly (2nd and 3rd toe) of right foot with a scalp defect over the vertex and skin mottling all over the body.

Findings And Procedure: The patient was subjected to MRI(1.5T)
MRI: Diffusion restriction seen in left tempo-parieto-occipital region exhibiting T2/FLAIR hyperintensity in midbrain, pons, medulla, thalamus, basal ganglia predominantly on left side.

Large intraparenchymal periventricular deep white matter bleed in left parieto-occipital region with adjacent subarachnoid hemorrhage with a midline shift of 4.5 mm towards right side with intraventricular extension of bleed in bilateral occipital horn of lateral ventricle.

On MR Angiography: Abnormal arterio-venous communication in left posterior occipital parafalcine deep white matter suggestive of Arteriovenous malformation.

Conclusion: Clinically known case of ADAM OLIVER SYNDROME with areas of acute infarct in left tempo-parieto-occipital region, midbrain, pons, medulla, thalamus, basal ganglia predominantly on left side with bleed in left parieto-occipital region and adjacent subarachnoid hemorrhage with a midline shift towards right side and extension of bleed in bilateral occipital horn of lateral ventricle with abnormal arteriovenous communication in left posterior occipital parafalcine deep white matter suggestive of Arteriovenous malformation.

Abstract ID:785

ABSTRACT TITLE: ROLE OF DIFFUSION WEIGHTED MR IMAGING AND APPARENT DIFFUSION COEFFICIENT FOR THE EVALUATION OF INTRACRANIAL LESIONS

PRESENTING AUTHOR: ROHIT NANDAN

CO-AUTHOR: DR. LUV DUGAD, DR. TEJAS YERMAL

Aim: To study the appearance of various lesions of brain on DWI & ADC maps.

To compare the diffusion weighted imaging features of these lesions with ADC, T2 and FLAIR sequences to help differentiate among them.

Methods: A descriptive study was undertaken in 50 patients having intracranial lesions at B.T.G.H hospital, Gulbarga. In MR study of these patients, the DWI findings were noted and correlated with ADC, T2 and FLAIR images.

Results: 100% acute infarcts, abscesses, epidermoid, and medulloblastoma cases and 33.3% of Glioblastoma Multiforme cases showed true diffusion restriction. None of the chronic infarcts, low grade tumors, meningioma, demyelination and PRES showed diffusion restriction. All cases of arachnoid cysts showed low signal on DWI.

Conclusion: DWI is a highly sensitive technique in the detection and characterization of acute infarcts and detecting Hypoxic ischemic injury and showing the extent of involvement better than T2WI. DWI is a useful method of differentiating abscesses from necrotic or cystic neoplasms. Highly cellular tumors may show restricted diffusion. Arachnoid cysts can be differentiated from epidermoid cysts by the presence of low signal on DWI. PRES and demyelination do not show restricted diffusion.

Discussion: DWI provides better image contrast and a technique for mapping proton contrast reflecting the microvascular environment and is sensitive to early ischemic insult. DWI is performed with a pulse sequence capable of measuring water diffusion over short distances which is much slower in certain pathological conditions as compared with normal brain.
Abstract ID:787

ABSTRACT TITLE: ARTERIAL SPIN LABELING PERFUSION IN BRAIN TUMOURS AND STROKE

PRESENTING AUTHOR: GORLI DIVYA RANI

CO-AUTHOR: DR.T.NAGESWARA RAO, PROFESSOR DR. B.SESHULAKSHMI, PROFESSOR DR. V.KARUNA, ASSISTANT PROFESSOR DR.N.SWATHI, MD

Objectives:
1. To assess perfusion alterations in both acute and chronic phases of stroke.
2. To investigate the relationship between tumor blood-flow on basis of perfusion.
3. To detect radiation necrosis or tumour recurrence after chemoradiation of tumours.

Materials and methods:
The study was done on patients with ischemic stroke and brain tumours. They are screened using pseudo-continuous ASL (pCASL) on a clinical 1.5T MR system with a product transmit/receive head coil. After conventional MR imaging protocol (T1W, axial T2W/FLAIR/DWI/SWI and coronal T2W images & Post contrast), pCASL was performed with following parameters: scan mode FEPI, TR 4500ms, TE 25ms, ET 21, BW 816Hz/px, slice thickness 6mm & acquisition time 4.39min.

Conclusion: ASL Perfusion imaging is a totally noninvasive MR procedure that can be helpful as an complimentary imaging tool for evaluation of different types of brain tumors, even without quantification of perfusion parameters.

In ischemic stroke patients, potentially salvageable tissue by timely reperfusion (tissue at risk or ischemic penumbra) can be identified by perfusion imaging through perfusion-diffusion mismatch. Since ASL does not require exogenous contrast administration it should be a method of choice for assessment of brain perfusion in children, elderly patients, patients with impaired renal function, and all other where gadolinium contrast is contraindicated. ASL perfusion imaging should be a part of imaging protocol in patients after chemoirradiation, where radiation necrosis or tumor recurrence is likely to occur.

Abstract ID:789

ABSTRACT TITLE: ROLE OF RING VOLUME AND ADC VALUES IN EVALUATION OF RING ENHANCING LESIONS OF BRAIN

PRESENTING AUTHOR: USHA RANI(PGJR)

CO-AUTHOR: DR PURNIMA AGGARWAL(PROF), SUMAN KOCHHAR(PROF & HEAD), DR MONICA GUPTA(PROF) AND DR NISHIT SAWAL(ASTT PROF)

Purpose: Intracranial Ring Enhancing Lesions (IREL) are commonly encountered neuroimaging abnormalities. MRI is the modality to characterize these lesions. Our study is aimed at assessing usefulness of volume of ring and ADC values in diagnosis of IREL.

Materials and Methods: Study was conducted on 42 patients. T1W, T2W, Post-contrast-T1W and diffusion-weighted-imaging(DWI) was done. Volume of largest ring and pattern-of-ring enhancement on post-contrast images were noted and mean apparent diffusion coefficient(ADC) was calculated by drawing Region-Of-Interest(ROI) in core and periphery of lesions. Follow-up was done and diagnosis was confirmed by response-
Results: Out of the 42 patients, 20 had tuberculomas, 13-NCC, 6-metastases and 3-abscesses. All tuberculomas and NCC showed smooth ring-enhancement, all abscesses showed irregular ring-enhancement, whereas 83.3% of metastases (5/6) showed irregular ring-enhancement. Mean ADC values from core-and-periphery of lesions were 1.06X10^-3mm^2/s and 1.13X10^-3mm^2/s respectively in tuberculomas, 1.5X10^-3mm^2/s and 1.09X10^-3mm^2/s in NCC, 2.39X10^-3mm^2/s and 0.77X10^-3mm^2/s in metastases, 0.41X10^-3mm^2/s and 1.25X10^-3mm^2/s in abscesses. Mean volume of largest lesion was 4.64cc, 4.25cc, 25.3cc and 35.4cc respectively of above mentioned lesions.

Sensitivity of differentiating metastases from other lesions is 100% for ADC values with cut-off in core-and-periphery of lesions as ≥1.45X10^-3mm^2/s and ≤0.94X10^-3mm^2/s respectively, and is 83.3% for volume with cut-off of volume as ≥12.85cc. Sensitivity of differentiating tuberculoma from NCC is 92.31% and 38.4% with ADC cut-off as ≤1.72X10^-3mm^2/s and ≥1.31X10^-3mm^2/s respectively and is 100% with volume cut-off of ≥1.53cc. T1W, T2W and DWI images helped in differentiation of above-mentioned lesions and correlation was statistically significant.

Conclusion: Volume of ring and ADC values have better diagnostic accuracy in differentiation of ring lesions and can be used as an adjunct to routinely used spectroscopy.

Abstract ID: 791
ABSTRACT TITLE: MRI EVALUATION OF SPECTRUM OF WHITE MATTER DISEASES IN ADULT BRAIN
PRESENTING AUTHOR: S SUJITHA
CO-AUTHOR: DR.T.NAGESWARA RAO, PROFESSOR DR.T.RAJESWARA RAO, PROFESSOR DR.D.ANKAMMA RAO, PROFESSOR

Objectives: To analyze a practical approach of MRI findings and to study the distribution and nature in white matter diseases of adult brain.

Methods and materials: All the MRI sequences were obtained on 1.5 Tesla MRI machine ‘GE Signa’ 1.5T Signa Excite system (General electrical medical systems, Milwaukee, USA). A dedicated eight channel high resolution head coil was used.

Results and conclusion: Of the cases studied, the most common white matter diseases in our study population was found to be ADEM followed by PRES and then multiple sclerosis, osmotic demyelination and Diffuse axonal injury. Few cases of CADASIL, PML and tumefactive demyelination were identified. Two cases each of cerebellar tendon xanthomatosis and Marchiafava-Bignami disease were identified. MRI due to its excellent gray-white matter resolution is very sensitive in detecting subtle white matter changes.

Abstract ID: 801
ABSTRACT TITLE: ASSOCIATION BETWEEN FETAL POSTERIOR CEREBRAL ARTERY AND CEREBROVASCULAR ISCHEMIC DISEASE ON MRI BRAIN AND MR ANGIOGRAM OF CIRCLE OF WILLIS
PRESENTING AUTHOR: ANUSHAA D S
CO-AUTHOR: DR. ADITI JAIN

Title: Association Between Fetal Posterior Cerebral Artery And Cerebrovascular Ischemic Disease On MRI Brain And Mr Angiogramof Circle Of Willis.
Purpose: To study the association between incidence of small vessel ischemic changes and large vessel strokes in patients with fetal posterior cerebral artery (fPCA) using MRI Brain and MR Angiogram of Circle of Willis.

Materials and Methods: This was a retrospective study of 100 MR brain and MR angiograms showing fPCA performed in our institution from January 2017 to August 2018 to assess the association between fPCA (both complete and partial subtypes) and small vessel ischemic changes and large vessel strokes.

Results: Out of 100 patients with fetal PCA on MRI, 32 patients had no ischemic changes, 43 had small vessel ischemic changes and 52 had large vessel infarcts in any of the vascular territories. 32 showed infarcts in the middle cerebral artery, 11 in the posterior cerebral artery and 9 in anterior cerebral artery territories. Out of these 100 patients, there were 120 fPCA with 20 cases showing bilateralism. 109 fPCA were classified as complete and 11 as partial.

Conclusion: Our study showed increased incidence of MCA infarcts in patients with fPCA suggesting its inability for collateral formation in case of decreased flow through the internal carotid artery (ICA). Hence, the fPCA is one of the important risk factors in cerebrovascular ischemic changes according to our study.

Abstract ID: 836

ABSTRACT TITLE: "ROLE OF MRI IN CEREBRAL ISCHEMIC STROKE WITH MRA"

PRESENTING AUTHOR: M. BHAVANI SANKAR

CO-AUTHOR: DR. S. VENKATESWAR RAO, DR. B. VENKATESWARLU

Introduction: Cerebral ischemic stroke remains the leading cause of death and disability in many countries. Stroke (cerebrovascular disease) is defined as a sudden, non convulsive focal neurological deficit. Pathologic process is given an inclusive meaning—namely, occlusion of the lumen by embolus or thrombus, rupture of a vessel, an altered permeability of the vessel wall, or increased viscosity or other change in quality of blood flowing through the cerebral vessels.

Aims & Objectives: Role of MRI in detection of cerebral ischemic stroke, age and sex distribution of infarcts in an Indian population. To determine the location and the territory of the involved blood vessels. Incidence of negative cases (stroke mimics).

Materials and Methods: All patients referred to the Department of Radio-Diagnosis at ASRAMS, ELURU with clinically suspected stroke in a period of 2 years from 2016 to 2018. Total no of cases were 150 and scans were done on 1.5T SIEMENS MAGNETOM.

Results & Conclusion: 150 patients who were clinically suspected of cerebral ischemic stroke were subjected to MRI study of the brain. Among these 150 patients, 77.33% had infarcts, 10.33% had intracerebral hemorrhage, 5.31% patients had cerebrovenous thrombosis, 4% patients had subarachnoid hemorrhage and 3.03% patients had tumours. However 5 patients had normal scans and was excluded from our series. Predominant risk factors were hypertension and diabetes mellitus. Men were commonly affected. Youngest age group was 20 years and oldest was 89 years. MCA territory (L>R) was the commonest territory involved in patients with cerebral infarction.

The present study is a prospective study. The results obtained from our study are well comparable with other stroke surveys. Differences in pattern of stroke may be related to genetic, environmental or sociocultural factors and to differences in the control of risk factors.
Our study observed that diffusion weighted imaging add sensitivity and specificity to the standard MR evaluation.

Abstract ID:848

ABSTRACT TITLE: CAUDAL REGRESSION SYNDROME - A RARE CONGENITAL ANOMALY.
PRESENTING AUTHOR: SAURABH JINDAL
CO-AUTHOR: (None)

Learning objectives: To review the neuroradiological aspects in sacrococcygeal agenesis and delineate the associated systemic impairments.

Background: Caudal regression syndrome is a rare congenital abnormality resulting from a developmental failure of a segment of the vertebral column and spinal cord. It affects between 0.1 and 0.25 out of every 10,000 pregnancies. It occurs in up to 1% of pregnancies of diabetic mothers making maternal hyperglycemia as the most important teratogen. Prenatal ultrasound and fetal MRI can be used for antenatal diagnosis. It is associated with genital and pelvic malformations, bilateral renal dysplasia or aplasia, imperforate anus, cardiac anomalies, pulmonary hypoplasia.

Imaging findings: 4-year-old boy of a diabetic mother, on radiograph showed absent sacral & coccyx vertebrae with narrowed pelvis, hypoplastic lower limb bones and bilateral congenital vertical talus. MRI spine showed completely absent sacral & coccygeal vertebrae, blunt ending club shaped conus medullaris, double bundle arrangement of cauda equina nerve roots, lipomeningocele and absent left kidney.

Conclusions/teaching points: Caudal regression syndrome is a rare entity with a known association with maternal diabetes. It is characterized by sacrococcygeal dysgenesis associated with orthopaedic, genitourinary malformations. MRI is the imaging modality of choice and more likely to correlate with clinical course than findings on skeletal radiography. Early detection and prompt intervention is very important to correct or ameliorate the impairment and thus, to improve the prognosis.

Abstract ID:851

ABSTRACT TITLE: MOLAR TOOTH IN BRAIN WITH A DANDY WALKER VARIANT
PRESENTING AUTHOR: KUSUMA VEMPULURU
CO-AUTHOR: DR.PREM CHAND, DR. VN NARVEKAR, DR RAMA KRISHNA RAO, DR SUNEETHA

Objective: Joubert syndrome (JS) is a very rare, autosomal-recessive condition. It is characterised by agenesis of cerebellar vermis, abnormal eye movements with nystagmus, episodes of hyperpnea and apnea, delayed generalized motor development, retinal coloboma and dystrophy and, sometimes, multicystic kidney disease. The importance of recognizing JS is related to the outcome and its potential complications. Prenatal diagnosis by ultrasonography and antenatal magnetic resonance imaging (MRI) is also possible.

Imaging Findings: On 3T MRI Brain study the findings were dysplastic vermis with cleft noted involving the vermis and abnormally thickened superior cerebellar peduncles (“Molar Tooth Sign”). Elongated mid brain with narrowing at the level of isthmus. Bat wing appearance of fourth ventricle with Dandy-Walker variant (DwV).

Summary: Joubert Syndrome should be ruled out in all patients presenting with hypotonia, ataxia,
nystagmus, breathing abnormalities and developmental delay. Its neuroimaging hallmarks include molar tooth sign and batwing-shaped fourth ventricle. As JS is associated with multi-organ involvement, these patients should undergo a diagnostic protocol to assess systemic abnormalities. Extreme caution should be taken while administering drugs in these patients as they are prone to respiratory depression.

Abstract ID: 863

ABSTRACT TITLE: ROLE OF DIFFUSION TENSOR IMAGING TO IDENTIFY EXTENT OF NERVE FIBRE INJURY IN SPINAL CORD TRAUMA USING 3T MRI

PRESENTING AUTHOR: MANISH KUMAR

CO-AUTHOR: DR VIVEK PATRE (PROFESSOR)

Diffusion Tensor Imaging (DTI) is a recently developed MRI technique that can measure microscopic axonal organization in nervous system tissues. Our aim is to verify the usefulness of diffusion tensor imaging (DTI) and fiber tractography (FT) compared with routine magnetic resonance imaging (MRI) in patients with cervical spinal cord injury, and to clarify the relationship between motor and sensory impairments and DTI and FT parameters. Diffusion tensor imaging (DTI) is currently the only non-invasive in vivo assessment of white matter tract integrity. Development and application of this technique may improve our understanding of the nature and evaluation of structural damage in spinal cord disease. We performed routine MRI with DTI sequence on patients with spinal cord trauma for duration of 7 days since the trauma. Quantitative parameters of DTI, such as fractional anisotropy (FA) and apparent diffusion coefficient (ADC), were calculated for different vertebral level. Normal standardized Mean value ADC(1.06±0.09) and FA(0.68±0.05)×10-3 mm2/sec were taken. In patients with cervical cord trauma, abnormal vertebral levels detected on routine MRI were not correlated with clinical findings and DTI parameters, but FA of DTI was correlated with motor function, as were imaginary crossing fiber numbers and connection rates of FT. Quantitative DTI and FT analyses were useful in the evaluation of patients with spinal spinal cord trauma. The traumatised cervical spinal cord can be evaluated in more detail and more precisely using DTI and FT, for which findings are correlated with clinical findings such as neurological impairments.

Abstract ID: 868

ABSTRACT TITLE: SPECTRUM OF IMAGING FINDINGS IN VON HIPPEL LINDAU SYNDROME: A MULTI MODALITY PICTORIAL REVIEW

PRESENTING AUTHOR: ANINDITA BOSE

CO-AUTHOR: DR LALENDRA UPRETI, DR NATASHA GUPTA, DR ARUNIMA AGGARWAL, DR TEENA TRESA J., DR TAMANNA KHULLAR

Learning Objectives: The aim of this presentation is to illustrate the spectrum of imaging findings in VHL and to highlight the role of imaging in surveillance and screening of the disease in patients and relatives.

Background: Von Hippel Lindau (VHL) syndrome is a neurocutaneous complex characterized by involvement of multiple organs which harbor various tumors. Often times, these lesions are detected incidentally. Knowledge of the spectrum of imaging findings shall enable the radiologist to search for other lesions. This is very important in VHL syndrome as early detection and management of tumors has been proven to decrease the morbidity and prolong the longevity of these patients.

Imaging Findings: Patients presenting with diagnosis of VHL syndrome and the patients in which characteristic lesions were discovered during imaging of various organs, were examined in detail using various imaging techniques.
modalities like Ultrasound, CT, scan and MRI. The choice of modality and protocol of examination were optimized for detection and characterization of various lesions.

1. CNS lesions
   - Cerebellar hemangioblastoma
   - Spinal hemangioblastoma

2. Visceral lesions
   - Renal cyst
   - Renal cell carcinoma (clear cell variant)
   - Pancreatic cyst
   - Pancreatic neuroendocrine tumor
   - Phaeochromocytoma
   - Epididymal cyst.

**Conclusion:** Wide spectrum of lesions is observed in VHL syndrome involving CNS, kidneys, adrenals, pancreas, pelvis and epididymis which are often asymptomatic and detected incidentally. Thus, imaging has a central role in screening, diagnosis and surveillance of the patients with VHL syndrome. Knowledge of the imaging findings shall enable the radiologist to search for additional lesions in these patients.

**Abstract ID:** 878

**ABSTRACT TITLE:** CNS INFECTIONS – A PICTORIAL REPRESENTATION OF MR IMAGING OF MANIFESTATIONS OF CNS INFECTIONS

**PRESENTING AUTHOR:** SANJIVA N HULMANI

**CO-AUTHOR:** DR. MUTHU MAGESH

**Purpose:** To identify characteristic MR findings of different CNS infections for early management of patients.

**Material and methods:** Laboratory and HPE proven cases of CNS infections with radiological imaging evidence over past 5 years at Department of Radiodiagnosis and Imaging have been included.

**Introduction:** CNS infections can be broadly classified into congenital, encephalitis, cerebritis/abscess/ependymitis, granulomatous, fungal & parasitic and HIV infections.

Under congenital, TORCH is the most common; in which early CMV presents as germinal necrosis with subependymal cysts and dystrophic calcifications while toxoplasmosis as hydrocephalus, microcephaly and scattered parenchymal calcifications.

Herpes simplex presents as encephalitis and hemorrhagic encephalitis. Classically Japanese encephalitis involves bilateral thalami.

Complications of meningitis include hydrocephalus, sinus thrombosis, subdural or epidural empyema, parenchymal infections, ventriculitis/ependymitis.

Four stages of abscess formation include early cerebritis, late cerebritis, early encapsulation and late encapsulation. Pyogenic abscess presents as thin wall with rim enhancement while fungal as irregular walls with massive edema, intracavitatory projections and irregular ring enhancement and tuberculoma as conglomerated solid enhancing lesions with caseations.

**Cryptococcosis:** Gelatinous pseudocysts and cryptococcomas. Among parasitic infections, neurocysticercosis and cerebral hydatid are the most common.

**Neurocysticercosis:** Vesicular stage – no enhancement with eccentric scolex enhancement, colloidal vesicular stage – thick peripheral enhancement with enhancing marginal nodule, granular nodular stage - nodular or ring enhancement and nodular calcified stage - small calcified lesion. Cerebral Hydatid manifests as well-defined spherical non-enhancing cysts with typically no calcifications or surrounding edema.
Conclusion: Identification of typical MR imaging findings in various CNS infections guide approach in treatment.

Abstract ID: 886

ABSTRACT TITLE: ARNOLD CHIARI III MALFORMATION - RAREST OF CHIARI MALFORMATION
PRESENTING AUTHOR: ARAVIND REDDY TAMMA
CO-AUTHOR: (None)

Learning Objectives: This poster is intended to depict complete findings on cross sectional imaging in Arnold Chiari III malformation. This poster would educate the radiology residents about what findings are seen in Arnold Chiari III malformation and for the more experienced it would be a good review.

Background: Arnold Chiari III malformation is an extremely rare anomaly with poor prognosis. It is the most serious form of Chiari malformation.

Imaging findings: Complete spectrum of CT and MR imaging of Arnold Chiari III malformation

Conclusion and/or Teaching points: Classic imaging findings in Arnold Chiari III malformation described in literature, when learnt in an innovative way, give us a confidence in diagnosis. Imaging being so vast, with so many developments occurring at a very rapid pace and so much to remember, brushing up even well known topics and especially rare one's like Arnold Chiari III malformation depicted in this poster would help us in retaining it for a longer duration. Radiological imaging plays a vital role in the diagnosis.

Abstract ID: 893

ABSTRACT TITLE: A RARE CASE REPORT OF BILATERAL INTERNAL CAROTID ARTERY HYPOPLASIA IN POST PARTUM FEMALE: CLINICAL SPECTRUM AND ROLE OF VARIOUS MODALITIES IN DIAGNOSIS
PRESENTING AUTHOR: RAGHUKUL TILAK
CO-AUTHOR: NK KARDAM, KB GEHLOT, ROHIT YADAV

Background & aims & Objectives: Congenital hypoplasia of bilateral internal carotid arteries (ICAs) is an extremely rare anomaly with less than 25 reported cases in literature till date. However, after thorough review of literature no such case has been found to be reported in postpartum female. To the best of our knowledge, this is the first case with bilateral ICA hypoplasia presenting in postpartum female who developed infarct in bilateral frontal region and subarachnoid hemorrhage (SAH).

Material & Methods: At our institution, NECT Head, 3D CT Angio were done on 128 slice MDCT scanner (Siemens) and MRI, MR Venogram, MR Angio were done on a 1.5 tesla PHILIPS ACHIEVA system. Retrospective color doppler was also done on Simens Acuson Ultrasound System.

Case History: We present a case of a 30-year-old primigravida who developed seizures and short-term loss of consciousness just few minutes after normal vaginal delivery of a healthy male child. She had although complained about on and off severe headaches since last 10 days, for which no specific cause related treatment was initiated. Her baseline hematological work-up and vitals including blood pressure were within the normal limits during the antenatal and natal periods.
Result: On a postpartum three-dimensional (3D) computed tomography (CT) angiography, bilateral ICA hypoplasia was confirmed and the manifestations of infarcts were probably the consequence of altered hemodynamics of pregnancy.

Conclusion: In conclusion, a patient in her late pregnancy and postpartum period, having nonspecific cerebral symptoms or having suffered a cerebrovascular accident, should not only be evaluated for pregnancy or puerperium-related complications but also whenever possible a baseline screening with Doppler study of neck vessels and a noncontrast magnetic resonance imaging (MRI) angiography of neck and cerebral vessels should be performed to rule out congenital anomalies.

Abstract ID: 897

ABSTRACT TITLE: MARCHIAFAVA BIGNAMI DISEASE - TYPICAL AND ATYPICAL ETIOLOGIES
PRESENTING AUTHOR: EESHA RAJPUT
CO-AUTHOR: (None)

Marchiafava Bignami Disease (MBD) is a rare toxic demyelinating neuroetiology conventionally associated with chronic alcoholism. It can also be seen in patients with chronic malnutrition. The presentation is with neurocognitive manifestations.

Typical involvement of corpus callosum on MRI is what clinches the diagnosis. MRI with diffusion weighted imaging is imperative in early disease for timely intervention and prognostication. Lucid description of two cases is presented – with typical and atypical etiologies – followed by detailed discussion of the disorder.

Abstract ID: 902

ABSTRACT TITLE: CAUDAL REGRESSION SYNDROME
PRESENTING AUTHOR: RAJKANTA KARMAKAR
CO-AUTHOR: (None)

Learning Objectives: When a newborn presents with neurogenic bladder with narrow hip and hypoplastic gluteal muscles this rare entity should be kept in mind.

Background: Caudal regression syndrome is a rare complex disorder characterised by abnormal development of caudal end of spine. It is a rare entity. The syndrome is estimated to occur in 1 to 2.5 per 100000 newborns. Malformations vary from agenesis of coccyx to lumbosacral agenesis.

Imaging: In our case the patient is an adult having limited range of motion, narrow hip, unable to pass urine since birth:

Xray revealed sacral dysgenesis with hemivertebra MRI revealed sacral dysgenesis with truncated spinal cord which ends below the normal level with associated tethered cord.

Conclusion: Based on Xray and MR images and on clinical history, we have concluded that this is a case of caudal regression syndrome.
Diastematomyelia is a form of spinal dysraphism in which the spinal cord is divided into two columns by a cartilaginous or osseous spur. In isolated cases the skin is intact and the prognosis is favourable. When associated with other spinal anomalies such as spina bifida, kyphoscoliosis, butterfly vertebra or hemivertebra the prognosis is poor. Correct diagnosis and prediction of prognosis is possible by radiological methods.

A 25 year old female came for regular antenatal evaluation at 15 weeks of pregnancy. Ultrasonographic evaluation revealed a singleton fetus with biometry corresponding to gestational age.

Examination of fetal spine revealed widening of posterior vertebral elements at lower thoracic level with a longitudinal echogenic foci between them and absence of skin covering.

CT scan revealed a midline hyperdense foci at lower thoracic level with widening of posterior vertebral elements with absent skin covering confirming the diagnosis of diastematomyelia with open spina bifida.

Introduction: Leucodystrophy is defined as a group of genetic disorders which are characterized by the imperfect growth/development of the myelin sheath that covers nerve fibres in the brain. Metachromatic leucodystrophy (MLD), also called Arylsulfatase A deficiency, it is a lysosomal storage disease which is commonly listed in the family of leucodystrophies. It is caused by the lack of an important enzyme called arylsulfatase A which leads to breakdown of fatty substances (lipids) and causes lipids to build up in the brain, spinal cord and peripheral nerves. They are based on when the symptoms begin:

1. Late infantile MLD symptoms usually begin by ages 1 - 2 years.
2. Juvenile MLD symptoms usually begin between ages 3 - 10 years.
3. Adult (Late-stage juvenile MLD) symptoms may occur over age 16 years.

Case Discussion: Here we present a case of 2 years old female child presenting with complaints of deafness and unable to speak since birth. Patient was a term baby with immediate cry preset at the time of birth. Her vaccination is adequate upto her age. Her motor milestones were normal for her age. On MRI, multiple confluent T2/FLAIR hyperintensity was noted typically involving the bilateral periventricular white matter symmetrically with sparing of sub-cortical U fibres.

Diagnosis: On the basis of clinical and imaging findings, a provisional diagnosis of metachromatic leucodystrophy was made which was subsequently confirmed on biochemical analysis.

Conclusion: MLD is a severe disease that gets worse over time. Eventually people lose all muscle and mental function. Life span varies depending on what age the condition started, but the disease course usually runs 3-20 years.
Abstract ID: 941

**ABSTRACT TITLE**: EVALUATION OF VASCULAR MALFORMATIONS ON SWI IN PATIENTS PRESENTED WITH ACUTE STROKE IN 3T MRI

**PRESENTING AUTHOR**: NERELLA.KRISHNA TEJA

**CO-AUTHOR**: DR. VENKATESH.M, DR. V.N.NARVEKAR, DR. SUNEETHA.P, DR. RAMA KRISHNA RAO BARU

**Objective**: Significance of SWI sequence in detecting occult vascular lesions in patients with acute stroke.

**Materials & Methods**: A prospective study of 75 patients done in the department of Radio-diagnosis at Narayana medical college and hospital referred from Emergency medicine and Neurology. Patients who were having symptoms of stroke were advised MRI Brain Stroke Profile with SWAN, FLAIR, DWI & ADC done on 3T GE machine. Patients who are claustrophobic, unwilling, with metal/ cochlear implants/ pacemakers and pregnant women were excluded.

**Results**: Of 75 cases, 61 had microbleeds, 9 patients had cavernomas, venous angiomas in 4 patients and Arterio-venous malformation in 1 patient.

**Conclusion**: SWI is a MRI novel sequence with high sensitivity for blood and blood products. This technique can demonstrate occult cerebrovascular malformations by increasing the visibility of small vascular structures which may be undetectable by conventional MR sequences. Therefore we propose SWI in the imaging protocols which plays a major role in detection of occult vascular lesions which helps in further management of patients.

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Abstract ID: 942

**ABSTRACT TITLE**: “SIGNIFICANCE OF PHASE MASK IMAGE IN ACUTE STROKE PATIENTS”

**PRESENTING AUTHOR**: NERELLA.KRISHNA TEJA

**CO-AUTHOR**: DR. VENKATESH.M, DR. V N NARVEKAR, DR. SUNEETHA.P, DR. RAMA KRISHNA RAO.B.

**Objectives**: Significance of phase mask images in differentiation of haemorrhage and calcifications in acute stroke patients.

**Materials and Methods**: A prospective study of 100 patients is done in the Department of Radio-diagnosis at Narayana Medical College and hospital referred from emergency medicine and neurology departments.

Patients of all the age groups, both men and women who were having symptoms of stroke were advised MRI Brain Stroke Profile with FLAIR, DWI, ADC, SWAN and Phase mask sequences, done on 3T GE machine. Patients who are claustrophobic, unwilling, with metal/cochlear implants/pacemakers and pregnant women were excluded. HP filter is applied to remove the low spatial frequency components of the background field. This is usually done by using a 64 x 64 low pass filter divided into the original phase image to create an HP filter effect. Once we have a phase image with the background field changes removed, the door is open to differentiate one type of tissue from another, depending on their susceptibilities.

**Results**: Of 183 cases 60 patients had microbleeds, 10 patients had granulomas, 58 patients had arterial thrombus, 20 patients had falx calcifications, 20 patients had intra parenchymal haemorrhage, 15 patients had infarcts with haemorrhagic transformation.
Conclusion: Phase mask imaging plays a major role in differentiation of calcification from haemorrhage. Phase mask imaging acts as a supplement tool in acute stroke patient which guides further management.

Abstract ID:943

ABSTRACT TITLE : “3T MR VOLUMETRIC ANALYSIS OF HIPPOCAMPAL LOBE IN PEDIATRIC PATIENTS PRESENTING WITH PARTIAL SEIZURES BUT HAVING NO ABNORMAL MR SIGNAL INTENSITY.”

PRESENTING AUTHOR : NERELLA.KRISHNA TEJA

CO-AUTHOR : DR.V.N NARVEKAR, DR. VEDA RAJU, DR.RAMA KRISHNA RAO, DR.GURIVI REDDY

Institution : Department of RadioDiagnosis, Narayana Medical College, Nellore.

Aim: To determine the volume of hippocampal lobe and its diagnostic significance in patients with clinical history and no abnormal signal intensity in concordance with asymptomatic controls.

Materials and Methods: A retrospective study involving 60 children in the age group of 5-15 years in which 30 children are with clinical history of partial seizures but not showing any abnormal signal intensity on MR images are considered as subjects for the study 30 are asymptomatic children who are considered as controls for the study for determining the normal volumetric range.

Subjects are scanned in 3T GE MR scanner using a head coil, FSPGR sequence is done with slice thickness 2.5mm, and Hippocampal volumes are derived by manual quantification using GE Volumeshare.

Results: In the study the normal range of hippocampal volume is determined to be 2.6 +/- .35cc3 on right side and 2.5 +/- .35cc3 on left side.

Of the 30 children with positive clinical history 12 % of patients have shown mean of right hippocampal volume is 2.0 +/- .35 cc3 and left hippocampal volume is 2.1 +/- .35 cc3 which is decreased compared to the control population.

Conclusion: Volumetric analysis has found to be more sensitive with detection of volume loss in patients with no abnormal signal intensity.

In Concordance with visual inspection the volumetric range helps in accurate diagnosis of various conditions like Mesial Temporal Lobe epilepsy, Schizophrenia, Fragile X syndrome and post traumatic stress disorder.

Abstract ID:945

ABSTRACT TITLE : LOOPS IN THE BRAIN WHAT WE NEED TO KNOW.

PRESENTING AUTHOR : N NITYA

CO-AUTHOR : DR.M.VENKATESH, DR(MAJ.)T.SAI KRISHNA, DR.V.N.NARVEKAR, DR.RAMAKRISNA RAO BARU, DR.P.SUNEETHA.

Objective: Neurovascular conflict refers to a group of conditions where in an aberrant or a tortuous blood vessel causes nerve compression with subsequent related symptoms. Transition zone or root entry/exit zone lies between central and peripheral myelin and is prone to mechanical vulnerability. Hence it is of particular importance in the context of symptomatic neurovascular conflict.
Imaging findings: 3D FIESTA-C sequence was done for all suspected cases of neurovascular conflicts. Distance of the vascular loop and the nerve from the origin of brain stem is assessed. Grading of neurovascular conflicts done based on contact, deviation and atrophy of the involved nerve.

Summary: FIESTA-C is composed of a pair of true FISP acquisitions run back to back preceded by an automatic shimming procedure giving a high CSF signal, spatial resolution, decreased artefacts and is the current sequence of choice for visualising cranial nerves.

Involvement of root entry/exit zone of the cranial nerve by the vascular loop is of prognostic significance. Appropriate grading and accurate assessment of vascular loop contact with nerve is of utmost importance for surgical management.

Abstract ID:956
ABSTRACT TITLE : SPINAL DYSRAPHISM: A CASE SERIES
PRESENTING AUTHOR : SHAKTIPRADA NAYAK
CO-AUTHOR : DR. M. K. MITTAL

Learning Objectives: To study the developmental anatomy and spectrum of various spinal dysraphisms

Background: Spinal dysraphisms are one of the most difficult, complex and surprisingly common radiological presentations in day-to-day practice. We present a series of 10 cases of spinal dysraphism and discuss the developmental anatomy behind them.

Imaging findings: We discuss various types such as meningocele, meningomyelocele, lipomeningomyelocele, tethered cord, etc and present a diagnostic algorithm to diagnosing such cases.

Conclusion: Spinal dysraphisms are a confusing and difficult topic to understand. This case series highlights some of the common types and an approach to their diagnosis.

Abstract ID:959
ABSTRACT TITLE : A CASE OF TYPE I DIASTEMATOMYELIA WITH SPINAL EPIDERMOID CYST AND VERTEBRAL SEGMENTATION ABNORMALITIES
PRESENTING AUTHOR : SHAKTIPRADA NAYAK
CO-AUTHOR : DR. M.K. MITTAL

Learning objectives:
The purpose of this exhibit is:
1. To review the various types of Diastematomyelia and their associations
2. To discuss the differentials of a cystic lesion in the subdural space in spine
3. To explain the utility of MRI and particularly diffusion-weighted imaging (DWI) in the diagnosis

Background:
1. Types of Diastematomyelia
2. Relationship of various types of Diastematomyelia and vertebral segmentation abnormalities
3. Relationship of epidermoid cyst in spine with diastematomyelia and vertebral segmentation abnormalities

4. Review of imaging findings – Conventional MRI – Diffusion weighted imaging and FLAIR

**Imaging findings:** Levoscoliosis in upper thoracic spine Hemivertebrae at D3, D4, D10 and D11 levels with partial block vertebra at D10-D11 level Spina bifida occulta at D12-L1 level Diastematomyelia type I with thickened tethered cord Spinal epidermoid cyst extending from D10 to L3

**Conclusion:** We present a typical case of Type I Diastematomyelia with spinal Epidermoid cyst and vertebral segmentation abnormalities. Diastematomyelia coexisting with a spinal epidermoid cyst is rare.

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**Abstract ID:962**

**ABSTRACT TITLE:** A RARE CASE OF CHIARI 1.5 MALFORMATION WITH FRONTAL ENCEPHALOCELE

**PRESENTING AUTHOR:** REVATHY PRADEEP

**CO-AUTHOR:** (None)

**Purpose:** Chiari 1.5 is a variant of chiari 1 malformation which is a combination of cerebellar tonsillar herniation along with caudal herniation of brain stem through foramen magnum. Although chiari malformation with occipital encephalocele is common, we encountered a case of chiari 1.5 malformation with frontal encephalocele with syringomyelia and obstructive hydrocephalus. Chiari 1.5 malformation with frontal encephalocele is an uncommon finding - 1 in 40,000 live births. This presentation is an attempt to present a relatively lesser known entity in chiari spectrum which is important to recognize due to the differences in its management and prognosis.

**Materials and method:** A 6 days old infant presented with 2 episodes of seizure. On radiological imaging (CT and MRI) it was found to be chiari 1.5 malformation with frontal encephalocele which is a rare neural tube defect with syringomyelia and obstructive hydrocephalus.

**Result:** On CT Sagittal image frontal encephalocele with herniation of cerebellum and brain stem was observed. CT axial section showed crowding of posterior fossa with brain stem and cerebellar tonsil. Sagittal T2 weighted image revealed herniation of cerebellum and brain stem through the foramen magnum into the cervical spinal canal. Axial T2 image showed frontal encephalocele and obstructive hydrocephalus.

**Conclusion:** Although chiari malformation with occipital encephalocele is common, we encountered a case of chiari 1.5 malformation with frontal encephalocele with syringomyelia and obstructive hydrocephalus. And we conclude that MRI is the imaging modality of choice, sagittal image is the best plain for assessing the presence of chiari 1.5 malformation.

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**Abstract ID:975**

**ABSTRACT TITLE:** THE BIHEMISPHERIC AZYGOS ANTERIOR CEREBRAL ARTERY, IDENTIFICATION AND SIGNIFICANCE.

**PRESENTING AUTHOR:** N NITYA

**CO-AUTHOR:** DR.(MAJ)T.SAI KRISHNA

**Learning objectives:** Identification of bihemispheric variant of azygos anterior cerebral artery in CT/MR Angiography and it’s significance.
Background: Bihemispheric azygos anterior cerebral artery is a very rare anatomical variant of ACA. The presence of this anatomical variant and its potential associated anomalies proved a major consideration in its identification and reporting. A 42Y male patient presented with headache, vomitings and loss of consciousness was advised CT Brain in which there is acute SAH with intraventricular extension. Then he was advised CT angiogram in which a bihemispheric ACA was detected.

Imaging findings: On NECT brain, there was extensive intracerebral bleed in the anterior parasagittal frontal and pericallosal location and Acute SAH in bilateral frontal, parietal and temporal lobes with extension into bilateral lateral ventricles. On CT Angiogram, there was a small small saccular aneurysm arising from the distal A2 segment of left ACA.

Also, the left ACA was dominant and was seen traversing in the anterior interhemispheric groove. It was seen bifurcating into two branches, and was seen skirting through the rostral segment of corpus callosum and then continuing as the pericallosal artery. A1 segment of right ACA was hypoplastic and the A2 segment of left ACA was dominant, thus representing bihemispheric azygos ACA.

Conclusion: This rare anatomical variant of ACA should alert the surgeon while planning for surgery because clipping the dominant ACA will result in damage to both the frontal lobes and the clinician as the treatment options like DVT prophylaxis has the potential to cause more damage in the form of devastating bleed from the bihemispheric ACA since there is increased incidence of aneurysm formation and its rupture. It also has important implications for routine inpatient care and treatment of potential neurological and neurosurgical conditions.

Abstract ID: 1001

ABSTRACT TITLE: PERSISTENT HYPOGLOSSAL ARTERY - A CASE REPORT
PRESENTING AUTHOR: A DILEEP CHOWDARY
CO-AUTHOR: DR. JINI ABRAHAM, DR. ASHWIN M POLNAYA, DR. GANESH K

Learning Objectives: To review the imaging features of persistent hypoglossal artery (PHA), which is a rare embryonic carotid verteobasilar artery anastomosis and to understand the importance of imaging in detection of persistent carotid-verteobasilar anastomoses.

Background: Persistent hypoglossal artery is a rare anomaly. This finding is frequently associated with hypoplasia of the verteobasilar system. This anomaly when present may predispose the person to aneurysm formation, ischaemia in the posterior circulation and atherosclerotic disease of the intracranial vessels. Here is a rare case of right sided PHA as a sole supply to posterior circulation of brain with hypoplastic bilateral vertebral arteries in a 44 year old female patient. She presented to our hospital with complaints of headache and vomiting since 2 days. No other comorbidities present.

Imaging Findings: CT scan brain revealed intraparenchymal haemorrhage in right temporal lobe. She was further referred for a CT cerebral angiogram and Digital Subtraction Angiography (DSA) to rule out aneurysm / AVM. DSA revealed bilateral hypoplastic vertebral arteries. PHA noted on right side which is seen to form the basilar artery and appears to be arising from right cervical ICA at C1-C2 level. Right internal carotid artery and its intracranial branches are normal. No evidence of AVM / fistula / aneurysm was detected.

Conclusion: A persistent hypoglossal artery is one of the persistent carotid-verteobasilar anastomoses. It is second in frequency to the trigeminal artery. Associated hypoplasia of vertebral arteries and PCOM predisposes to a precarious posterior fossa circulation. For all functional purposes, PHA may be the only
dominant posterior fossa arterial supply. Careful understanding of the abnormal vasculature is important during aneurysm or skull-base surgery, carotid endarterectomy or endovascular intervention.

Abstract ID: 1024

**ABSTRACT TITLE**: ROLE OF 3 TESLA MAGNETIC RESONANCE IMAGING (MRI) IN THE EVALUATION OF SPINAL TRAUMA.

**PRESENTING AUTHOR**: V KUSUMA

**CO-AUTHOR**: DR. VENKATESH.M, DR. V N NARVEKAR, DR. SUNEETHA.P, DR. RAMA KRISHNA RAO.B.

**Materials and Methods**: A prospective study of 50 patients is done in the Department of Radio-diagnosis at Narayana Medical College and hospital referred from emergency medicine and neurology departments.

Patients of all the age groups, both men and women of all age groups with spinal trauma of various causes were advised MRI Spine and it was performed with axial and Sagittal T2 WI spin echo sequences, short tau inversion recovery sequences (STIR), done on 3T GE machine. Patients who are claustrophobic, unwilling, with metal/cochlear implants/pacemakers and pregnant women were excluded.

**Results**: Of 50 cases 26 patients had cervical, 10 patients had dorsal, 14 patients had lumbar spinal injury. The various types of spinal injuries noted, were vertebral fractures in 21 cases, cord edema in 12 cases, cord transaction in 3 cases, cord compression in 5 cases, ligament injuries in 9 cases noted. The various modes of injury were road traffic accidents (RTA), fall from a height, fall of a heavy object on spine, assault. In the male patients, commonest mode of injury to the cervical and dorsal spine was RTA, and to the lumbar spine was fall from a height. Among the female patients, RTA was the commonest mode of injury to the cervical spine, and fall from a height in case of dorsal and lumbar spine.

**Conclusion**: Magnetic Resonance Imaging is the only tool available for depicting the changes within the cord, ligaments and paraspinal soft tissues which helps in the management of the patients and in predicting the prognosis of recovery.

Abstract ID: 1025

**Title**: Role of SWI in evaluation of acute stroke.

**Topic**: Neuroradiology

**Author**: Dr. V. Kusuma

**Co-Authors**: Dr. Venkatesh, Dr. Narvekar, Dr. Sunitha, Dr. Ramakrishna Rao.

**Objective**: The aim of this work was to evaluate the importance of susceptibility weighted imaging in diagnosis of cerebro-vascular strokes.

**Patients and Methods**: The study was conducted upon 75 patients presenting with symptoms of cerebro-vascular stroke within 72 h after the onset of the neurological symptoms. All patients were subjected to MRI of the brain including susceptibility weighted MRI.

**Results**: Out of 75 patients, 40 patients had acute infarctions with thrombus, 14 patients had acute infarcts with haemorrhagic transformation, 6 patients had venous infarctions with haemorrhagic transformation.
and 15 patients had intraparenchymal haemorrhage. Management was planned for each group according to the presence or absence of hemorrhagic transformation of infarction.

Conclusions: Deoxygenated blood, hemosiderin, ferritin, and calcium have different susceptibility from their surrounding structures. Therefore susceptibility-weighted imaging offers valuable information in the detection of hemorrhages, thrombosed arteries, veins or sinuses alarming the treating physician about the devastating complication of anticoagulant therapies. Thus SWI should be a routine sequence in the protocol of stroke imaging.

Abstract ID:1029

ABSTRACT TITLE: ADDED VALUE OF SUSCEPTIBILITY-WEIGHTED IMAGING IN ACUTE STROKE

PRESENTING AUTHOR: KASTURI LAKSHMI NAGA SINDHUJA

CO-AUTHOR: DR.M.VENKATESH, DR.V.N.NARVEKAR, DR.P.SUNEETHA, DR.RAMA KRISHNA RAO BARU

Objectives:

• Purpose of this study is to evaluate the role of Susceptibility weighted imaging in detection of Acute stroke.

• Diffusion-Susceptibility mismatch in patients with massive stroke.

Materials and Methods: A prospective study of 120 patients is done in the Department of Radio-diagnosis at Narayana Medical College and hospital referred from general medicine and neurology departments.

Patients of all the age groups, both men and women who were having symptoms of stroke were advised MRI Brain Stroke Profile with FLAIR, DWI, ADC, SWAN and Phase mask sequences, done on 3T GE machine(DISCOVERY MR750w).

Our study excluded patients with claustrophobia, metallic foreign bodies and < 16 years.

Results: Of 120 cases 78 patients had microbleeds, 52 patients had arterial thrombus, 43 patients had venous infarcts and 76 patients had haemorrhages. 42 had Diffusion-Susceptibility mismatch.

Conclusion:

• Susceptibility weighted imaging detects early hemorrhagic transformation within an infarct, intra arterial thrombus, cerebral venous thrombosis and microbleeds.

• Diffusion-Susceptibility mismatch is a predictor of good response to treatment in stroke patients.

• Susceptibility weighted imaging should be routinely included in stroke protocol which plays a major role in further management and assessing the prognosis.
**Abstract ID: 1037**

**ABSTRACT TITLE**: ROLE OF MRI IN THE EVALUATION OF COMPRESSION MYELOPATHY

**PRESENTING AUTHOR**: NERBADYSWARI DEEP BAG

**CO-AUTHOR**: DR.SUPRAVA, DR. SUDIPTA, DR.MANTYU, DR.SIMRAN

**Background**: To evaluate spinal MRI features of various causes of compressive myelopathy, characterization of compressive lesions and to classify the lesions based on location into intramedullary/intradural/extradural compartments.

**Materials and methods**: A cross sectional study was done on 100 patients who were clinically suspected to have compressive myelopathy and they were subjected for MRI Study by 1.5 Tesla MRI Scanner.

**Results**: In our study of 100 cases of compressive myelopathy, we found various causes for compression. Among there are degenerative (48), trauma (22), infectious (12), secondary neoplasms (10) and primary neoplasms (8) causes.

**Conclusion**: MRI is very definitive, sensitive, accurate, non-invasive, though costly but very specific, radiation free modality for evaluation of compressive myelopathy.

**Keywords**: MRI, compressive myelopathy, degenerative, trauma, neoplasm, metastases

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**Abstract ID: 1058**

**ABSTRACT TITLE**: “MAGNETIC RESONANCE IMAGING IN EVALUATION OF SPINAL INFECTIONS.”

**PRESENTING AUTHOR**: VULCHI RANJITH KUMAR

**CO-AUTHOR**: DR.VN NARVEKAR, DR. RAMA KRISHNA RAO. BARU, DR. VEDA RAJU, DR.SUNEETHA.

**Institution**: Narayana medical college and hospital.

**Introduction Design**: Hospital based prospective study.

**Methodology**: All patients referred to the department of Radiodiagnosis, aged between 20-80 years irrespective of sex.

**Inclusion Criteria**: The study includes Patients with suspected clinical spinal infections. Patients with chronic non-resolving low backache.

**Exclusion Criteria**: The study will exclude: Patient having history of claustrophobia. Patient having history of metallic implants insertion, cardiac pacemakers and metallic foreign body in situ.

**Patients with known primary malignancies causing low back ache**

**Technique**: All patients presenting with symptoms of spinal infection referred from emergency, outpatient or inpatient department will be studied on 3.0 Tesla GE MRI scanner (DISCOVERY MR750w). The following sequences will be performed, sagittal T1 and T2 weighted images, axial T2 weighted images and STIR images and Gadolinum T1 weighted images are acquired whenever necessary with approx acquisition time of 15 to 20 minutes.
Objectives of the Study:

(i) Evaluation of various spectrum of spinal infections.
(ii) Role of MRI in assessment and diagnosis of different types of spinal infection.
(iii) Characteristic MRI findings in various spinal infections.

Summary: Spinal infections are increasing in incidence and is a common cause of debility in high risk patients and carry high morbidity and mortality rates when they are misdiagnosed. Spinal infections may involve the bony structures (osteomyelitis), disc space (diskitis), epidural, subdural, subarachnoid spaces and the cord itself. Early diagnosis of spinal infections will decrease the morbidity in many cases.

MRI is the imaging modality of choice for diagnosis of spinal infections and is the gold standard for disc space infections and osteomyelitis because of its advantages which includes: multiplanar capabilities, soft tissue contrast resolution, direct visualization of disc, spinal cord and absence of ionizing radiation.

Abstract ID: 1065

ABSTRACT TITLE: “BILATERAL THALAMIC DOUGHNUT - A CHARACTERISTIC FEATURE OF DENGUE ENCEPHALITIS.”

PRESENTING AUTHOR: VULCHI RANJITH KUMAR
CO-AUTHOR: DR.RAMA KRISHNA RAO BARU, DR.VN NARVEKAR, DR.VEDA RAJU, DR.P.SUNEETHA

Institution: Narayana medical college and hospital, Nellore.

Introduction: Dengue encephalopathy is a well-recognized and common entity, the incidence ranging from 0.5 to 6.2 %. The possible mechanisms are liver failure (hepatic encephalopathy), cerebral hypoperfusion (shock), cerebral edema (vascular leak), deranged electrolytes, and intracranial bleeding due to thrombocytopenia or coagulopathy, which is secondary to hepatic failure.

Imaging Findings: On 3T MRI Brain study the findings were hypointensity in bilateral thalami in T1W images and hyperintensity in bilateral thalami in T2W images. Intense diffusion restriction at the centre of bilateral thalami in DW and ADC images with hemorrhages in the centre of bilateral thalami in SWI

Summary: Diagnosis of dengue encephalitis was made based on: - Presence of fever;

Acute signs of cerebral involvement such as altered consciousness or personality and/or seizures and/or focal neurological signs; Reactive IgM dengue antibody, NS1 antigen, or positive dengue polymerase chain reaction in serum and/or CSF; Exclusion of other causes of viral encephalitis and encephalopathy.

Thalamic involvement has been described in dengue encephalitis; however, to the best of our knowledge, this kind of appearance has not been reported in literature. Other imaging findings include involvement of brainstem, cerebellum, and medial temporal lobes. We propose to name the MRI finding in dengue encephalitis as “double doughnut sign.”
Abstract ID:1072

ABSTRACT TITLE: DIFFUSION TENSOR IMAGING IN INTRACTABLE UNILATERAL MESIAL TEMPORAL LOBE EPILEPSY

PRESENTING AUTHOR: KIRUTHIKA
CO-AUTHOR: DR.SATHYAN, DR.SUHASINI, DR.PREM CHAND

Aims and objectives: To confirm the efficacy of Diffusion Tensor Imaging (DTI) parameters in the diagnosis of unilateral mesial temporal lobe sclerosis and to know the extratemporal and contralateral hemisphere involvement in intractable MTS.

Material and Methods: We evaluated 25 patients with intractable unilateral MTLS by using DTI, MRI, clinical and EEG parameters. Out of these 12 were Right sided and 13 were left sided MTLS. We compared the mean diffusivity (MD) and fractional anisotropy (FA) values in hippocampus, parahippocampus, fimbriae, fornix, middle cerebellar peduncle, corpus callosum, inferior fronto-occipital fasciculus, superior longitudinal fasciculus, anterior and posterior cingulum, thalamus, internal capsule, caudate and lentiform nucleus.

Results: There was significant decrease in FA values with increased mean diffusivity in ipsilateral hippocampus, parahippocampus, fimbriae, fornix, inferior fronto-occipital fasciculus and posterior cingulated, contralateral hippocampus, parahippocampal white matter, fimbriae, fornix, middle cerebellar peduncle, corpus callosum, uncinate fasciculus, inferior fronto-occipital fasciculus, superior longitudinal fasciculus, and cingulum.

Conclusion: DTI shows microstructural abnormalities beyond the involved hippocampus extending to ipsilateral and contralateral major white matter tracts that is not apparent on conventional MRI. These observations shows epileptogenic focus and spread in the neural network, which may be responsible for secondary generalization.

Clinical relevance: Diffusion Tensor Imaging (DTI) is a non-invasive MRI technique which provides insight into the white matter microstructure. In this study, DTI has shown to be highly sensitive in detecting the involvement of extratemporal and contralateral hemisphere in unilateral MTLS patients.

Abstract ID:1080

ABSTRACT TITLE: MRI IMAGING IN SPINAL DYSRAPHISMS

PRESENTING AUTHOR: PRAJEETH RAO
CO-AUTHOR: DR. MUTHU MAGESH, DR. SMITI SRIPATHI.

Learning objectives: To illustrate the common MRI findings of various spinal dysraphisms.

Background: Spectrum of congenital anomalies of spinal cord with variety of clinical manifestations. MRI - Modality of choice as reduced incidence of delayed diagnosis and disclosed large number of asymptomatic dysraphics Classified into open and closed dysraphisms on the presence/absence of the overlying skin.

Imaging findings: 1) Myelocele: neural placode flush with skin surface and no expansion of adjacent subarachnoid space.

2) Myelomeningocele: neural placode extends beyond the skin surface with enlargement of adjacent subarachnoid space.

3) Lipomyelocele: placode-lipoma is flush with skin surface, no expansion of the adjacent subarachnoid space.
4) Lipomyelomeningocele: placode- lipoma extends beyond skin surface with enlargement of adjacent subarachnoid space

5) Meningocele: herniation of CSF filled sac lined by dura and arachnoid mater.

6) Intradural lipoma: Midline lipoma located in the groove of unopposed neural placode in its dorsal surface within an intact dural sac.

7) Dorsal dermal sinus: epithelial lined tract from skin into subarachnoid space/ cord.

8) Tight filum terminale: Thick filum terminale (>2 mm) and a low lying conus medullaris.

9) Myelocystocele: herniation of a dilated terminal central canal forming terminal syringohydromyelia through a posterior vertebral defect into an expanded CSF filled dural sheath.

10) Terminal ventricle: small, ependyma lined cavity within conus medullaris.

11) Diastomatomyelia: split cords with two hemicords with two dural sacs separated by bone or cartilage (type I) or both hemicords lying within same dural sac (type II).

Conclusion and teaching points: Early detection and complete correction can significantly reduce the neurological disability associated with spinal dysraphism.

Abstract ID: 1109

ABSTRACT TITLE: A MIXED CLINICAL SCENARIO: JAPANESE ENCEPHALITIS AND NEUROCYSTICERCOSIS

PRESENTING AUTHOR: ANUJA KAPADNIS

CO-AUTHOR: DR. SHILPA SANKHE, ASSOCIATE PROFESSOR

Background: Japanese encephalitis (JE) is one of the viral encephalitis, endemic in eastern parts of Uttar Pradesh, India.

It is caused by the JE virus, a single-stranded RNA flavivirus. Domestic pigs and wild birds are reservoirs for the virus.

The most common differentials include other viral encephalitides like arboviral diseases, dengue fever, enteroviral infections and herpes simplex.

Final confirmation of the diagnosis is through detection of virus specific IgM antibodies through ELISA test done on serum or CSF.

Neurocysticercosis (NCC) is caused by pork tapeworm Taenia solium with seizure as a most common presentation.

Imaging (MRI) findings: In JE, T2W/FLAIR hyperintensity in the thalamus and substantia nigra bilaterally. Restricted diffusion is also noted in the affected parts of brain. Basal ganglia, pons, cerebellum, cerebral cortex and spinal cord may also be involved.

In NCC, there are well defined cystic T2 hyperintense, T1 hypointense lesions with blooming dot within s/o scolex. the lesion shows no enhancement or very faint peripheral enhancement. Subarachnoid spaces are the most common sites of involvement.
Teaching points: Both JE and NCC share some common epidemiological factors and in both conditions, pig acts as the intermediate carrier.

Studies show that the occurrence of JE and NCC in the same patient is not just a coincidence, albeit, NCC predisposes a person to JE infection.

Keeping in mind this fact may help radiologists & clinicians in proper and early management of the

Abstract ID:1111

ABSTRACT TITLE : INVIVO PROTON MR SPECTROSCOPY IN EVALUATION OF INTRACRANIAL CYSTIC LESIONS
PRESENTING AUTHOR : ARUN ALEX K
CO-AUTHOR : DR AMARNATH CHELLADURAI

Aim & Objective: To assess the usefulness of proton invivo spectroscopy in providing additional information regarding various intracranial cystic lesions including non-neoplastic, benign and malignant lesions.

Methods & Materials: This is a retrospective analytical, single institutional study which includes patients with intracranial cystic lesions who came to our department for MRI Brain study, with or without usage of contrast. We evaluated seventy patients (41 male & 29 female). 1.5 Tesla Siemens system was used with head first in the MRI with channel head coil fixed over their head. Basic sequences were employed. Invivo multivoxel proton spectroscopy study was conducted with voxel placed in cystic component of the lesions.

Results: Among the 70 patients, lactate peak is seen in abscesses (3). Arachnoid cyst (3), choroid fissural cyst (2), choroid plexus cyst (3), Of the 8 tuberculomas, 2 showed both lipid-lactate peaks, 3 - lipid peak, 3 - lactate peaks, & one cyst - no significant peak.

11 cysts studied were benign neoplastic cysts, 1 colloid cyst - mild reduction of NAA & increased lactate peak. Among 6 DNETs studied, one showed choline peak & fall in NAA peak & another showed mild rise in NAA level, 4 others showed no specific signals.

13 gliomas were studied, they showed choline peak & reduced NAA. 4 showed both lipid, lactate peaks, 2 showed only lipid & 3 showed lactate peaks.

Conclusion: MR Spectroscopy valuable input in intracranial lesion evaluation and diagnosis.

Abstract ID:1126

ABSTRACT TITLE : PITUITARY STALK INTERRUPTION SYNDROME (HYPOPLASTIC ANTERIOR PITUITARY GLAND WITH ABSENT INFUNDIBULUM AND ECTOPIC NEUROHYPOPHYSIS)
PRESENTING AUTHOR : G. DEEPTHI

Learning Objectives: Pituitary stalk interruption syndrome is a rare congenital abnormality of the pituitary that is responsible for anterior pituitary deficiency. It is characterized by a classic triad of interrupted pituitary stalk, absent or ectopic posterior pituitary, and anterior pituitary hypoplasia or aplasia.
Clinical presentation varies according to age. In adults it presents as short stature and anterior pituitary deficiency.

**Back Ground:** A 22-year-old young man presented with short stature and underdeveloped secondary sexual characters.

**Imaging Findings:** The normal hyperintense signal of neurohypophysis was not seen in posterior aspect of sella. The T1W coronal and sagittal images showed hyper intense focal area at inferior aspect of median eminence of hypothalamus – indicates ectopic neurohypophysis. Anterior pituitary gland was small in size with normal signal intensity and pituitary stalk was not seen.

**Conclusion:** We report the case of a young man who presented with short stature and ultimately was found to have a rare congenital syndrome called PSIS.

Despite the fact that PSIS is a rare disorder it should always be kept in the differential diagnosis of a patient presenting with short stature.

**Abstract ID:1150**

**ABSTRACT TITLE:** DYKE DAVIDOFF MASSON SYNDROME AS A RARE CAUSE OF EPILEPSY: A CASE REPORT WITH IMAGING FEATURES

**PRESENTING AUTHOR:** NAVNEET KAUR

**CO-AUTHOR:** DR. YASSER SHEIKH, DR. ANKIT PRABHAKAR, DR. ANIL SHARMA, DR. RAMANDEEP, DR. SUMIT SHARMA

Dyke-Davidoff-Masson Syndrome (DDMS) is a rare condition characterised by seizures, hemiparesis, mental retardation, speech disorders and facial asymmetry, secondary to a fetal or early childhood brain insult. The classical radiological features include cerebral hemiatrophy with ipsilateral osseous hypertrophy and hyperpneumatised sinuses. Here we describe the case of a 18-year old male who presented with recurrent seizures and a diagnosis of Dyke-Davidoff-Masson Syndrome was made on the basis of radiological features An 18-year old male presented for the first time to the hospital with complex partial seizures with secondary generalization. Computed Tomography (CT) of the brain revealed right frontoparietal encephalomalacia with associated volume loss. There was homolateral calvarial hypertrophy with hyperpneumatization of right frontal sinus and mastoid air cells.

Magnetic Resonance Imaging (MRI) of the brain revealed an area of encephalomalacia with surrounding gliosis and associated volume loss involving the right frontoparietal lobe and the superior temporal gyrus. There was reduction in volume of the ipsilateral cerebral peduncle with mild flattening of the right side of pons. Right sided basal ganglia appeared to be atrophic and there was dilatation of the ipsilateral lateral ventricle. There was homolateral cranial vault thickening with hyperpneumatization of the ipsilateral frontal sinus and mastoid air cells. A diagnosis of Dyke-Davidoff-Masson Syndrome was made on the basis of these typical radiological findings (CT+MRI). Shen et al8 described three MR imaging patterns seen in cerebral hemiatrophy:

- **Pattern I:** diffuse cortical and subcortical atrophy
- **Pattern II:** diffuse cortical atrophy with porencephalic cysts
- **Pattern III:** old infarction with gliosis in MCA territory

- **Our patient corresponds to pattern III on MRI.**
Abstract ID:1164

**ABSTRACT TITLE**: CEREBRAL VENOUS THROMBOSIS- DOES THE ENTIRE SPECTRUM GET IMAGED ON CROSS SECTIONAL IMAGING

**PRESENTING AUTHOR**: ADITI VARMA

**CO-AUTHOR**: R S NEGI

**Purpose**: CVT is an important cause of stroke especially in young and at high altitudes. It has a wide spectrum of presentation. CVT spectrum on cross sectional imaging was studied along with role of MRI in picking up subtle findings.

**Materials and Methods**: 30 patients from various age groups with history and symptomatology suggestive of CVT were imaged using MRI +/-MRV and/or CT. Sensitivity and specificity of MRI in diagnosis of CVT was calculated.

**Results**: Spectrum of CVT is wide. CT is insufficient to diagnose all types of CVT. MRI is essential to pick up subtle findings. MR Venography is useful but not conclusive.

**Conclusion**: MRI is useful for imaging the wide spectrum of CVT, however pitfalls are present, and it is not always sufficiently conclusive. Further angiographic evaluation has scope in diagnosis of small cortical venous thrombosis as well as in interventional treatment.

Abstract ID:1178

**Title**: Correlation Of Clinical Symptoms / Syndromes In Patients With Acute Posterior Fossa Infarcts By Using Magnetic Resonance Imaging.

**Topic**: Neuroradiology

**AIM**: To correlate clinical symptomatology in patients with acute posterior fossa infarcts with MRI findings.

**Introduction**: Ischemic infarcts in cerebellum and brain stem can produce variety of radiological and clinical symptoms/syndromes. Brain stem has a complex anatomy and even small infarcts in the brain stem can be dangerous.

Cerebellum acts as a coordination center for maintenance of equilibrium, muscle tone and refined movements of somatic muscles.

Evaluation of posterior fossa stroke by CT may not be always accurate because of limitations of CT in the evaluation of posterior fossa.

MRI is the imaging investigation of choice for evaluation of acute infarcts in the brain parenchyma and plays a important role in the evaluation of posterior fossa structures, which is suboptimally visualized in CT-Scan.

The present study tries to correlate the clinical symptomatology of the patient with the infarcts involving a specific region of the brain stem / cerebellum. This helps in understanding the anatomical and physiological aspect of the posterior fossa structures and helps the clinician / radiologist to narrow down the possible site of infarct and to actively evaluate the suspected location. This will further helpful even in the evaluation of CT-Scan, even when the lesions are not so conspicuous.

**Materials and Methods**: This is a retrospective study of analysis of MR imaging data of patients presenting with symptoms of posterior fossa stroke. The exact anatomical site of infarcts were identified and
correlated with the clinical findings. Other expected clinical symptoms resulting from these infarcts were also mentioned.

**Conclusion:** This article provides information about anatomy of posterior fossa structures correlated with clinical symptomatology in lesions with acute posterior fossa infarcts.

**Abstract ID:1184**

**ABSTRACT TITLE:** PICTORIAL ESSAYS: REVISITING TYPICAL AND ATYPICAL IMAGING FEATURES AND VARIABLE LOCATIONS OF INTRACRANIAL MENINGIOMAS

**PRESENTING AUTHOR:** UPASNA SINHA

**CO-AUTHOR:** DR RAVI KUMAR, DR PRANAV KUMAR SANTHALIA, DR NITU

**Learning objectives:** Typical and atypical imaging features and various location of intracranial meningiomas.

**Background:** Meningiomas are the most common non-glial intracranial tumors accounting for about 15% of intracranial tumor. It predominantly occurs in middle age group with female preponderance. These arises from meningotheelial cells of arachnoid. These are slow growing tumor and symptoms are usually due to compression of adjacent structures.

**Imaging findings:** We reviewed the MRI (of all cases) and CT (of few cases) of 15 intracranial meningiomas. Most of the meningiomas showed the typical imaging features i.e. homogenously enhancing extra-axial dural based mass, iso to hypointense on T1w images and iso to hyperintense on T2w images with variable diffusion restriction. On CT they charcreristically showed hyperdensity. Dural tail, calcification, internal flow voids, peritumoral edema and hyperostosis of overlying bones were also demonstrated. Few showed internal necrosis and heterogenous enhancement. Two of the lesions showed infiltration into the skull with one of them showing sun-ray type of periosteal reaction. Depending upon the location we had parafalcine, lateral convexity, olfactory groove, parasellar, sphenoid wing, tentorial and cerebellopontine angle meningiomas. There was one case of intraventricular meningioma. We also had a meningioma of transverse and sigmoid sinus junction extending into the lumen of the sinus. One of the meningioma was completely ossified. Various complications were also noted like hydrocephalous, significant midline shift, optic nerve encasement and proptosis, skull base infiltration and cranial nerve compression.

**Conclusion:** Meningiomas can show varied imaging features and variable location. Radiologists should be aware of unusual location and atypical imaging features including its complications, to make correct diagnosis of intracranial meningiomas.

**Abstract ID:1187**

**ABSTRACT TITLE:** THE ROLE OF MAGNETIC RESONANCE IMAGING IN TRIGEMINAL NEURALGIA

**PRESENTING AUTHOR:** UPASNA SINHA

**CO-AUTHOR:** DR NITU, DR PRANAV KUMAR SANTHALIA, DR RAVI KUMAR

**Learning objectives:** MRI is the imaging modality of choice in trigeminal neuralgia.

**Background:** Trigeminal neuralgia is a debilitating disorder characterized by episodic facial pain syndrome followed by a period of relief in the sensory distribution of trigeminal nerve. Vascular compression by the superior cerebellar artery is the most common cause. Other rare causes include cerebellopontine angle tumors like acoustic and trigeminal schwannoma, meningioma, epidermoid cyst and metastasis; and demyelinating or inflammatory causes. Often patients are misdiagnosed and put on medical treatment.
However if MRI is done as the initial and essential imaging modality, treatable causes of trigeminal neuralgia can be diagnosed early and the patients suffering can be reduced.

**Imaging features:** Five patients with clinical diagnosis of trigeminal neuralgia of variable severity and variable duration underwent MRI brain. High resolution 3D steady state free precession sequences for cranial nerves were acquired in all the cases. Three of these patients showed thinning and lateral displacement of root exit zone of trigeminal nerve by the superior cerebellar artery consistent with Neurovascular compression syndrome. Two of these patients had cebellopontine mass which were hypointense on T1 and T2, isointense on FLAIR and showed diffusion restriction consistent with epidermoid cyst. In one of them epidermoid was encasing the trigeminal nerve and in the other it was displacing the trigeminal nerve.

**Conclusion:** MRI is effective in imaging entire course of intracranial trigeminal nerve and can accurately locate the site and severity of its vascular compression; and other aetiology of trigeminal neuralgia. Thus all the patients with clinical diagnosis of trigeminal neuralgia should undergo MRI with cranial nerve imaging sequences for early detection of treatable causes.

**Learning objectives:**
- To study imaging findings of rabies encephalitis.
- With proper clinical history and clinical findings narrowing down the differentials and helping in early diagnosis.

**Background:** Rabies encephalitis is one of the oldest and deadliest communicable diseases known to man. It continues to be a serious health hazard in several parts of the world including India, where it is endemic. Rabies is caused by neurotropic RNA virus. Transmission of the disease is mostly through the bite of dogs, through inhalation in bat-infested caves. Human rabies presents in two forms: Encephalitic and paralytic. These forms are analogous to the furious and dumb type of rabies seen in dogs. The ‘encephalitic form’ is more common and is characterized initially by hyperactivity, which soon progresses to episodes of fluctuating consciousness. Phobic spasms, aerophobia, and hydrophobia; triggered by puffs of air and sounds or even the mention of water are the hallmark of this form of the disease. Paralytic rabies accounts for 20% of rabies.

**Imaging (MRI) Findings:** In rabies encephalitis, MRI findings include ill-defined T2W/FLAIR hyperintensity in the brainstem involving the dorsal medulla, pontine tegmentum, periaqueductal gray matter, collicular plate, central white matter of the midbrain, hippocampi, medial thalami, and in the hypothalamus on both sides. In addition, T2 hyperintensity are seen in the bilateral basal ganglia and left temporoparietal cortex. Diffusion restriction may be seen.

**Teaching points:**
- Rabies is mainly diagnosed with its classical clinical features, but MRI is the imaging of choice for its early diagnosis and it helps to narrow down other differentials of encephalitis from rabies.
- Early diagnosis of rabies will not improve patient’s health, but in diagnosed cases, managing of patients and handling of tissues can be done with special precautions.
Abstract ID: 1222

ABSTRACT TITLE: MRI FINDINGS IN NEUROIMAGING OF PHAKOMATOSES: CASE SERIES
PRESENTING AUTHOR: SAMIR DERE
CO-AUTHOR: DR AVINASH DHOK

Learning Objectives: Evaluation of clinically suspected rare cases of phakomatoses using GE 1.5 tesla MRI machine.

Background: CASE I- 4 year old male, c/o abnormal body movements since birth. CASE II- A 30 years old male, came to radiology department with chief complaints of Multiple episodes of abnormal body movements 3 years.

CASE III- 53 years old male patient came with complaint of headache since 8-10 days and vomiting on and off since 2 months.

Imaging findings

CASE I:
CT- sub cortical calcification with parenchymal volume loss
Tram-track Sign of cortical and sub cortical calcification.
T1: signal of affected region largely normal, with anatomic volume loss evident at older age
T1 C+ (Gd) prominent leptomeningeal enhancement in affected area; enlarged ipsilateral choroid plexus
T2-low signal in white matter; calcification later in life; abnormal deep venous drainage seen as flow voids
SWI: sensitive to calcification

CASE II:
Calcified lesions along the subependymal region of body of left lateral ventricle and occipital horn of right lateral ventricle.

CASE III:
A well defined altered signal intensity lesion is noted in the right cerebellar lobe measuring appearing hypointense on T1WI and FLAIR, hyperintense on T2WI. The lesion shows eccentrically placed well defined altered signal intensity area. On susceptibility weighted images, focal area of blooming noted in the above mentioned eccentric nodule. No evidence of restriction noted on diffusion weighted images. On post contrast study, shows intense enhancement.

Conclusion: and/or Teaching points

CASE I- STURGE WEBER SYNDROME
CASE II- TUBEROUS SCLEROSIS
CASE III- VON HIPPEL-LINDAU DISEASE

MRI is useful modality in evaluation of different Phakomatoses
Abstract ID:1223

**ABSTRACT TITLE**: ROLE OF MR IMAGING IN THE EVALUATION OF ETIOLOGY OF SEIZURES.

**PRESENTING AUTHOR**: KRISHNA CHIDRAWAR

**CO-AUTHOR**: DR SANJAY SAHU

**Purpose**: With the introduction of MRI and increasing use in the study of seizures, the evaluation of seizures is a common indication for magnetic resonance imaging. MR imaging is clearly more sensitive imaging technique, particularly in the detection of early disease. Magnetic resonance imaging (MRI) gives precise localization and histological nature of lesions and subsequently.

**Aim**: Role of MR Imaging In The Evaluation of Etiology of Seizures.

To diagnose various findings of seizure on MRI and to rule out any organic causative factor resulting in seizure.

**Methods and Materials**: The present prospective study includes 150 patients referred to the department of Radio-diagnosis which includes all patients presenting with seizures. MRI was performed on GE 1.5 HD-XT MRI machine.

**Results**: Among the patients, Age of patients varied from 2 months to 82 years. There was a male predominance 87 (58%) and 63 (42%) females. MRI revealed abnormal findings in 95 (63.33 %) of 150 patients. Acute infarct in 5 (5.26 %), chronic infarct in 3 (3.15 %), cystic encephalomalacia in 6 (6.31 %), chronic small vessel disease in 14 (14.74 %), tumors in 11 (11.59 %), hydrocephalus in 2 (2.10 %), developmental malformations in 2 (2.10 %), infective in 12 (12.63 %), vascular malformations in 1 (1.05 %), hemorrhage in 7 (7.36 %), thrombosis in 4 (4.21 %), mesial temporal sclerosis in 3 (3.15 %), atrophy in 13 (13.68 %), and edema in 12 (12.63 %)

**Conclusion**: The study highlights the contribution of MRI in identifying different cause of seizures and thus aid in timely management.

Abstract ID:1244

**ABSTRACT TITLE**: PICTORIAL ESSAY ON CHARACTERISTIC CT AND MR FEATURES OF GIANT SERPENTINE ANEURYSMS, A CEREBRAL NEOPLASM MIMICKER.

**PRESENTING AUTHOR**: RISHABH AGGARWAL

**CO-AUTHOR**: DR ANKUSH JAJODIA

**Learning Objective**: Pictorial essay on characteristic CT and MR features of giant serpentine aneurysms, a cerebral neoplasm mimic.

**Background**: Giant serpentine aneurysms form a subgroup of large intracranial aneurysms that are associated with mass effect and adjacent cerebral edema mimicking cerebral neoplasms, and have specific anatomic detail necessary for endovascular treatment by occlusion of parent artery.

**Imaging findings**: NCCT: Ovoid / globoid mass of mixed density causing mass effect on underlying neuroparenchyma and midline shift. There is curvilinear calcification and perilesional edema.

**CECT**: Intense enhancement of the serpentine vascular channel within the aneurysm.

**MRI**: Mass of heterogeneous signal intensity which represents various stages of hemoglobin degradation.
products and flow void regions representing the patent channel within the aneurysm.

Cerebral Angiography: Most accurate method for evaluating the location and state of flow in a giant serpentine aneurysm.

**Conclusion and/or Teaching points:**
- They have been defined as giant (>2.5 cm) and are almost completely thrombosed, except for tortuous vascular channels that have separate entrance and outflow pathways.
- It has recently been hypothesized that continual growth of a dolichoectatic aneurysm may lead to the formation of a GSA—Unlike giant saccular aneurysms, these aneurysms don’t have discrete identifiable necks.
- Spontaneous complete occlusion of these aneurysm is known in up to 15% of cases.

**Abstract ID: 1251**

**ABSTRACT TITLE**: NEONATAL HYPOGLYCAEMIC ENCEPHALOPATHY; MRI CHANGES

**PRESENTING AUTHOR**: SUPRAVA NAIK

**CO-AUTHOR**: SANJEEV KUMAR BHOI, TAPAS SOM, PANKAJ MOHANTY, N DEEP

Authors: Suprava Naik, Sanjeev Kumar Bhoi, Tapas Som, Pankaj Mohanty, N Deep Department of Radiodiagnosis, All India Institute of Medical Sciences, Bhubaneswar.

The neurological manifestations complicated by profound hypoglycemia range from reversible focal deficits to coma. Cranial MR imaging is a useful technique for evaluation of severe hypoglycemic encephalopathy. Two day term baby delivered by caesarean section presented with seizure. He was given phenobarbitone, but seizure continued. At that time his blood sugar was 40 mg/dl. On day 5, MRI was carried out to find out the cause of seizure. There was spontaneous cry after birth. Mother had developed diabetes mellitus during 28th week of gestation. Mother was not taking any hypoglycemic medication.

Diffusion weighted imaging showed restriction in bilateral parieto-occipital, posterior temporal lobe and splenium of corpus callosum. The lesions were not appreciated on T2 or T1 WI. Only sulcal effacement seen posteriorly in parieto occipital region suggesting minimal mass effect.

Common causes of hypoglycemia are overuse of insulin or oral hypoglycemic agents, undiagnosed insulinoma, or other medical diseases such as sepsis or renal or hepatic failure. Neonatal hypoglycemia is a preventable condition that should be monitored closely in babies of diabetic mother. Diffusion weighted imaging is more useful in diagnosis of this condition.

**Abstract ID: 1261**

**ABSTRACT TITLE**: TITLE: BRAIN IMAGING IN A IMMUNOCOMPROMISED PATIENT: A UNUSUAL CASE

**PRESENTING AUTHOR**: KRISHNA CHIDRAWAR

**CO-AUTHOR**: DR SANJAY SAHU

**Learning Objectives**: To describe the relevant neuro-imaging findings of Progressive Multifocal Leuкоencephalopathy

**Background**: A 55 years old, male, HIV positive
came to radiology department with CHIEF COMPLAINTS of:

- Progressive weakness of left side of body since 6 months
- Difficulty in walking since 1 month
- Diminution of vision since 1 month
- Headache since 15 days

Imaging Findings:

MRI Brain Study: Multifocal, asymmetric periventricular and subcortical altered signal intensity lesions are noted involving right parietal, bilateral high parietal, right frontal and bilateral occipital regions with further involvement of anterior portion of corpus callosum crossing midline to involve adjacent white matter.

Mild perilesional edema is noted. Mass effect is noted in form of effacement of body of ipsilateral lateral ventricle and adjacent sulcal spaces.

T1WI: Involved regions are hypointense T2WI/ FLAIR: Involved regions are hyperintense T1 C+: No evidence of enhancement SWAN: No evidence of any blooming MR spectroscopy: significantly reduced NAA, lactate presence, and by significantly increased choline. DWI: Peripheral patchy restriction in parietal and occipital regions.

Conclusions: PMLE is strongly associated with immunosuppressed states, particularly AIDS and diagnosing it early is very useful as Prognosis is poor with neurologic decline leading to coma. If untreated, PML is usually fatal within one year.

Abstract ID: 1269

ABSTRACT TITLE: MRI AND CT EVALUATION OF SELlar AND PARASELLAR MASSES

PRESENTING AUTHOR: R C SHUKLA

CO-AUTHOR: TANYA YADAV, ASHISH VERMA, SHWETA SINGH, S.K. SINGH

Purpose: A small and complex anatomical structure of central nervous system, sella turcica, and adjoining area, contains many vital structures. The sellar and parasellar masses often present with profound neuroendocrine manifestations.

CT and mainly MRI are the imaging modalities which can be used for early diagnosis and accurate characterization of lesions. CT scan is useful for depicting soft tissue calcification, bony destruction and surgically relevant bony anatomy. Currently MRI is the examination of choice for sellar and parasellar pathologies such as pituitary adenomas, pituitary infarction etc.

Aim: This study was done to identify imaging characteristics of various common and some rare sellar and parasellar lesions in order to develop an approach for reaching a diagnosis.

Materials and Methods: This study was a prospective observational study, done between July 2015 to July 2017, conducted on 40 patients after obtaining informed consent. All scans were performed using a multidetector CT scanner and 1.5-tesla Siemens magneton avanto and the predesignated protocol was followed. Data processing was done on offline work station.

Results: In this study, the most common tumor was macroadenoma followed by microadenoma. Meningiomas which grow typically in suprasellar space showed strong early homogenous contrast enhancement and
positive dural tail sign. All cases of microadenoma showed delayed peak of enhancement. The characteristic location i.e. tuber cinereum and no contrast enhancement on post gadolinium imaging were the diagnostic clues for hypothalamic hamartoma.

Conclusion: This study showed that CT and MRI are good imaging modalities for early diagnosis and evaluation of the extent of sellar and parasellar masses, thus providing significant clinical benefit and aid in planning proper surgical technique for resection.

Abstract ID: 1273

ABSTRACT TITLE: A CLASSICAL CASE OF HYPOXIC ISCHAEMIC ENCEPHALOPATHY
PRESENTING AUTHOR: HARISH BABURAO PAWAR
CO-AUTHOR: DR DIPALI KADAM

Learning Objectives: To describe the relevant neuroimaging findings using a detailed anatomic description in of hypoxic ischemic encephalopathy.

Background: A 3 days old new born did not cry immediately after birth and was resuscitated with a single episode of seizure (tonic-clonic). (Stage-2 according to SARNAT Staging)

Mother was positive for HBsAg Antigen. On examination: pupils were sluggishly reacting to light. On EEG: Neuronal hyperexcitability was recorded. Two MRI scans were done on day 3 of life and second was after gap of 20 days.

Imaging findings:

On day of life 3: (first scan): Generalized cerebral edema was present.

On day of life 23: (after 20 days scan):

Cystic Encephalomalacia was noted in the bilateral fronto parietal region (right > left). Ischaemic insult was noted in deep grey matter nuclei involving bilateral thalami, bilateral lentiform nucleus in the form of T1 and T2 hyperintensity.

Severe generalized cerebral and cerebellar atrophy was noted. These were sequelae of Hypoxic Ischaemic encephalopathy.

Conclusion and/or Teaching points: Immediate MRI helps to show pattern of brain injury and to exclude other causes of encephalopathy. Imaging plays an important role in early diagnosis and timely intervention, thereby reducing the severity of neonatal brain injury, small interval follow up MRI scans will increase positive outcome.

References:
1. Anne G. Osborn
Abstract ID:1277

ABSTRACT TITLE: MRI EVALUATION OF OPTIC NERVE SHEATH DIAMETER IN NORMAL PATIENTS IN COMPARISON TO PATIENTS WITH RAISED INCREASED INTRACRANIAL PRESSURE.

PRESENTING AUTHOR: R AMULYA
CO-AUTHOR: DR. V. BALAMURALI KRISHNA, MD RD, ASST PROFESSOR, DR. PSIMS&RF. DR. K. CHANDRASEKHAR, MD RD, PROFESSOR AND HOD, DR. PSIMS AND RF

Purpose: Measurement of the Optic Nerve Sheath Diameter (ONSD) provides indirect evidence of intracranial hypertension. This study provides age wise diameter of the optic nerve sheath from 0-80 years on T2 weighted MR images in a 1.5Tesla MR scanner. The data serves as a baseline standard for comparison of ONSD in patients of various age groups. Then this is compared with the patients with signs of raised intracranial pressure. To establish age and sex wise reference norms for ONSD from 0-80 years.

Materials and Methods: This was a retrospective cross sectional study of analysis of MR image data set of 200 consecutive MRI studies of the brain, with normal optic nerves. A total of 400 optic nerve sheath diameters were measured (200 patients, both eyes). The study population was divided into 8 age groups of each decade of life from 0 to 80 years. The data was tabulated age and sex wise, for both the eyes and analyzed. The normative data is compared with that of 50 patients of raised intracranial pressure patient’s data.

Results: There was statistically significant difference between normal patients ONSD and patients with raised intracranial pressure. There was no statistically significant difference between the sides as well as genders.

Conclusion: This study provides a baseline age wise ONSD and orbital diameter of general population. The maximum ONSD in any age group is never above 5.5 mm. If higher ONSD is found, the patient should be thoroughly investigated for intracranial hypertension.

Abstract ID:1298

ABSTRACT TITLE: ACUTE SYRINGOMYELIA COMPPLICATING A CASE OF TUBERCULAR MENINGITIS

PRESENTING AUTHOR: SUDIPTA MOHAKUD
CO-AUTHOR: DR. SUPRAVA NAIK, DR. NERBADYSWARI DEEP (BAG), DR. AMIT KUMAR SATAPATHY

Learning Objectives:
1. Imaging findings of TB meningitis and its complications.
2. Spinal complications of TB meningitis

Background: Syringomyelia is a known delayed complication of Tubercular meningitis. Usually the interval between TBM and syrinx formation varies from 7 - 28 years. But development of syringomyelia in early phase of the disease or during treatment on ATT is rare. The proposed mechanism of syrinx development in TB meningitis are tubercular vasculitis producing cord ischemia and softening, spinal subarachnoid space scarring leading to reduced compliance of the subarachnoid space and the patent Virchow-Robin spaces in the spinal cord providing a channel for the CSF to enter into the central canal. Other spinal complications of TBM are arachnoiditis, vasculitic infarcts and spinal tuberculomas.
A 6-year-old male child presented with difficulty in walking, blurring of vision in eyes, multiple seizure episodes, headache & intermittent vomiting 4 months back. The CECT of brain demonstrated enhancing basal exudates & communicating hydrocephalus. CSF showed increased protein and lymphocytosis. He was diagnosed to have tubercular meningitis & started on ATT. He underwent VP shunt surgery one month back. Now the patient is irritable, drowsy and shows paraparesis.

**Imaging findings:** Sagittal T2 WI of the spine showed long segment hyperintense multi-septated intramedullary lesion suggestive of syringomyelia involving the Cervico-dorsal cord. No cord expansion was seen. MRI of brain showed dilated ventricles with VP shunt in situ suggestive of shunt obstruction. Mild subdural hygroma was seen over bilateral cerebral convexities. There was pachyrenal enhancement on post gadolinium T1 WI. No basal exudates or tuberculomas were noted.

- Conclusion and/or Teaching points-
  - Syringomyelia may be an acute complication of TB meningitis.
  - New onset neurological symptoms like paraparesis should raise the suspicion of spinal cord involvement.
  - Septated syringomyelia may be seen in inflammatory conditions like tubercular meningitis leading to adhesions.
**Abstract ID: 11**

**ABSTRACT TITLE**: INIENCEPHALY CLAUSUS WITH CONGENITAL INTRAPERICARDIAL DIAPHRAGMATIC HERNIA: AN EXTREMELY RARE ASSOCIATION

**PRESENTING AUTHOR**: T SEETAM KUMAR

**CO-AUTHOR**: SEEMA ROHILLA

**Learning Objective**: Iniencephaly is an uncommon and lethal neural tube defect. Most cases are diagnosed prenatally by ultrasonography (USG); however, Magnetic Resonance Imaging (MRI) gives additive information in detecting associated anomalies. Here, we report the case of a neonate with iniencephaly clausus associated with hydrocephalus and congenital intrapericardial diaphragmatic hernia, which is an extremely rare association and has never been documented in the literature.

**Case Summary**: A 26-year-old healthy primi-gravida at 32 weeks of gestation with uneventful antenatal history, after an abnormal prenatal US scan performed at an outside facility came to our hospital. Foetal and neonatal MRI as well as neonatal radiography were performed, findings were hyperextended face with short neck (like star gazing foetus) with significant shortening of the spinal column by marked lordosis and hyperextension of the malformed cervicothoracic column. In brain, there was gross hydrocephalus with thinned out cerebral cortex, communicating with enlarged cisterna magna as well as CSF spaces of cervical spinal canal. There was also partial herniation of spleen into pericardial cavity as well as herniation of left lobe into left pleural cavity with bilateral lungs appearing normal.

With the above finding, iniencephaly clausus with congenital intrapericardial diaphragmatic hernia was diagnosed.

**Conclusion**: Ultrafast MRI has been validated as an efficient technique to evaluate equivocal fetal sonographic findings, especially for neurological anomalies. Since iniencephaly is a lethal syndrome, their identification with other associated anomalies is of academic interest only.

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**Abstract ID: 38**

**ABSTRACT TITLE**: SYSTEMIC INVOLVEMENT IN LANGERHANS CELL HISTOCYTOSIS: UNUSUAL CASE OF LETTERER-SIWE DISEASE

**PRESENTING AUTHOR**: SWARNA

**CO-AUTHOR**: DR. REETA KANAUJIA, ASSISTANT PROFESSOR

**Purpose**: Describe imaging findings in two cases of LETTERER-SIWE-DISEASE in infants with involvement of skin, liver, lung, brain, salivary gland and thymus.

**Background knowledge**: LETTERER-SIWE-DISEASE is a rare unusual form of Langerhans cell histiocytosis presenting in infants. It is a hematological disorder characterized by abnormal proliferation of histocytes and disseminated involvement of the RES with a fulminant clinical course in children less than 2 years old. The other two classic syndromes which may have considerable clinical overlap: eosinophilic granuloma, in which the disease is limited to bone in patients usually 5-15 years old; Hand-Schüller-Christian disease, characterized by multifocal bone lesions and extraskeletal involvement of the reticuloendothelial system (RES) usually seen in children 1-5 years old.
Imaging Findings: CASE 1. One year infant presented with fever and bilateral cervical lymphadenopathy, with atypical rashes all over the body. USG examination of neck showed multiple large hypoechoic rounded internal juglar lymphnodes on bilaterally . Cect chest showed findings of pulmonary LCH . There was enlargement of thymus gland with calcification. Skeletal survey of the child was normal. Diagnosis was confirmed by skin and nodal biopsy.

CASE 2. 8 months old child presented with hepatomegaly, fever and deranged liver function test along with skin rashes. USG abdomen showed hepatomegaly with hypoechoic infiltration along the portal vein along with few nodes at porta. Cect Chest and abdomen was done which showed typical pulmonary finding of nodules, cysts and Ground glassing. PETCT of the patient showed increased uptake in the liver along the portal vein , lung parenchyma and in the cerebral parenchyma. Skin biopsy confirmed the diagnosis of LCH

Abstract ID: 42

ABSTRACT TITLE : PEDIATRIC INTERVENTIONAL ONCOLOGY: AN EMERGING SUBSPECIALTY
PRESENTING AUTHOR : RAJA SHAIKH
CO-AUTHOR : (None)

Objectives: To discuss the pioneering use of interventional techniques to treat and palliate tumors in pediatric patients.

Methods: We retrospectively reviewed the medical records and imaging studies of all pediatric patients with cancer who underwent interventional procedures e.g. cryoablation, radiofrequency ablation, sclerotherapy and transarterial embolization at our institution. Patient and disease demographics, interventional procedures performed and outcomes were documented. Symptomatic and radiological changes were evaluated and compared pre and post procedure.

Results: 30 pts (5-20 yrs.; mean age 12.5 yrs.) underwent interventional oncological procedures for different indications. The outcome of these interventions was individually evaluated at procedural level.

Conclusions: Interventional oncology in pediatric age group is an evolving specialty. Our experience demonstrates that these procedures are feasible and provide a safe and minimally invasive treatment and/or palliative option in clinical care of children with cancer.

Abstract ID: 43

ABSTRACT TITLE : FIBRO ADIPOSE VASCULAR ANOMALY (FAVA): REVIEW OF IMAGING FEATURES
PRESENTING AUTHOR : RAJA SHAIKH
CO-AUTHOR : (None)


Materials and methods:Study approved by the Committee on Clinical Investigation at BCH.

We reviewed 38 patients with FAVA lesions evaluated and diagnosed by our Vascular Anomaly Center (VAC). Medical records,Imaging studies,Pathology reports were reviewed.
Conclusion: FAVA is a complex vascular malformation with distinctive clinical, pathologic and imaging features. Heterogenous fibrofatty tissue replacing the muscle, intertwining veins, and phlebectasia are the most characteristic imaging features. Radiologists should be familiar with the clinical and radiologic manifestations of simple and complex vascular malformations to ensure patients receive the most appropriate and effective treatment.

Abstract ID: 103

ABSTRACT TITLE : PEARLS AND PITFALLS OF SUSPECTED CHILD ABUSE
PRESENTING AUTHOR : ATIF SIRAJ
CO-AUTHOR : DR. BABU PHILIP

Learning objectives:
- To discuss the multiple radiographic presentations of child abuse.
- To list the most highly specific injuries in child abuse.
- To discuss pearls and pitfalls in the evaluation of suspected child abuse.

Background: More than 40% of deaths from child abuse occur among children younger than 12 months of age (1). Abusive head trauma is the most common cause of lethal child abuse. Most fatal head injuries in children less than two years old are secondary to abuse (2). Up to 30% of children admitted to hospital with head injury, have inflicted injuries and as many as 30% of children with inflicted head injuries may be misdiagnosed at the initial evaluation (3), and up to 50% of children admitted to neonatal care under 2 years.

Findings and procedure details: Abusive head trauma includes inflicted cranial, cerebral, and spinal injuries resulting from blunt force trauma, shaking, or a combination of forces. The pattern associated with shaking includes diffuse unilateral or bilateral subdural hemorrhage, diffuse multilayered retinal hemorrhages, and diffuse brain injury. This pattern has been referred as the “shaken baby syndrome”.

Risk factors:

1. Infant factors
   - Perinatal illness and major birth defects
   - Incessant crying: “colicky” babies
   - Male gender.

2. Family risk factors
   - History of familiar dysfunction
   - Young maternal age
   - Family disruption and separation
   - Maternal military service
   - Prior history of abuse of the index child or other family members

Head Injury Types
1. Retinal hemorrhages.
2. Intracranial hemorrhage - subdural, epidural, subarachnoid, intraparenchymal or a combination
3. Skull fractures.

B. Skeletal Trauma: Approximately 50% of victims of non-accidental trauma presents skeletal fractures. 87% of patients present with multiple fractures.

c. Abdominal injury - Non-accidental abdominal trauma increases six fold the risk of death when comparing with accidental abdominal trauma. - Non-accidental abdominal trauma (NAAT) is the second most common cause of death in child abuse.

Abstract ID: 134

ABSTRACT TITLE: EVALUATION OF PAEDIATRIC RETROPERITONEAL MASSES USING MULTI-DETECTOR COMPUTED TOMOGRAPHY: A PROSPECTIVE STUDY IN FIFTY PATIENTS

PRESENTING AUTHOR: MANIK MAHAJAN

CO-AUTHOR: DR GHANSHYAM DEV GUPTA

Background/Purpose: The retroperitoneum extends superiorly from the diaphragm to the pelvic brim below. A broad spectrum of retroperitoneal masses is seen in paediatric age group. These originate from various organs and may be benign or malignant. Ultrasonography (USG) and Multi-detector computed tomography (MDCT) are the primary imaging modalities in the evaluation of paediatric retroperitoneal masses. MDCT with its multi-planar reconstruction is an excellent modality to locate and characterize retroperitoneal masses, helps develop a differential diagnosis and determines the local extent and distant metastases.

Aims: To determine the morphologic and imaging features of paediatric retroperitoneal masses on MDCT and to facilitate the diagnosis and management in these patients.

Materials and Methods: Fifty patients were included in the study. All patients were subjected to MDCT after obtaining detailed history and clinical examination. MDCT findings were recorded in terms of location, organ of origin, MDCT characters and extensions. Based on MDCT findings, provisional diagnosis was made and findings correlated with pathological diagnosis and laboratory investigations. The diagnostic accuracy of MDCT in evaluating retroperitoneal masses was calculated.

Results: Majority of the patients were seen in 1-5 year age group with male preponderance. Wilms tumour was the commonest lesion (16.7%) followed by neuroblastoma (13.3%) and lymphoma (10%). 40% of the masses were benign. MDCT findings corroborated with pathological findings in 45 cases with a diagnostic accuracy of 90.0%.

Conclusions: MDCT is reliable and highly accurate method for diagnosing paediatric retroperitoneal masses and can serve as a handy tool in deciding appropriate management and outcome.
### Abstract ID: 177

**ABSTRACT TITLE**: HISTIOCYTOSIS AN OVERVIEW  
**PRESENTING AUTHOR**: THARA PRATAP  
**CO-AUTHOR**: GEORGE JOSEPH, MANU, MISCHAL KHALID

**Objective**: Histiocytosis is a multisystemic disease. This presentation aims at delineating the pattern of involvement of multiple organ systems.

**Background**: The benign form of disease has a self-limiting course with a good prognosis. Knowledge of this entity helps in reassuring the patient.

**Imaging Findings**: There are varied findings in different systems. Geographic pattern of involvement in skull, vertebra plana, cysts in lung are some of the findings. Involvement of hepatobiliary system indicates poor prognosis.

**Teaching Points**: To create awareness about the patterns of involvement of multiple systems and prognosticate, as many of the forms have a self-limiting course. Another aim is to form histiocytosis awareness group as in other parts of the country.

### Abstract ID: 271

**ABSTRACT TITLE**: PULMONARY MANIFESTATIONS OF PRIMARY IMMUNODEFICIENCIES IN PEDIATRIC PATIENTS: IMAGING CONSIDERATION  
**PRESENTING AUTHOR**: POONAM SHERWANI  
**CO-AUTHOR**: DR MANISHA JANA, DR ASHU SEITH BHALLA, DR PRIYANKA NARANJE, DR ARUN KUMAR GUPTA, DR DEVASENATHIPATHY KANDASAMY

**Pulmonary manifestations of Primary immunodeficiencies in Children: Imaging Consideration**

**Learning Objectives:**

1. To describe the typical imaging appearances of more frequently encountered primary immunodeficiency disorders (PIDDs).
2. To highlight clinico-radiological features which should lead to suspicion of diagnosis of PIDDs.

**Background**: PIDDs include more than 300 distinct genetically determined disorders with varied presentations depending on the type of defects based on which they are classified. Since there is no screening method available hence the diagnosis is only made when these patients present with one or more infections. High index of suspicion along with clinical details and other supportive ancilliary studies are required to make the diagnosis. Thoracic changes are seen in over half of the patients with PIDDs. Here we describe the various imaging findings in chest in PIDDs.

**Imaging Findings**: Imaging of a total of 19 patients with diagnosed PIDDs were analysed. Most commonly encountered PIDDs were Chronic granulomatous disease (CGD -6/19), followed by Common variable immunodeficiency (CVID-3/19), X-linked Agammaglobulinemia (XLA-3/19) and hyperIgE syndrome (2/19). Bronchiectasis with or without mucus plugging was the most commonly encountered finding (9/19), followed by collapse/consolidation (11/19), centrilobular nodules (6/10), and mediastinal or hilar lymphadenopathy (8/19). Absent thymus was seen in one patient of DiGeorge syndrome. Lymphoma and ILD were two
complications which were seen in CGD patients. Fibrosis, mosaic attenuation, cyst and pneumatoceles, pneumothorax, chest wall abscesses and pulmonary artery hypertension were other less common imaging findings.

Results and Conclusions: Imaging plays a crucial role in the early identification and classification of various PIDDs as well as to determine the prognosis by identifying the reversibility of

Abstract ID: 283

ABSTRACT TITLE: TRAUMATIC FINGER INJURIES: MECHANISM, RADIOLOGICAL FINDINGS AND CLINICAL CORRELATION

PRESENTING AUTHOR: AMAN KUMAR
CO-AUTHOR: DR AMIT KUMAR SAHU; DR GYANEESH AGGARWAL; DR BHARAT AGARWAL

Purpose of study: To correlate MRI brain findings and DTI findings in early neonatal period of term and preterm neonates with hypoxic ischemic encephalopathy and its clinical outcome.

Materials and methods Study Design: Prospective Study

Data Collection: Newborn babies with APGAR score of less than 7 with history of birth asphyxia.

Inclusion Criteria:
• Term and preterm New Born with perinatal asphyxia.

Exclusion criteria:
• New born with congenital anomalies
• Syndromic babies
• Infants with metabolic disorders
• Associated hyperbilirubinemia

Methodology and results:
• All included babies are subjected to conventional MRI and DTI.
• Conventional MRI sequences can help exclude other causes of encephalopathy (such as hemorrhage, cerebral infarction, neoplasm or congenital malformation.)
• Eight months appear to be the earliest time at which conventional MRI findings correlate well with the neuro developmental outcome.
• In predicting neurological outcome conventional MRI findings of the neonatal period had the highest negative predictive value.
• DTI provides qualitative and quantitative information about the Micro structure of white matter that may not be deducted by the conventional MRI sequences.
• DTI allow transcending MRI from anatomic images toward functional and embryology based imaging.
• Due to incomplete myelination and higher brain water content in Neonates conventional MRI is limited in its ability to detect the presence and extend of injury in stage 1 HIE.
• Structural changes usually manifest after 4 to 8 months in infants with HIE stage 1 and 2.
Conclusions:

- DTI is currently the only way to quantify the maturation and damage of brain development in preterm neonates.
- In the early stage, it can identify damages that cannot be screened by MRI
- Thus, it can provide evidence for developing effective measures of prevention, protection, and rehabilitation for damage to the brain.

Abstract ID: 300

ABSTRACT TITLE: IMAGING SPECTRUM IN COMMON CAUSES OF PEDIATRIC ACUTE ABDOMEN
PRESENTING AUTHOR: RAJAT KHURANA
CO-AUTHOR: NEHA BAGRI, KOMAL SOOD

Learning Objectives: Assessment of Ultrasound features of Pediatric non-traumatic gastro-intestinal emergencies.

Background:

- Non traumatic gastrointestinal emergencies in the children is a dilemma for the radiologist in the emergencies room.
- Appendicitis, intussusception, and hypertrophic pyloric stenosis (HPS) are three of the most common reasons for emergent abdominal imaging in pediatric patients.
- Early diagnosis is the first step towards proper management of a child presenting with acute abdomen
- Inability to give reliable history, atypical clinical presentations and the painful abdomen in children often causes difficulty in arriving at the correct diagnosis.
- Ultrasound outweighs CT scan in various aspects including radiation free, cost effective, early diagnosis, easy accessibility, portability and relatively less requirement of sedative medications.

Imaging Findings: The inflamed, non perforated appendix appears as a fluid-filled, uncompressible, blind-ending tubular structure characterized by the “target sign”. The maximal appendix diameter from outside wall to outside wall, is greater than 6 mm. Other findings include right iliac fossa probe tenderness, hyperemia within the appendiceal wall, echogenic inflamed periappendiceal fat and presence of an appendicolith.

In intussusceptions, the “classic” clinical triad is acute colicky abdominal pain, “currant jelly” or frankly bloody stools, and palpable abdominal mass or vomiting. We evaluated “crescent in doughnut sign”, “concentric ring sign”, “sandwich sign”, “hairfork sign” and the “pseudokidney” sign.

In CHPS, persistent abnormal thickening of the pyloric muscle (>3-4mm) is the most important parameter. The “nipple sign” characterized of the muscle hypertrophy to a variable degree, crowding and thickening of mucosa to a variable degree, and protrusion into the distended portion of the antrum. The “double track sign” is characterized by double layer of redundant mucosa that occludes the lumen of the stomach.

Conclusion: Ultrasound, through the research for these characteristic signs, is an accurate and simple method for the study and immediate diagnosis in the emergency room of Pediatric gastro-intestinal pathologies.
Learning Objectives: To demonstrate case of Amniotic band syndrome and discuss radiographic findings in newborn/infant with congenital malformation of the extremities.

Background: Amniotic band syndrome is a rare set of congenital malformations attributed to the anomalous amniotic bands that entangle fetal parts during intrauterine life resulting in a broad spectrum of anatomical disturbances.

Imaging Findings: We report a case of amniotic band syndrome along with radiographic findings in a male child. Antenatal ultrasonography was unremarkable. Examination of the left upper extremity revealed two constricting bands at the level of wrist and mid portion of the arm. Examination of the lower extremity revealed clubfoot deformity in both feet. Radiograph of the left upper extremity revealed two soft tissue constriction bands at the level of mid portion of humerus and wrist. Radiograph of left foot revealed clubfoot deformity with absent middle phalangeal bone of 5th toe. Similarly Radiograph of the right foot revealed clubfoot with absent distal phalangeal bones of 1st, 2nd, 3rd and 4th toes and middle phalangeal bone of 2nd toe. Based on these clinical and radiographic findings a diagnosis of amniotic band syndrome was made.

Teaching Points: Amniotic band syndrome should be considered in every newborn with congenital anomalies, especially defects of extremities and/or body walls. The basis for postnatal diagnosis is physical examination of the newborn, with additional examinations like radiograph and echocardiography so as to detect potential internal organs malformations in order to implicate proper treatment strategy.

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imaging findings was possible in 50% episodes. Most common etiology was fungal followed by bacterial and tubercular, with halo sign in approximately 80% cases of invasive fungal disease. Bacterial pneumonias predominantly showed unifocal or multifocal consolidation.

**Conclusion:** Targeted CT based on localizing symptoms is justified in children with FN. In patients with no localizing signs and symptoms, instead of CT chest abdomen and PNS, CT chest and PNS along with USG abdomen could be considered, reserving CT abdomen for cases with suspected complications.

**Abstract ID:** 390

**ABSTRACT TITLE:** TO DETERMINE THE ROLE OF IMAGING IN EVALUATING PATIENTS WITH PRECOCIOUS PUBERTY

**PRESENTING AUTHOR:** SOFIYA IFTIKHAR MODAK

**CO-AUTHOR:** DR. PRISCILLA JOSHI

**Materials And Methods:** This was a hospital based cross sectional, observational, descriptive study done over a period of two years. Thirty patients referred to our department for evaluation of precocious puberty were included in the study. The patients were evaluated with a radiograph of the left hand, USG of the abdomen and pelvis or scrotum as required and CT/ MRI, if indicated.

**Results And Discussion:** Out of the thirty patients evaluated there were 21 girls and 4 boys (F:M ratio 21:4) with central precocious puberty (CPP) and 4 girls and 1 boy (F:M ratio 4:1) with peripheral precocious puberty (PPP).

Imaging findings were positive in 10 patients with a cause being identified in four boys and six girls. All boys with CPP underwent a MRI brain. Bone age determination is important in both sexes, as it is usually significantly advanced in CPP.

In our study CPP (gonadotrophin-dependent) was seen in 83.33% patients. Four of the twenty five patients had a hypothalamic hamartoma and one had a cerebello-pontine angle epidermoid. The rest twenty patients were idiopathic.

We studied five cases of PPP (gonadotrophin-independent). Two of them were found to have adrenal tumour. There was one case each of Mccune Albright syndrome, ovarian granulosa thecal cell tumour and testicular tumour.

**Conclusion:** Imaging plays an important role in patients with precocious puberty in evaluating whether it is central or peripheral and determining the cause, hence facilitating treatment.

**Abstract ID:** 409

**ABSTRACT TITLE:** ROLE OF APPARENT DIFFUSION COEFFICIENT VALUES IN DETECTION OF HYPOXIC ISCHEMIC INJURY IN TERM NEONATES.

**PRESENTING AUTHOR:** NEERAJA AKKI

**CO-AUTHOR:** DR. T ARUL DASAN, M.D.R.D, PROFESSOR AND HOD OF RADIODIAGNOSIS

**Purpose:** To determine the significance of apparent diffusion coefficient (ADC) values as an objective measure in detection of hypoxic-ischemic encephalopathy (HIE) in term neonates.
Materials and Methods: A tertiary care center retrospective study was conducted, expanding over a period of 2 years. Magnetic resonance imaging studies conducted by 1.5 Tesla Siemens Magnetom Avanto MRI machine on term neonates born between September 2016 to August 2018 at Vani Vilas Hospital were reviewed. Selected cases were classified into group A – term neonates clinically suspected of having HIE and group B - term neonates without HIE which served as control subjects. ADCmean values were calculated in predefined regions in patients and compared with those in control subjects. A Student t test was used for data analysis.

Results: ADCmean values in patients with HIE were significantly low from those of control subjects in the posterior limb of the internal capsule. Differences in other regions of brain were not promising.

Conclusion: Evaluation of apparent diffusion coefficient maps can improve conspicuity of hypoxic-ischemic injury and calculation of ADC values can provide an objective measure of hypoxic-ischemic injury.

Abstract ID: 446

ABSTRACT TITLE : A RARE CASE OF PSEUDOPSEUDOHYPOPARATHYROIDISM
PRESENTING AUTHOR : RASHMI.K.N
CO-AUTHOR : DR. M R SHASHIKUMAR, DR. N L RAJENDRA KUMAR, DR.NANJARAJ C P, DR KAVYA SHREE

Learning Objectives: To study the imaging features of Pseudopseudohypoparathyroidism

Background: A 14 yr old male with k/c/o global developmental delay, dysmorphism and seizure disorder, No significant birth history or family history, Immunised up to date. On examination- Microcephaly, Exophthalmos, Short stature, Pectus carinatum, Bilateral talipes GE Hispeed dual slice CT scanner, MRI scanner 1.5 Tesla (Siemens) were used.

Imaging Findings: Computed tomography-Head, shows dense calcification involving grey white matter junction of bilateral cerebral hemispheres, basal ganglia and dentate nucleus. MRI- Brain shows T2 and FLAIR hypointensities with blooming on GRE sequence in the grey white interphase of bilateral cerebral hemispheres, bilateral basal ganglia and cerebellar dentate nuclei, suggestive of calcifications.

Skeletal survey shows intracranial calcification and Dental abnormalities on skull radiograph Generalised osteopenia involving all the bones Fraying and splaying of the distal metaphyseal ends of the radius and ulna

Lab investigations: Calcium-normal, Phosphorus-normal, ALP-elevated, PTH-normal, Thyroid profile-normal

Conclusion: Pseudopseudohypoparathyroidism (PHP) is not an endocrine disorder but a syndrome of multiple congenital defects. It should be differentiated from hypoparathyroidism and from pseudohypoparathyroidism. It is phenotypically similar to pseudohypoparathyroidism type 1a, called Albright hereditary osteodystrophy (AHO) but biochemically normal and do not show resistance to parathyroid hormone. Both PHP-1a and PPHP are caused by mutations that affect the function of the GNAS gene. But people who inherit the mutation from their mother develop PHP-1a; whereas those who inherit the mutation from their father develop PPHP.
Abstract ID: 447

ABSTRACT TITLE: COMPUTED TOMOGRAPHY FINDINGS IN FETUS IN FETU
PRESENTING AUTHOR: MANIK MAHAJAN
CO-AUTHOR: DR GHANSHYAM DEV GUPTA, DR SUMEET SABHARWAL

Learning Objective: Fetus in fetu is an extremely rare (1/500,000 live births) congenital anomaly and is defined as a malformed fetus which grows within the body of its twin. It is often overlooked in the differential diagnosis of an abdominal mass in infants or children. Unlike teratomas, fetus in fetu is a benign condition and has no malignant potential. Fetus in fetu is a rare condition with less than 200 cases reported in the world to the best of our knowledge. Here we describe the computed tomography (CT) findings in two surgically proved cases of fetus in fetu.

Case Summary: Two children with abdominal lump on clinical examination were evaluated using CT examination. CT examinations revealed large intraabdominal/retroperitoneal masses with variable (solid and cystic) consistency and displacement of the adjacent structures. The internal structure of the masses showed fluid, fat, soft tissues, and bony elements including deformed skull, vertebral body or long bones. Prospective diagnosis of fetus in fetu was made which was confirmed postoperatively.

Conclusions: Although rare, fetus in fetu should be considered in differential diagnosis of paediatric and infantile abdominal masses and in presence of typical CT findings, appropriate diagnosis can be made.

Abstract ID: 509

ABSTRACT TITLE: PEDIATRIC RENAL MASSES: A PICTORIAL ESSAY
PRESENTING AUTHOR: NATASHA GUPTA
CO-AUTHOR: DR. LALENDRA UPRETI, DR. ANUP MOHTA, DR. NIDHI MAHAJAN, DR. NEHA KUMARI, DR. ARITRA KUMAR PANDA.

Learning Objectives: The objective of this presentation is to familiarize the reader with
i) Knowledge about various congenital, inflammatory and neoplastic renal pathologies presenting as renal mass lesions in pediatric age group.
ii) The role of imaging modalities in diagnosis of these lesions.
iii) The imaging findings of various renal masses in pediatric population

Background: Pediatric renal masses constitute an intriguing proportion of abdominal masses seen in children. There is a vast differential diagnosis for pediatric renal lesions, which varies with the age at presentation, clinical presentation and imaging morphology. Accurate diagnosis based on the correct knowledge of imaging findings of these lesions and appropriate clinical correlation is necessary for guiding proper and timely management.

Imaging findings: Multimodality imaging along with role of various modalities and imaging findings of congenital, inflammatory and neoplastic renal lesions presenting as mass lesions in the pediatric age group are presented in the form of a pictorial review.

Conclusion: Imaging is essential for accurate identification and characterization of renal masses in the pediatric population. Many of these lesions have characteristic imaging findings pointing towards definitive histological diagnosis. Appropriate clinical correlation and age at presentation also need to be taken into
consideration. Accurate and early diagnosis is of immense value for timely management facilitating an improvement in the outcome of these children.

Abstract ID: 562

ABSTRACT TITLE: THE ROLE OF BRAIN MAGNETIC RESONANCE IMAGING IN THE EVALUATION OF CHILDREN WITH GLOBAL DEVELOPMENTAL DELAY

PRESENTING AUTHOR: UTKARSH YADAV

CO-AUTHOR: DR. HARI SINGH, DR. SUNANDA SAMANTA

Background: The estimated prevalence of developmental delay in children is ~5-10% and the etiologic profile is diverse. Global developmental delay is diagnosed when there is a significant delay in two or more of the following domains of development: gross motor, fine motor, speech and language, cognition, and social/personal development. The etiology of global developmental delay varies from specific diseases to sequelae of perinatal ischemic insult. Determination of causality may or may not lead to treatment modification but has specific implications with regard to prognosis and counselling of the family. Magnetic resonance imaging is the modality of choice in investigating infants and children with developmental delay.

Aims and Objectives: To study and classify brain magnetic resonance imaging findings in children aged 3 months-5 years who presented with global developmental delay.

Materials and Method: Developmentally delayed children between the ages of 3 months to 5 years who presented to the Dept. of Radio-diagnosis, SN Medical College, Agra for brain magnetic resonance imaging were analyzed and various causes were then tabulated.

Result: Most of them had features sequelae to ischemic insult such as periventricular leukomalacia, encephalomalacia and thinning of corpus callosum. Sequelae to meningoencephalitis and trauma was found to important cause. Rest of them had structural malformations including corpus callosum agenesis, subcortical nodular heterotopia, etc.

Conclusion: MRI is a highly sensitive technique for evaluation children with global developmental delay. Most children with global developmental delay who underwent Magnetic resonance imaging showed positive findings, showing that MRI can contribute significantly to the determination of causality.

Abstract ID: 574

ABSTRACT TITLE: PATTERN RECOGNITION IN PEDIATRIC DIFFUSE LUNG DISEASES (DLD): ATERTIARY CARE CENTRE EXPERIENCE.

PRESENTING AUTHOR: POONAM SHERWANI

CO-AUTHOR: DR. DISHA MITTAL, DR. MANISHA JANA, DR ASHUSEITHBHALLA,DR PRIYANKA NARanje, DR ARUN KUMAR GUPTA, DR DEVASENATHIPATHY K

Introduction: Pediatric diffuse lung diseases (DLDs) are different from the adult DLDs. They are rare but very heterogeneous in nature.

Aim: The aim was to analyse HRCT chest in pediatric DLDs in order to
1. Describe a pattern approach on HRCT towards a specific diagnosis
2. Evaluate the etiologic distribution in pediatric DLDs
Materials and Methods: This was a retrospective study including all children attending pediatric pulmonology clinic with a clinical diagnosis of chronic lung disease. After a detailed clinical evaluation, HRCT chest images were analysed using a pattern approach. Different patterns on HRCT were then separately analysed and matched with the final diagnoses (based on the typical clinico-radiological/laboratory profile; or lung biopsy).

Results: Seventy three children of ages ranging from 8 months to 17 years were included. Ground glass opacity (GGO) was the predominant HRCT finding (n=36); followed by septal thickening (both axial and peripheral subpleural) (n=30), nodules (n=17), cyst (n=14) and crazy paving appearance (n=6). A combination of the individual patterns were observed in multiple patients.

DLDs with GGO predominance on HRCT had diverse etiologies, most frequent being acute or subacute hypersensitivity pneumonitis (7), diffuse pulmonary haemorrhage syndromes and surfactant protein disorders. Majority of the DLDs with septal thickening were fibrotic/end stage DLDs (n=8); showing non-specific diffuse fibrosis and disorganization on biopsy. DLDs with nodules and cysts had specific etiologic diagnoses.

Conclusion: Pattern approach on HRCT can narrow down the differentials in pediatric DLDs, and can serve as a useful non-invasive tool for etiologic diagnosis.

Keywords: Diffuse lung diseases, HRCT, GGO

Abstract ID: 582

ABSTRACT TITLE: RARE CAUSE OF INFANTILE SEIZURE - WOLCOT RALLISON SYNDROME
PRESENTING AUTHOR: SUBRAMANIAN A
CO-AUTHOR: PROF.J.DEVIMEENAL, PROF.P.CHIRTRARASAN, PROF.K.GOPINATHAN

Learning Objective:
- To demonstrate MRI Brain findings of a rare Autosomal Recessive disease WOLCOT RALLISON SYNDROME
- Fewer than 60 cases have been described in the literature
- MRI Findings have not been demonstrated in literature till date.

Background:
- WRS characterized by neonatal/early-onset non-autoimmune insulin-requiring diabetes occurs before six months of age & associated with skeletal dysplasia and growth retardation
- WRS is caused by mutations in eukaryotic translation initiation factor 2a kinase 3 (EIF2AK3), also known as PKR-like endoplasmic reticulum kinase (PERK)
- characterized by Multiple Epiphyseo-metaphyseal Dysplasia.

Imaging Findings - MRI Findings:
- Perirolandic subcortical whitematter, posterior limb of internal capsule and posterolateral thalamus and paratrigonal whitematter shows mild volume reduction and T2 hyperintense areas
- Paucity of sulcal space with thick gyri in bilateral frontal, temporal and adjacent parietal region - possible prematurity / agryria-Pachygryria complex
Skeletal Survey Findings:

- WRS is characterized by Multiple Epiphyseo-metaphyseal Dysplasia.
- Knee: Enlarged and irregular metaphyses with prominent beaks.
- Femoral and tibia: Flattened epiphyses.
- Carpal bones: Small and irregular carpal centres.
- Phalanges: Short and enlarged, with dense and cone-shaped epiphyses in proximal phalanges.
- Vertebrae: Irregular upper and lower plates with frequent ossification defects at the anterior edge, more marked at the dorso-lumbar level.
- Pelvis: Abnormal iliac wings and dysplastic acetabular roofs with dislocation or subluxation of the femoral heads.

Conclusion:

- In a case of Neonatal diabetes and seizure disorder with MR findings of Agyria Pachygyria complex and multiple epiphyseal dysplasia, the diagnosis of WOLCOTT-RALLISON SYNDROME is to be considered.
- This the index case of WOLCOTT - RALLISON SYNDROME presenting with Agyria-Pachygyria complex.

Abstract ID: 671

**ABSTRACT TITLE**: EVALUATION OF BRAIN INJURIES IN PRETERM INFANTS WITH NEUROSONOGRAPHY

**PRESENTING AUTHOR**: VED VIKHARE

**CO-AUTHOR**: DR DILIP LAKHKAR, DR SUSHIL KACHEWAR

**AIMS**: To study the role of neurosonogram in detecting lesions like germinal matrix hemorrhage (GMH), intraventricular hemorrhage, periventricular leucomalacia (PVL), ventriculomegaly in preterm neonates.

**Methods**: Fifty preterm neonates with suspected brain injuries underwent neurosonogram using curvilinear and linear transducers of MINDRAY Ultrasound machine in the department of Radiodiagnosis, Dr.Vithalrao Vikhe Patil Memorial Hospital, Ahmednagar within one week of birth. Neurosonogram was performed through anterior, posterior and mastoid fontanelle in coronal and sagittal planes.

**Inclusion criteria**:  
1. All preterm born <37 weeks of gestation with clinical suspicion of brain damage.  
2. Preterm with abnormal neurological presentation like seizures.

**Exclusion criteria-Cases with congenital malformations, severe infections and failed resuscitation.**

**Results**: Most common abnormality was GMH which was seen in 23 patients. Out of which grade 1 GMH is most common. PVL was seen in 3 patients. All of these injuries are seen more common in babies born prior to 32 weeks of gestation.

**Conclusion**: Neurosonogram is best initial method of investigation for preterm babies with suspected neurological injuries. It is best to perform neurosonography within 1st week of birth. It helps in satisfactory
grading of GMH, PVL, in analyzing the prognosis and possible outcome.

Discussion: Neurosonography is simple, established non-invasive technique for intracranial assessment of preterm neonate and for assessing pathological imaging appearances in neonates.

Abstract ID: 797

ABSTRACT TITLE: ENCEPHALOCRANIO CUTANEOUS LIPOMATOSIS (FISHMAN/HABERLAND SYNDROME)

PRESENTING AUTHOR: HIMAN BINDU TUMU

CO-AUTHOR: DR. VENKAT RAM REDDY DR. G. RAMA KRISHNA REDDY DR. VYSHNAVI

Learning Objectives: ECCL (ENCEPHALO CRANIOCUTANEOUS LIPOMATOSIS) is a rare, sporadic congenital neuro oculo cutaneous disorder that involves ecto-mesodermal tissues such as skin, eyes and central nervous system. Till now no epidemiological data on incidence is available and no clear gender, racial or geographical predilection. The pathogenesis still unclear, somatic mosaicism is thought to be the underlying pathophysiology.

Diagnostic Criteria: The Revised Moog’s criteria is used which includes a) OCULAR FINDINGS of Choriostomas, Ocular colbomas, Corneal abnormalities, Anterior chamber abnormalities, Globe calcification. b) CUTANEOUS FINDINGS Nevus psiloliparus, focal dermal aplasia, Hypoplasia on scalp and face, Non-scarring alopecia, Nodular skin tags, Subcutaneous lipoma. c) NEUROLOGICAL FINDINGS: intracranial lipomas, asymmetrically dilated ventricles, porencephalic cyst, seizures, developmental delay and mental retardation.

Background: A 3 year old female patient came to paediatrics OP with a complaint of midline rubbery elevated soft tissue scalp swelling and with non scarring alopecia. History of right sided seizures, Mental retardation and developmental delay since birth.

Imaging Findings: Findings On CT And MRI
1) Mild dilatation of right lateral ventricle & right subdural hygroma.
2) Arachniod cyst in temporal region of right cerebral parenchyma measuring approximately 4.7x4.4 cm.
3) Lipomas in bilateral cerebellopontine angles (1.5x0.9 cm on right side, 1.3x1cm on left side) which are extending in to medial temporal region (1.4x0.7cm on right side, 1.2x 0.6cm on left side) and right meckles cave region measuring 1x0.4cm.

Clinical Findings: demonstrates a nevus psiloliparus and focal area of non-scarring alopecia covers an underlying scalp lipoma seen as rubbery slightly elevated mass.

Conclusion: 3 yrs old female patient with hallmark of findings of seizures, mental retardation, benign lipomas in brain and scalp, arachnoid cysts in brain, Lipomas in bilateral cerebellopontine angles extending in to medial temporal and right meckles cave regions, nevus psilolipar, non-scarring alopecia.

Differential Diagnosis: Oculo cerebro cutaneous syndrome, Nevus sebaceous syndrome, Proteus syndrome.

Abstract ID: 798

**ABSTRACT TITLE**: UNRAVELING THE MAZE OF FETAL BODY MRI- UTILIZATION IN A CASE OF OEIS COMPLEX DISORDER

**PRESENTING AUTHOR**: VINAY B S

**CO-AUTHOR**: DR. AJIT MAHALE. DR. MERWYN FERNANDES. SAHANA OJHA.

**Background**: The OEIS complex includes defects such as exstrophy of the cloaca, omphalocele, spinal defects and imperforate anus. Abdominal wall defects are a complex group of anomalies which most of the times are incorrectly diagnosed. The OEIS complex affects 1 in 200 000 to 400 000 pregnancies and is of unknown cause. MRI 1.5T SIEMENS MAGNETOM AVANTO is used.

**Imaging findings**: Herniation of abdominal contents through the ventral abdominal defect (4.5cms). Bladder extrophy Gross kyphoscoliosis of Thoracolumbar vertebrae Mild degree of talipes of leg and ankle

**Learning objectives**:
- Embryological background
- Role of MRI in rare case of OEIS
- Review of associated syndromes.

**Conclusion**: With an algorithmic approach beginning with discovery of the location of the defect, a more precise diagnosis can be determined that may give valuable opinion on pre- and postnatal management decisions.

**Keywords** : Omphalocele, fetal MRI, OEIS complex.

Abstract ID: 811

**ABSTRACT TITLE**: ‘WINE GLASS SIGN’ IN A CASE OF INFANTILE KRABBE DISEASE – A RARE MRI MANIFESTATION.

**PRESENTING AUTHOR**: SAURABH MAHESHWARI

**CO-AUTHOR**: C M SREEDHAR, P SHARMA, K U BHANU, S BHATTACHARJEE

**Learning objectives**: To understand the imaging appearance of ‘wine glass sign’ on T2 weighed MR images and its occurrence in Krabbe disease.

**Background**: ‘Wine glass sign’ on T2 weighed coronal MR images represents characteristic symmetrical hyperintensities of the bilateral corticospinal tracts, extending from the centrum semiovale to the brain stem. These findings are classically described in amyotrophic lateral sclerosis (ALS) and primary lateral sclerosis. Krabbe disease is an autosomal recessive demyelinating leukodystrophy due to deficiency of galactocerebroside β-galactosidase.

Although involvement of corticospinal tract is not uncommon in Krabbe disease (1), continuous tract involvement has not been described in its infantile variant. A single case report of its adult variant showing such involvement was found during search of literature (2).

**Imaging findings**: A 6-year-old male child was referred for MR imaging with complaints of progressive weakness of bilateral upper and lower limbs with onset at the age of 2 years. MRI was done at AFMC, Pune in Siemens Symphony 1.5 Tesla scanner.
MR images revealed bilateral symmetrical hyperintensities involving centrum semiovale, corona radiata, posterior limb of internal capsule, crus cerebri and pons giving the 'wine glass' appearance on T2 coronal images. A few T2/FLAIR periventricular hyperintensities were also seen in bilateral parieto-occipital lobes.

On the basis of clinical and imaging features primary differential diagnosis was juvenile amyotrophic lateral sclerosis. However, further work-up revealed deficiency of galactocerebrosidase and patient was confirmed to have Krabbe disease.

Teaching points:
- MR appearance of ‘wine glass sign’.
- Rare presentation of Krabbe disease with ‘wine glass sign’

References:

Abstract ID:844

**ABSTRACT TITLE**
MYSTERY OF PANDORA’S BOX: A RARE CASE OF CONGENITAL TB PRESENTING WITH ABDOMINAL DISTENSION IN AN INFANT

**PRESENTING AUTHOR**
DILIP INGOLE

**CO-AUTHOR**
S CHATTTERJEE, K U BHANU, K MANRAI

**Learning objectives:** To study a rare case of disseminated congenital tuberculosis.

**Background:** Tuberculosis in neonatal period is classically divided into two types: congenital and postnatally acquired. Placenta plays a vital role as highly effective natural barrier preventing the spread of bacteria towards fetus, so the vertical transmission of TB in children is uncommon and documented cases of congenital TB are scarce. Mean age of presentation of congenital TB is 28 days (range between 1 to 3 months of life). Though in about 60-70 % cases of congenital tuberculosis mother is asymptomatic, the knowledge of potential latent or active Mycobacterium TB infection during pregnancy is crucial.

**Imaging findings:** A 2.5 months old female child presented with history of fever and gradual distension of abdomen. Ultrasound abdomen revealed hepatosplenomegaly with multiple hypoechoic lesions in liver & spleen along with retroperitoneal lymphadenopathy. CECT chest, abdomen and pelvis was done at AFMC Pune, using Somatom Siemens 16 sensation scanner. CECT abdomen and pelvis revealed hepatosplenomegaly with multiple peripherally enhancing lesions in both lobes of liver and spleen, extensive retroperitoneal lymphadenopathy and ascites. Also seen were sub-centimeter sized nodules in bilateral lung fields with few lytic lesions in ribs.

On the basis of clinical features and imaging our initial differential diagnosis were lymphoma/ metastases. However, CT guided biopsy from liver, spleen lesions and lymph nodes reveled tuberculous granulomas showing AFB positivity, thus confirming the diagnosis of congenital TB.

**Teaching points:** A rare case of congenital tuberculosis presenting with fever and abdominal distension.
Abstract ID: 855

ABSTRACT TITLE: PAEDIATRIC INTRACRANIAL CALCIFICATIONS: DIVERSE SPECTRUM
PRESENTING AUTHOR: VIJAY KUMAR
CO-AUTHOR: S CHATTERJEE, P SHARMA, N KAKRIA

Learning Objectives: The purpose of this study is to present diverse spectrum of conditions resulting in intracranial calcifications in pediatrics population.

Background: Intracranial calcification (ICC) is a common finding on neuroimaging in pediatric neurology practice. In approximately half of all cases the calcification occurs in damaged, neoplastic, or malformed brain. For the large number of other disorders in which ICC occurs, no common pathogenetic mechanism can be suggested.

Congenital infection, particularly with cytomegalovirus, accounts for a significant proportion of all cases. However, some genetic diseases, in particular Aicardi–Goutières syndrome, Band-like calcification, Sturge Weber syndrome, tuberous sclerosis etc may mimic congenital infection; therefore, a full consideration of the radiological and clinical features is necessary before concluding that congenital infection is the cause.

Imaging Findings: Six children of different age group having eventful and non-eventful birth history were evaluated by CT scan and MRI. The imaging revealed various patterns of intracranial calcifications characteristic to different pathologies.

Conclusion: The aim of this study is to emphasize the importance of pattern of calcification in brain to differentiate various diseases in children.

Abstract ID: 882

ABSTRACT TITLE: DYNAMIC SUSCEPTIBILITY CONTRAST ENHANCED MRI PERFUSION IN CEREBRAL PALSY
PRESENTING AUTHOR: GURDARSHDEEP SINGH MADAN
CO-AUTHOR: GIRIRAJ SINGH, KS RANA, MJ JACOB

Purpose: Cerebral Palsy is most common neurological problem of the childhood accounting for 2-2.5 per 1000 new born. Despite improvements in infant mortality and maternal mortality and morbidity, the incidence of cerebral palsy has not gone down but have actually increased in certain countries due to survival of extremely low birth weight (ELBW) and very low birth weight babies (VLBW).

MRI morphological imaging has been the keystone imaging for diagnosis of cerebral palsy. We sought to answer certain such questions using Dynamic Susceptibility Contrast Enhanced (DSC) MRI perfusion imaging not answered by morphological appearances.

Materials and Methods: We conducted this study for 55 patients who had clinical signs of cerebral palsy as assessed by an experience paediatric neurologist. These children were subjected to T2* DSC MRI perfusion imaging with 0.2 mmol/kg bw (Gadolinium based contrast) on 3.0 T MR System (TRIO- Siemens Erlanger, Germany) and relative Cerebral Blood Volume and relative Cerebral blood flow Maps were created and assessed subjectively by two independent radiologists.

Results: The most common site of hypoperfusion was frontal lobe (n = 41) followed by parietal lobe (n = 39), temporal lobe (n = 33), basal ganglia (n = 18), thalamus (n = 16) and occipital lobe (n = 11). We could not
demonstrate cerebellar perfusion abnormalities in our subset of patients. Hypoperfusion in basal ganglia was not only seen in mixed type but also in 48% of spastic quadriplegics, 18.8% of spastic diplegics and 16.7% of hemiplegics.

**Conclusion:** Use of perfusion imaging helps in making the imaging in CP more sensitive and helps in describing the pathogenesis of certain disabilities which are not explained by morphological findings alone. There is certain disadvantage with DSC MRI perfusion imaging being qualitative/semi quantitative, ability to detect global hypoperfusion remains to be evaluated.

**Abstract ID:** 883

**ABSTRACT TITLE:** ROLE OF HIGH RESOLUTION ULTRASOUND VS MRI IN CHILDREN WITH SPINAL DYSRAPHISM

**PRESENTING AUTHOR:** SAYEMA

**CO-AUTHOR:** DR SHAGUFTA WAHAB (MD RADIodiagnosis), DR RIZWAN KHAN (MS, MCH PEDIATRIC SURGERY),

Spinal dysraphism is one of the most common congenital disorders associated with significant morbidity and mortality with an estimated incidence of 0.05 to 0.25 per 1000 births. It occurs due to incomplete midline closure of osseous/mesenchymal/neural tissue, due to an early insult in embryogenesis of spine. They are divided into aperta (visible lesion) and occulta (with no external lesion). The aperta is usually associated with skin defect with an impending risk of CSF leak constituting “open defects,” whereas the occult forms have normal skin cover.

Recent improvements in imaging quality of sonography have brought the diagnostic value of new generation high frequency ultrasound scanners at par with that of MRI. The diagnostic value of high frequency USG is invaluable due to this modality being cheaper, better available, noninvasive and not requiring sedation of the child. In developing nation as ours, where there are still cost restraints & availability concerns for MRI spine, sonography of spine can provide a cheap alternative.

**Objective:** Study the HR USG findings in children (0-14 yrs) with spinal dysraphism & compare it with the existing gold standard imaging modality – MRI.

**Materials and Methods**
- An observational study including 30 pediatric patients (0-14 years) with complaints s/o Spinal Dysraphism in the OPD/IPD of Paediatric surgery.
- After clinical evaluation patients underwent high resolution sonography and MRI.
- Findings are tabulated and compared with MRI as the gold standard.

**Conclusion:**
- High resolution sonography of spine is a useful and cheap tool for detailed evaluation of spinal dysraphism.
- Till 3 months of age its efficacy approaches that of MRI and it can easily substitute MRI in this age group where costs are concern. At present its usefulness is underestimated and understated.
- Beyond 3 months of age its accuracy is variable but can still be used in special case scenarios.
Spinal dysraphism is one of the congenital disorders associated with significant morbidity and mortality. Its estimated incidence is approximately 0.05 to 0.25 per 1000 births(1). Etiology wise it has a multifactorial causation. It occurs due to incomplete midline closure of osseous, mesenchymal tissues and neural tube resulting in splitting of structures involved in a normal spine development.

The term “split notochord syndrome “ represents splitting or deviation of notochord with a persistent connection between the ventrally located endoderm and dorsal ectoderm. The most severe form is represented by a dorsal enteric fistula through which a portion of bowel herniates into a dorsal sac traversing spinal canal to open in the skin/membrane covered dorsal sac. Obliteration at various levels in this tract leads to formation of dorsal enteric sinus/cyst/diverticula(2). Similarly, intraspinal enteric cysts (neuroenteric cyst) are infrequently diagnosed in an infant unless they are large enough to cause myelopathy and radicular pain. Neurenteric cysts account for 0.7-1.3% of spinal axis tumors(3).

The concurrence of both these entities in our case of a rather asymptomatic 9 month old infant who presented with a deformity and swelling at upper back region makes it rare. Clinically, scoliosis was thought of and a plain radiograph of dorso-lumbar spine was requested which showed multiple vertebral segmentation anomalies with a soft tissue radio-opacity in upper thoracic region. MRI was advised by the radiologist under strong suspicion of a dysraphic spine which revealed this rare notochordal anomaly.

References:
1. Warder DE. Tethered cord and occult spinal dysraphism. Neurosurgery Focus 2001;15:10:e1
a) intrathoracic space-occupying lesions,
b) abdominal and pelvic masses,
c) abdominal wall defects and bowel atresias,
d) bilateral urinary tract anomalies (particularly with inconclusive findings on ultrasound) and oligohydramnios,
e) conjoined twins

**Imaging Protocol And Findings:** Patient preparation 2 hour fasting, oral diazepam 30 minutes prior to study (optional in cases with severe polyhydramnios to limit fetal motion)

MRI sequences Performed at 1.5 Tesla. Single Shot Fast Spin Echo (SSFSE), Fast Imaging T1- weighted sequence. MRI signal intensities of normal organs

Lungs: evolution of signal from intermediate to low on T1 and low to high on T2 images with fetal maturation during the 2nd and 3rd trimesters

Bowel: high T2 signal fluid is seen in proximal small bowel. High T1 signal meconium is seen in large bowel and distal small bowel in 2nd and mainly large bowel in 3rd trimester

Liver: liver parenchyma has intermediate T1 signal and low T2 signal

Kidneys: renal parenchyma has intermediate T2 signal

**Conclusion and/or Teaching points:** MRI is an excellent diagnostic tool for detecting paediatric congenital anomalies and should be used with more frequency. It is also good for following the course of the foetus. Being non-invasive it offers the advantage of safe, easy and quality imaging all together.

**Abstract ID:1009**

**ABSTRACT TITLE:** FAMILIAL DISTAL TUBULAR ACIDOSIS

**PRESENTING AUTHOR:** G SRUJANA

**CO-AUTHOR:** DR.M.VENKATESH, DR.V.N.NARVEKAR, DR.VEDARAJU, DR.RAMA KRISHNA RAO BARU, DR.P.SUNEETHA

**Objective:** We are reporting 2 siblings with distal tubular acidosis emphasizing the imaging findings for early diagnosis.

**Background:** Distal tubular acidosis can be familial or secondary Distal renal tubular acidosis or Type I renal tubular acidosis is characterized by metabolic acidosis due to impairment in the tubular secretion of hydrogen (H+ ) ions in the distal nephrons. Due to tubular derangements it can be associated with characteristic features of hypokalemia, medullary nephrocalcinosis, metabolic bone disease, i.e. rickets in children and osteomalacia in adults, nerve deafness. In untreated cases, the progression of nephro calcinosis may lead to chronic renal failure. Distal tubular acidosis is the second most common cause of medullary nephro calcinosis

**Imaging Findings:** Two siblings were assessed with radiographs and ultrasound. On radiographs of knee, wrist showing findings of rickets like cupping and fraying, with widening of growth plate and nephro calcinosis seen in abdominal radio graphs.
Ultrasound image shows nephro calcinosis.

Conclusion: Failure of early diagnosis and treatment will adversely affect the outcome of the disease as seen in our patient and her sister. Genetic evaluation and genetic counseling plays an important role in its prevention.

Abstract ID:1012

ABSTRACT TITLE: PRIMARY PULMONARY NEOPLASMS IN PEDIATRIC POPULATION.

PRESENTING AUTHOR: ANURADHA DAWANI

CO-AUTHOR: ASHU SETH BHALLA, PRIYANKA NARANJE, MANISHA JANA, ARUN KUMAR GUPTA

Learning Objectives: To review the imaging findings that are most useful in the differential diagnosis of primary pulmonary tumors in children.

Background: Primary lung tumors are extremely uncommon in children and comprise a wide range of histopathologic types, very distinct from that seen in adults. The most common tumor types are pleuropulmonary blastoma, inflammatory myofibroblastic tumor and carcinoid. Rare pediatric lung tumors include sarcomas (rhabdomyosarcoma, fibrosarcoma and leiomyosarcoma), mucoepidermoid carcinoma and bronchogenic carcinoma (1).

Imaging Findings: Most neoplasms are typically seen as soft tissue masses that range in size from several centimeters to large masses that occupy the entire hemithorax and may show features of local invasion. The lesions may be multicystic, solid cystic and entirely solid with malignancy rate increasing in that order. Some lesions typically show calcifications, for example, carcinoid and inflammatory myofibroblastic tumor. Associated mediastinal shift, lung collapse and pleural effusion may be seen (2).

Conclusion: Primary pediatric pulmonary tumors are rare and initial diagnostic consideration is usually pneumonia in these children. Hence, familiarity with the imaging features of these entities is crucial to prevent the errors and delay in diagnosis.


Abstract ID:1055

ABSTRACT TITLE: ROLE OF MR ENTEROGRAPHY IN EVALUATION OF DISEASE ACTIVITY AND TREATMENT RESPONSE IN PAEDIATRIC CROHN’S DISEASE

PRESENTING AUTHOR: KIRUTHIKA RAJENDRAN

CO-AUTHOR: DR.AMARNATH,DR.G.SATHYAN,DR.B.SUHASINI

Aim & Objective: The aim of the study is to devise a scoring system of MR enterography in pediatric Crohn’s disease by correlating the imaging features with clinical scoring system - PCDAI

Materials & Methods: 24 children, either suspected of inflammatory bowel disease or undergoing treatment
for the same and came for follow up were considered in this study. They underwent MR enterography & imaging features were tabulated and scoring system (MREGS, CDMI) was devised based on severity of the features. The scores were compared with PCDAI (Pediatric Crohn’s disease activity index).

Result & Conclusions: MR enterography showed high sensitivity & specificity in diagnosing the active or chronicity of inflammation. The MRE scores showed significant correlation with clinical score – PCDAI (Pediatrics crohns disease activity index score) and high sensitivity with wall thickness among individual variable.

References:
2. Majid chalian et al. MR enterography findings of inflammatory bowel disease in paediatric patients
3. Poerri F et Al. Assessing pediatric ileocolonic Crohn’s disease activity based on global MR enterography scores

Abstract ID: 1056

ABSTRACT TITLE: UNRAVELING PEDIATRIC LIVER TUMORS: CLINICO-IMAGING FEATURES
PRESENTING AUTHOR: POONAM SHERWANI
CO-AUTHOR: DR ANURADHA DAWANI, DR DEVASENATHIPATHY K, DR RAJU SHARMA, DR PRIYANKA NARANJE, DR MANISHA, DR ARUN KUMAR GUPTA

Learning objectives:
1. To describe the typical imaging features of common benign and malignant Pediatric liver tumors.
2. To highlight specific clinical and laboratory findings to help the radiologists in making the correct diagnosis

Background: Knowledge of common pediatric liver masses and their imaging appearance is essential to suggest the differential diagnosis. While evaluating liver tumors in children, important considerations should be given to the age of child, clinical features and biochemical markers which help in making the appropriate diagnosis. Among the benign tumors, most common are infantile hepatic haemangioma, mesenchymal hamartoma, epithelial tumors like focal nodular hyperplasia (FNH) and rare entities include hepatocellular adenoma. Among malignant tumors, hepatoblastoma is the most common and is associated with elevated Alpha fetoprotein. Other less common tumors are hepatocellular carcinoma in older children and undifferentiated embryonal sarcoma. Biliary rhabdomyosarcoma is unique to children and it is the only malignant tumor of the biliary tract which presents under 5 years as an intraductal mass.

Imaging findings: Infantile hepatic haemangioma can be focal, multifocal or diffuse and shows typical intense arterial phase enhancement and retention of contrast in the venous phase with dilated hepatic arteries and tapering of infra-celiac aorta. Mesenchymal hamartoma is seen in less than 2 years and is usually a large solitary solid-cystic multiseptate lesion. Hepatoblastoma can show arterial phase enhancement and washout on portal venous scans. Speckled or amorphous calcification can be seen in upto 50% of cases. Biliary rhabdomyosarcoma is seen as a mass within the biliary tree and is associated with elevated bilirubin and alkaline phosphatase.

Conclusion: Sound knowledge of clinical, laboratory and imaging features is critical for making the correct diagnosis in children with liver masses.
Learning Objectives: Grading of vesicoureteric reflux and other associated findings on micturating cystourethrography in children. 

Background: Vesicoureteral reflux (VUR) is the retrograde flow of urine from the bladder into the ureter and toward the kidney secondary to a dysfunctional vesicoureteric junction, urinary bladder outlet obstruction which has variety of causes.

VUR is more prevalent in male newborns, but VUR seems to be 5-6 times more common in females older than one year than in males. The incidence decreases as patient age increases. Severity is graded in to 5 grades using the International Reflux Study system.

The reference standard test for VUR is voiding cystourethrogram (VCUG), which has excellent interreader reliability in the setting of childhood urinary tract infection.

Imaging findings:

On Static films: Bladder contour, presence of diverticula, ureteroceles, grade of reflux, configuration & blunting of calyces, bladder neck anatomy, urethral patency, bony structure.

On dynamic films: Vesicoureteral reflux (VUR) is graded based which includes domains such as height of retrograde flow and dilation and tortuosity of the ureters.

Delayed or postvoid films: documenting clearance of contrast from the upper tracts.

Teaching points: - During reporting, vesicoureteric reflux should be graded and report should also contain all important associated static film findings. As all these are needed to make the decision of surgical and medical management of vesicoureteric reflux.
Purpose: To study the ancillary findings in HIV positive children undergoing CT chest for respiratory complaints.

Materials and method: 25 children with proven HIV positive status with respiratory symptoms or positive chest xray undergoing CECT chest were enrolled. The ancillary findings on CECT chest were evaluated for liver, spleen, spine abnormalities and abdominal lymphadenopathy.

Result: Five children in the study population had abdominal lymphadenopathy. Two children had focal splenic lesions, one had heterogenous liver attenuation and one child had a focal hyper vascular liver lesion. Six children had intrahepatic biliary radical dilatation. Calcific foci in pancreas was seen in one child. In addition, six children had axillary lymphadenopathy. Spine abnormality was noted in none. Extrapulmonary findings were more commonly encountered with children with lower CD4 count.

Conclusion: Disseminated and extrapulmonary complications are more frequently observed in HIV positive children with lower CD4 counts therefore impacting the treatment outcome and prognosis.

Abstract ID: 1145

ABSTRACT TITLE : SPECTRUM OF MRI FINDINGS IN POST COOLED HYPOXIC TERM NEONATES
PRESENTING AUTHOR : AISHWARYA R
CO-AUTHOR : PROF. DR. S. BABU PETER

Learning Objectives: To determine the role of Magnetic resonance imaging of brain in grading neonatal hypoxia. To assess the severity & pattern of hypoxic injury in term neonates. To predict the outcome from pattern of injury.

Background: The findings of hypoxia in the term neonate differ from those of older children. Furthermore, neonatal hypoxic events may be complex due additional component of hypoperfusion that is not present in older children or adults. The findings in full-term neonates differ from those in preterm neonates.

Therefore, imaging findings in term neonates must be assessed according to different rules from those used in other age groups.

Imaging Findings: 4 major signs that occur in proximity to one another are used as a means of facilitating the diagnosis of hypoxia in the term neonate. They are: -increased signal intensity in the basal ganglia on T1- weighted images, -increased signal intensity in the thalamus on T1-weighted images, -absent or decreased signal intensity in the posterior limb of the internal capsule on T1- weighted images, -restricted diffusion on diffusion-weighted images.

MR spectroscopy findings in full-term infants with hypoxic–ischemic injury include elevation of choline relative to creatine, decreased N-acetylaspartate, and the presence of a lactate peak.

Conclusion: In conventional MR imaging, the changes are best visualised 7 to 21 days after the insult. Acute hypoxic injury has predilection for grey matter structures due to their high metabolic activity. Prolonged partial hypoxic injury shows relative sparing of deep grey matter and involvement of cortex & white matter. MRI is useful to assess severity & pattern of injury, predict outcome & assess effectiveness of interventions.

Learning objectives: Describe the imaging features of neuroblastoma, ganglioneuroma and ganglioneuroblastoma. To describe the various image defined risk factors which are important in prognosticating these tumours.

Background and image findings: Neuroblastic tumours continue to be an enigma due to their varied behaviour pattern on follow up. Some tumours regress spontaneously while others progress to fatal outcomes. Neuroblastic tumours which comprise of neuroblastoma, ganglioneuroma and ganglioneuroblastoma arise from the sympathetic nervous system and are most common solid extracranial tumours in children. Ganglioneuroma is the most benign among these tumours while Ganglioneuroblastoma has an intermediate malignant potential. Neuroblastoma is the most immature, undifferentiated, and malignant tumor of the three. The mean age of presentation of neuroblastic tumours is around 16 months though most of these tumours are diagnosed upto 7 years of age. Most common sites of origin includes adrenals, retroperitoneum and chest while neck and pelvis are less common sites. The INTERNATIONAL NEUROBLASTOMA RISK GROUP PROJECT (INRG) has classified these tumours according to Image Defined Risk Factors (IDRFs). Treatment consists of surgery and, usually, chemotherapy. Despite various advances in treatment, including bone marrow transplantation, neuroblastoma among these remains a lethal tumour. A review of imaging findings and various IDRFs will be described in the educational exhibit.

Teaching points: Early diagnosis with imaging and prompt treatment will lead to better survival rates. It is important to identify various IDRFs to prognosticate these tumours.

Learning Objectives: Magnetic resonance imaging spectrum in neonatal hypoxic-ischemic encephalopathy:

Background: Neonatal hypoxic-ischemic encephalopathy (HIE) is one of the most common causes of cerebral palsy (CP) and other severe neurological deficits in children. Neonatal HIE occurs in 1.5/1000 live births. It is caused by inadequate blood flow and oxygen supply to the brain resulting in focal or diffuse brain injury.

Asphyxia is the most significant risk factor for HIE. The pattern of brain injury depends on the severity and duration of hypoxia and degree of brain maturation. Imaging findings: MRI is the most sensitive and specific imaging modality.

The imaging findings in full-term neonates (>36 weeks of gestation) may differ from those in preterm neonates (<36 weeks of gestation) T1 grey matter: hyperintense white matter: hypointense
T2-grey matter: variable depending on the time of imaging and presence of haemorrhage white matter: hyperintense DWI/ADC diffusion restriction first week ADC pseudonormalisation occurs at the end of the first week

Conclusion: There are three main patterns of HII depending on the severity of the insult and maturity of the neonatal brain.

Watershed pattern (WS): Seen in term neonates affected by mild-to-moderate asphyxia and injury involves the parasagittal cortex and subcortical white matter. PVL or GM-IVH: Associated with mild-to-moderate asphyxia in preterm neonates. Deep gray matter or basal ganglia thalamic pattern: Associated with profound hypoxia, irrespective of maturity.

Preterm neonates show less severe involvement of basal ganglia. Term neonates show frequent involvement of perirolandic cortex. There are varying degrees of cortical or white matter injury, depending on the nature of insult.

Abstract ID: 1215

ABSTRACT TITLE: PSEUDOTUMORAL PULMONARY TUBERCULOSIS IN PEDIATRIC PATIENT
PRESENTING AUTHOR: SUDIPTA MOHAKUD
CO-AUTHOR: DR. NERBADYSWARI DEEP (BAG), DR. SUPRAVA NAIK, DR. SUVENDU PURKAIT, DR. AMIT KUMAR SATAPATHY, DR. SUBHAKANT PATEL

Learning Objectives:
2. Imaging findings of pseudotumoral pulmonary tuberculosis

Background: Pseudotumoral form is a rare presentation of pulmonary tuberculosis even in endemic areas. Commonly TB presents as consolidation in lower lobes, pleural effusion, miliary nodules & hilar & mediastinal lymphadenopathy in its primary form. Postprimary tuberculosis appears as nodular and linear opacities or increased attenuation at the lung apex. Peripherally enhancing lymph nodes with central hypodensity due to necrosis are suggestive of tubercular etiology but not pathognomonic of it. Thin walled cavities may be seen in both the forms.

A 1.6-year-old male child presented with on & off fever, cough and inadequate weight gain for about 3 months with a large non-resolving radio opaque shadow in the right upper and mid lung zones. There was no hemoptysis but a positive past history of contact. The Mantoux test, sputum for AFB and the nucleic acid amplification test were negative. Histopathology demonstrated granulomas and Mycobacterium tuberculosis on ZN staining without evidence of malignancy.

Imaging Findings: CECT scan of thorax showed a large heterogeneously enhancing mass lesion in the right upper and middle lobe with adjacent consolidation. Mediastinal nodes with Central hypodensity and peripheral calcification were seen. The SVC was compressed and the right pulmonary artery was encased by the mass. Mild pleural effusion was seen.

Conclusion: and/or Teaching points: Pulmonary tuberculosis can present as a large intrathoracic mass resembling sarcoma or pulmonary blastoma in children. Mediastinal nodes with Central hypodensity and peripheral calcification are suggestive of tuberculosis. Histopathological analysis differentiates pseudotumoral tuberculosis from tumor when all other tests are negative.
ABSTRACT TITLE: ABDOMINAL PAIN IN FEBRILE NEUTROPENIC CHILDREN: AN IMAGING SPECTRUM

PRESENTING AUTHOR: DEEPIKA MISHRA

CO-AUTHOR: DR RAMA ANAND (LHMC AND SSKH), DR POOJA ABBEY (LHMC AND SSKH), DR VARINDER SINGH (KALAWATI SARAN CHILDREN’S HOSPITAL, DR RAVINDER KAUR (LHMC AND SSKH)

Background: Neutropenic patients have a high risk of infections. Chest infections are commoner, however they may often present with abdominal pain without any localizing signs. Early identification of the cause and treatment is important to prevent mortality.

Materials and Methods: 25 febrile neutropenic children presenting with abdominal pain were evaluated using ultrasonography first and CT if needed.

Results: The commonest cause identified in these patients was abscesses. While pyogenic liver abscesses were noted in 2 patients, the incidence of fungal abscesses was high (4 cases). They presented in liver and spleen as multiple microabscesses or larger abscesses with typical spoke-in-wheel or bull’s eye appearance.

In one patient with flank pain, bilateral renal abscesses were noted as multiple heterogeneously hypoechoic lesions in the renal parenchyma with no internal vascularity. Some of these appeared to communicate with a perinephric collection with echoes within. Another common cause was colitis, seen in 4 patients which appeared as bowel wall thickening with increased vascularity and ascites. Typical involvement of caecum was seen predominantly. Ascending colon involvement and pancolitis were also noted in two patients.

Two patients with disseminated fungal infections showed involvement of lungs and viscera, presented with focal lesions and infarcts involving kidneys and spleen.

One patient having enlarged appendix with periappendiceal inflammation and fluid, was diagnosed with acute appendicitis.

A rare cause of pain was abdominal TB which appeared as multiple necrotic periportal, peripancreatic and mesenteric lymph nodes.

ABSTRACT TITLE: IMMATURE GASTRIC TERATOMA - AN UNUSUAL PRESENTATION

PRESENTING AUTHOR: SRISHTI AGARWAL

CO-AUTHOR: DR. RAJKUMAR YADAV, DR. USHA JAIPAL

Learning Point: Gastric teratoma is a very rare tumor which accounts for <1% of all teratomas occurring in infancy and childhood. Almost all reported cases of gastric teratoma are of mature variety, only a few cases of immature variety. The rarity of the disease makes the diagnosis very difficult.

Background: Gastric teratoma is a type of extra gonadal germ cell tumor. Mature gastric teratomas are considered benign, whereas the malignant potential is present in immature gastric teratoma.

It can arise from various sites, but mostly from the greater curvature and posterior wall of the stomach. Gastric teratomas are exophytic in the majority of cases (>60%) and endophytic growths are present in about 30% of cases, in some cases, mixed exophytic and endophytic growths may present.
**Imaging:** Important modalities that help in diagnosis are abdominal radiograph, ultrasonography and CT or magnetic resonance imaging. Radiograph reveals a soft tissue mass with associated calcifications which is found in about 50% of cases. Ultrasonography demonstrates a heterogeneous mass with mixed echogenicity. CT with contrast is the modality of choice which demonstrates a heterogeneous mass containing varying amounts of cystic and solid components with fat and calcification. CT with contrast can detect the origin of gastric teratoma. Gastroscopy barium meal and other modalities has a limited role in the diagnosis of gastric teratoma.

**Conclusion:** Teratoma must be considered as a possible differential diagnosis in patients who present with common causes of gastrointestinal bleeding, such as neuroblastoma, nephroblastoma, rhabdomyosarcoma, and other benign neoplasms.

**Abstract ID: 1271**

**ABSTRACT TITLE:** RARE CASE OF UNDIFFERENTIATED EMBRYONAL SARCOMA MISDIAGNOSED AS HYDATID CYST

**PRESENTING AUTHOR:** VIJAYENDRA A

**CO-AUTHOR:** DR BISWADEEP RAY

Undifferentiated embryonal sarcoma (UES) is a rare primary malignant tumour of liver presenting in childhood accounting for less than 5% of paediatric malignant tumours of liver.

A 7 year old male child presented with swelling of the whole abdomen for eight months with occasional episodes of pain. Patient was evaluated at multiple peripheral hospitals with differentials of hydatid cyst, cystic variant of hepatoblastoma, mesenchymal hamartoma and pyogenic abscess. He was even posted for surgery at a periphery hospital with diagnosis of hydatid cyst and later surgery was abandoned as intraoperative findings showed it to be cystic tumour. Patient was subsequently referred to our institution and detailed analysis was carried out. Ultrasound showed a large solid cystic lesion arising from the right lobe of liver with multiple thick septations. Cystic part was filled with internal echoes giving a solid appearance. CECT abdomen revealed a predominantly cystic lesion with few enhancing solid components and multiple thick enhancing septations. Relevant lab investigations-negative for AFP, CEA. Serological markers for hepatitis, HIV and echinococcus were also negative. Intraoperative findings showed a large mass (2100gm) in abdomen. Cut section showed solid cystic appearance with variegated areas. Cyst showed mucoid material. Areas of necrosis and hemorrhage were seen in solid portions. Immunohistochemistry showed diffuse positivity for Desmin and focal positivity for SMA. Entrapped hepatocytes were positive for beta catenin and Peripheral ductular components were highlighted by CK19.

**Conclusion:** UES is a diagnosis of exclusion and should be suspected in children presenting with large abdominal mass without fever or eosinophilia, especially if AFP is normal and imaging shows solid appearance on ultrasound with paradoxical cystic appearance on CT, MRI. Awareness of this typical solid cystic appearance on imaging helps in accurately diagnosing the disease and thereby improving the prognosis.
Aims and objectives of the study: This exhibit provides a concise review of common abdominal MRI artifacts by
• Recognizing the major types of MR imaging artifacts.
• Explaining the physics underlying the propagation of each artifact type.
• To understand how to eliminate/minimize the artifacts.

Materials and Methods:
• GE 1.5 Tesla MRI scanner.
• Patients who have undergone MRI abdomen and pelvis in the department of
  Radiodiagnosis SSIMS and RC, Davangere.

Results: Recent developments in MR technology allow the acquisition of spectroscopic and functional information unavailable with radiography and CT. Yet, amid these advances, the diagnostic quality of MR images is still often limited by artifacts and especially in abdomen imaging compared to imaging of other parts because, in addition to blood flow and voluntary motion, abdominal MR imaging must address the respiratory and cardiac motion. Some cause of artifacts listed here be like, patient motion, vascular flow, geometric distortions of the magnetic field, signal inhomogeneity, aliasing, metallic implants, chemical shift, and signal truncation. The relatively larger size of the abdomen generates more problems with inhomogeneities in B 1 (the magnetic field generated by the radiofrequency [RF] pulse) that would be encountered in the imaging of smaller areas.

Continuing improvements in MR hardware may provide partial solutions to such limitations; however, knowledge of the physical basis of MR imaging artifacts often is needed to identify methods for avoiding specific types of artifacts or lessening their severity. Such an understanding may be helpful for recognizing common artefacts, optimizing MR image quality, and maximizing the diagnostic yield.

Conclusion: By recognizing common MR imaging artifacts and correctly identifying the cause (whether it be patient motion, magnetic susceptibility, chemical shift, or another factor), we can limit the degradation of MR image quality and optimize the diagnosis. This poster describes the appearances of major artifacts encountered in clinical MR abdomen imaging, explains their physical basis, and offers simple strategies for reducing or eliminating them.
Abstract ID:1259

ABSTRACT TITLE: DESCRIPTION OF A NEW RADIOGRAPHY ARTIFACT
PRESENTING AUTHOR: ABHINAV JAIN
CO-AUTHOR: AKANKSHA JAIN, SS ANAND

Purpose: To describe a new artifact due to RFID tags in patient linen on Radiographs

Materials and Methods: A set of radiographs were detected to have a strange artifact. These radiographs were repeatedly reported on radiographs of different anatomical areas and on different views.

A study was initiated to identify these artifacts. All the radiographs were carried out at Department of Radiodiagnosis of our institute using Siemens MultiX DR digital radiography system. Extensive search was made for source of artifacts in these radiographs. This included analysis of digital detectors and the examination rooms. The patient clothing were also examined. The patients were asked to change the gowns which they were wearing. Finally the radiographs were obtained by exposing the gowns alone and artefacts were identified to be originating from the patient gowns. The vendor managing the linen supply chain were contacted and enquiry conducted.

Results: Modern day linen management system employs high tech RFID tags to identify the linen being supplied to hospitals. The source of the artifacts was found to be these RFID tags. The images of these tags were stored and shall be used to impart knowledge to radiologists for future reference. Subsequently the artifacts were also studied on CT and MRI scanners and details recorded.

Conclusion: The study describes a new age artefact in radiology. This will help radiologist to identify this artefact which may appear in any radiology department.

Abstract ID:1265

ABSTRACT TITLE: DUAL ENERGY CT - MAKING CT SCANS SMARTER
PRESENTING AUTHOR: ASHISH ARAVIND
CO-AUTHOR: DR PA AMIN, DR BHARGAV TANK

Learning objectives: 1) Physics and principles behind Dual energy CT (DECT) 2) Benefits offered by DECT and its clinical applications

Background: Dual-energy CT (DECT) is an innovative imaging technique that operates on the basic principle of application of two distinct energy settings that make the transition from CT attenuation–based imaging to material-specific or spectral imaging. DECT acquisition provides multiple datasets, such as elemental decomposition analyses, iodinated attenuation maps, monochromatic images, virtual noncontrast images, which can be obtained simultaneously. Different manufacturers use different implementation approaches to obtain DECT, i.e., the dual CT scan, the dual source, the fast kV Switching and the two-layer detector approach with considerable differences regarding data acquisition and processing.

DECT technology has rapidly progressed over the last decade and several clinical applications have emerged. Renal stone differentiation, pulmonary perfusion and metallic implant imaging are well established clinical applications of DECT imaging, while there are several promising applications under investigation in musculoskeletal, liver, genitourinary and Cardiovascular imaging.

Conclusion: DECT is an innovative imaging technique that can dramatically improve the quality of CT scans and thus affect patient care positively.
Radiation Protection

Abstract ID: 1230

ABSTRACT TITLE: RADIATION ISSUES IN PAEDIATRIC IMAGING
PRESENTING AUTHOR: AKSHAY KUMAR SAXENA
CO-AUTHOR: ANMOL BHATIAL KUSHALJIT SINGH SODHI

Learning Objectives:
1. To understand the ill effects of the ionizing radiation
2. To understand the various radiation protection strategies

Background: Given the widespread use of ionizing radiation in the medical field, it is imperative to know its side effects. The exposure risk occurring from diagnostic radiation is small, but cumulative over a lifetime. Two types of radiation risks are involved with ionizing radiation, i.e. deterministic and stochastic. The most important stochastic radiation risks are genetic defects and potential carcinogenesis. Children are at greater risk than adults, because their growing tissues are more sensitive to effects caused by the ionizing radiation. Furthermore, as they also have more years to live than adults, their bodies have more time to respond to radiation induced injuries and effects. It is therefore imperative to reduce the radiation doses that children are exposed to.

Imaging Findings: Not applicable

Conclusion: and/or teaching points: Radiologists should take all precautions to minimize the radiation dose to children

References: 1. www.imagegently.org Last accessed on 23 September 2018
Recent advances in Imaging

Abstract ID: 89

ABSTRACT TITLE: IMAGING OF ONE OF THE RAREST ANATOMIC VARIATIONS IN THE BILIARY TREE AND THEIR CLINICAL SIGNIFICANCE.

PRESENTING AUTHOR: CHINTHI REDDY MITHUN REDDY

CO-AUTHOR: DR LOKESH KUMAR DR NAGARAJ B R

Background: Computer tomography (CT) is the gold standard for visualizing lung tumours in vivo, providing information on tumour size and spatial position. However, ex vivo histology is required for diagnosis, prognosis and treatment evaluation. Histology, a 2D technique, loses dimensional information obtained from CT essential for assessing tumour pathology across whole organs. This study compares 3D datasets obtained from CT with ex vivo high resolution 3D optical imaging modalities to bridge the gap: Optical Projection Tomography (OPT) and High Resolution Episcopic Microscopy (HREM) to measure lung tumour burden in a mouse model.

Methods: An orthotopic mouse lung tumour model was established via iv administration of 70x10^4 4TI murine breast cancer cells (n=10). Mice were imaged weekly using CT to detect in vivo tumour growth. At two weeks mice were sacrificed and the lungs inflation fixed to preserve lung architecture. Samples were dehydrated and cleared for OPT prior to reverse clearing and Eosin staining for HREM imaging. Image registration and segmentation was used to quantitatively assess tumour burden.

Results: Matched datasets were obtained (CT, OPT and HREM) in which diffuse and non-diffuse tumours were easily identifiable. OPT and HREM were comparable in their identification of tumour lesions and discerned higher numbers and smaller tumours than CT due to increased image resolution. Tumours were compared in 3D between OPT and HREM including their shape, size and spatial positioning within lung parenchyma.

Conclusion: This is the first study to compare the feasibility of CT, OPT and HREM to identify lung tumours in 3D across scales. Protocols implemented to retain lung structure and clearing processes for OPT and HREM, provide unique datasets with potential to validate existing CT measurements, and answer hypotheses regarding tumour heterogeneity and spatial position.

Abstract ID: 101

ABSTRACT TITLE: POINT SHEAR WAVE ELASTOGRAPHY OF SPLEEN IN PREDICTION OF PRESENCE AND SEVERITY OF OESOPHAGEAL VARICES

PRESENTING AUTHOR: NADELLA SINDHU

CO-AUTHOR: DR. PRAKASHINI K

Purpose: Role of point shear wave elastography of spleen in prediction of presence and severity of oesophageal varices(EV).

Materials and methods: subjects were cirrhotic patients diagnosed on ultrasound irrespective of cause of cirrhosis. Patients with previous or on going treatment for portal hypertension were excluded. Liver stiffness and spleen stiffness were measured on Philips machine using Elast PQ technique. Our’s was the first study with this technique to the best of our knowledge for assessing both presence and severity of
varices. Statistical analysis was done by independent variable t test and ROC curves.

**Results:** For predicting the presence of varices there was statistically significant difference ($p<0.05$) of means of SS ($2.13\pm0.69\text{m/s}$ in absent varices and $3.23 \pm1.32\text{m/s}$ in present varices group $p<0.001$), LS ($p \ -0.022$), spleen size ($p\ -0.001$) and platelet count (group $p\ -0.03$) between presence and absent varices groups.

However accuracy of classification ability (which is determined by AUROC) of only LS ($0.718$) and SS ($0.762$) was fair and rest all assessed parameters was poor (<0.70). For predicting the severity of varices only SS showed significant difference in mean between small and large varices group, however the classification ability of SS ($0.622$) was poor. SS cut off in our study was $1.99\text{m/s}$ and $2.75\text{m/s}$ respectively for presence and severity of varices.

**Conclusion:** Hence we concluded in our study that for predicting the presence and severity of varices, none of the parameters were having good classification ability. However SS showed better classification ability as compared to LS, Platelets and spleen size. Best possible cut off of SS in Our study was $1.99\text{m/s}$ and $2.75\text{m/s}$ respectively for prediction and severity of varices with sensitivity and specificity similar to previous studies.

**Abstract ID:** 149

**ABSTRACT TITLE:** DYNAMIC MR DEFCOGRAPHY AS A NOVEL TOOL IN DIAGNOSIS OF PELVIC ORGAN PROLAPSE AND OBSTRUCTIVE DEFECTION DISORDERS

**PRESENTING AUTHOR:** MEGHA KUMRA

**CO-AUTHOR:** DR. D.L LAKHKAR, DR. SUSHIL KACHEWAR

Dynamic MR Defecography as a novel tool in diagnosis of Pelvic Organ Prolapse and Obstructive defecation disorders

**Authors:** 1.Dr. Megha Kumra Resident, Department of Radiodiagnosis DVVPF’S Medical College and Hospital Ahmednagar 2.Dr. D.L Lakhkar Professor & HOD DVVPF’S Medical College and Hospital Ahmednagar 3.Dr. Sushil Kachewar Professor DVVPF’S Medical College and Hospital Ahmednagar

**Purpose:** To study the technique and usefulness of MR Defecography in diagnosis of Pelvic Organ Prolapse and Obstructive defecation disorders.

**Materials and Methods:** Dynamic MR Defecography studies of 42 patients of age range 20-80 years with symptoms of pelvic floor dysfunction, performed over a period of one year are included. For scanning Wipro GE Healthcare 1.5 Tesla MRI machine was used. Ultrasound jelly was instilled into the rectum of patient and was asked to defecate when instructed. Scanning was done in four phases-resting, straining, squeezing and defecation as per the protocol. Studies were read using the parameters mentioned in literature and results were drawn

**Results:** Out of 42 patients, 11 were found normal and 31 were found to have one of the pelvic floor dysfunction disorder. Out of these, 21% were diagnosed as Spastic Perinuem Syndrome, 19% as Pelvic Floor Dysynergia, 14% were found to have Rectal Prolapse, 9% had Rectocele, in 4.5% each Uterine prolapse and Cystocele was found.

**Conclusion:** Obstructed defecation and Pelvic Organ Prolapse together comprise Pelvic floor dysfunctional disorders. MR Defecography is a new modality to diagnose these disorders. In the past, fluoroscopic defecography was used in their diagnosis, but it had its limitations like radiation exposure. MR Defecography is a novel tool that enables real–time imaging of the defecation function, providing a multiplanar information. Also, good temporal resolution, high soft-tissue contrast and lack of radiation exposure, make it the preferred
imaging modality for evaluation. Precise surgical decisions can be made based on pre-operative assessment and management can be tailored.

**Abstract ID: 247**

<table>
<thead>
<tr>
<th>ABSTRACT TITLE</th>
<th>DIFFUSION TENSOR TRACTOGRAPHY (DTT) – AN OBJECTIVE METHOD OF DETERMINING CLINICALLY RELEVANT, COMPRESSIVE, SPINAL CORD MYELOPATHY</th>
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<tr>
<td>PRESENTING AUTHOR</td>
<td>RAJUL RASTOGI</td>
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<tr>
<td>CO-AUTHOR</td>
<td>DR. SUMEET BHARGAVA, YUKTIKA GUPTA, PAWAN JOON, FRANCIS RANDHAWA</td>
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We commonly come across cases of compressive spinal cord myelopathy (CSCM) due to variety of clinical conditions in our day-to-day radiological practice. Magnetic resonance imaging (MRI) has long been considered as the gold-standard imaging tool for evaluation of such cases. These cases reveal signs of spinal cord compression with or without alteration in spinal cord parenchymal signal alteration. Though, diffusion tensor imaging especially fiber-tracking or tractography has been described to be superior to routine MRI in predicting prognosis and urgency of decompression yet fewer studies have been conducted to demonstrate it especially in developing world. Hence, this study aims to evaluate diffusion tensor tractography (DTT) as an advanced dimension of MRI in patients with CSCM in predicting necessity of decompression management, predicting prognosis and evaluating post-decompression outcome objectively in simplified manner.

**Conclusions:** The findings of our study suggest that DTT may be used as a more sensitive indicator of spinal cord compression than conventional MRI by revealing color alterations in 3D color-coded maps, thinning and loss of integrity of spinal nerve fiber tracts providing easy and fast tool to predict the need of surgical decompression. To summarize, DTT, an advanced dimension of DTI may be a useful tool in evaluating patients of CSCM due to variety of causes. It is more useful than conventional MRI and not only helps in predicting the urgency of decompression but also in predicting prognosis and in follow-up of patients treated with Conservative or operative methods: However, more studies with larger number of patients and wider spectrum of pathologies along with higher field strength MRI may be required to validate the results of this study in routine clinical practice.

**Abstract ID: 502**

<table>
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<tr>
<th>ABSTRACT TITLE</th>
<th>ROLE OF PET-CT IN EVALUATION OF METASTASIS TO SPINE AND COMPARISION WITH MR IMAGING</th>
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<tr>
<td>PRESENTING AUTHOR</td>
<td>ROHIT KUMAR SHARMA</td>
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<tr>
<td>CO-AUTHOR</td>
<td>DR PRASHANTH KUMAR M DR GANESH K</td>
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**Purpose:** -To study the sensitivity and specificity of PET-CT in the detection and characterization of various metastatic lesions in spine and comparison with MR Imaging.

**Siemens Biograph Mct (For PET-CT) Siemens 1.5 Tesla Magnetom Avanto (for MRI)**

**Source of Data:** This is a hospital based prospective study. Clinically suspected patients with back ache in a known cancer patient or undiagnosed backache with normal CT, MRI findings or any neurological and functional deficit in a known case after taking an informed consent.

**Sample size:** Depending on the number of patients obtained during the 2 year duration.
Result: Sensitivity of the PET-CT is more than that of the MRI scan in detecting spine metastasis.

Conclusion: PET-CT is more sensitive than MRI scan in detecting Spine metastasis

Abstract ID: 898

**ABSTRACT TITLE**: CONTRAST ENHANCED ULTRASONOGRAPHY IN THE EVALUATION OF FOCAL LESIONS OF LIVER: CURRENT STATUS AND FUTURE POSSIBILITIES

**PRESENTING AUTHOR**: PRITAM GADIA

**CO-AUTHOR**: DR. SIMRANJEET SINGH DR. VIVEK MAVANI

**Purpose**: To Establish The Role Of Contrast Enhanced Ultrasonography (Ceus) In Improving The Detection And Characterization Of Focal Liver Lesions. Being A Cost Effective Stratgy, Ceus Is A Significant Breakthrough In Sonography, Permitting A Non Invasive Assessment In Real Time Of Liver Perfusion Through Out The Different Vascular Phases Has Led To Dramatic Improvement In Diagnostic Accuracy Of Ultrasound In Focal Liver Lesions.

**Material and Methods**: All The Focal Liver Lesions Detected On Grey Scale Ultrasonography Were Furthur Evaluated On Ceus By Using Second Generation Intravenous Ultrasound Contrasts Like Sonazoid, Sonovue And Optison As They Have More Stabilized Microbubbles Than First Generation Contrast Agents Like Levovist. Vascularity Of Lesions Is Evaluated In Arterial Phase (10-20 Seconds After I.v. Administration), Portal Venous Phase Starts At 30 To 45 Seconds And Delayed Phase At 5 To 10 Minutes After Contrast Administrstion.

**Results**: Ceus Can Accurately Differentiate Between Benign And Malignant Focal Liver Lesions. Benign Lesions Shows Hyperenhancement As Compared To Adjacent Normal Liver Parenchyma In Portal Venous Phase While Malignant Lesions Usually Presents As Hypoechoic In Portal Or Delayed Phase. Ceus Exhibits A Better Diagnostic Performance Than Conventional Grey Scale Us And An Accuracy Similar To That Of Cect Or Cemr In Evaluation Focal Liver Lesions.

**Conclusion**: Ceus Has A Unique Advantages Over Cect And Cemr, As Us Contrast Agents Are Safer Than Iodinated Or Gadolinium Chelate Contrast Agents Given That They Have No Effect On The Kidney And Thyroid Functions While Having No Radiations And Being Easily Accesible. Ceus May Be More Widely Used As First Line Or Problem Solving Imaging Tool In Future And May Increase Diagnostic Performances In Patient With Renal Lesions, Pancreatic Carcinoma And Evaluation Of Blunt Abdominal Trauma.

Abstract ID: 999

**ABSTRACT TITLE**: PHOTON-COUNTING CT - THE NEXT FRONTIER IN CT TECHNOLOGY

**PRESENTING AUTHOR**: ASHISH ARAVIND

**CO-AUTHOR**: DR. PA AMIN

**Learning objectives**: 1) Brief review of X-ray detectors
2) Advantages offered by Photon counting detectors
3) Clinical applications
4) Challenges ahead
**Background:** Photon-counting CT is an emerging technology with the potential to offer dramatic improvements over present day CT techniques. It uses Photon counting detectors (PCD) which are energy resolving x-ray detectors as opposed to the energy integrating detectors (EID) used in conventional CT. PCDs registers the interaction of individual photons and measures photon energy, whereas EIDs register the total energy deposited in a pixel in a given time (by multiple photons as well as noise). Typical CT detectors thus register only photon intensity, whereas photon-counting detectors also register spectral information. This technique results in higher contrast-to-noise ratio and improved spatial resolution. It can also reduce radiation exposure, decrease artefacts, optimize the use of contrast agents, and offer a new method of quantitative imaging relative to current CT technology.

Prototypes have shown promising results in breast imaging which benefit from the better spatial resolution than that offered by conventional CT. Recent advances in PCDs have made whole body Photon-counting CT possible, with a host of clinical applications such as in temporal bone CT, Chest CT, cardiovascular CT, etc.,. The technology had been limited by the deficiencies in detector technology, which has slowly but surely begun to catch up and will find it’s way into the clinical setting within the next decade.

**Conclusion:** Photon Counting CT is an exciting technology which has the capacity to transform current day CT technology offering benefits in better diagnosis as well as radiation dose reduction.
Women

Abstract ID: 41

ABSTRACT TITLE: ROLE OF CONTRAST ENHANCED ULTRASOUND IN CHARACTERIZATION OF SONOGRAPHICALLY SOLID BREAST MASSES

PRESENTING AUTHOR: APURVA SURANA

CO-AUTHOR: PROF. (DR.) SHABNAM BHANDARI GROVER, DR. AMIT KATYAN, DR. SUNIL KUMAR JAIN, DR. ASHISH KUMAR MANDAL

Learning Objectives: Evaluation of an incidental case of Limb Body Wall Complex diagnosed during regular antenatal anomaly screening of the pregnant patient during 19 weeks of gestation and post termination follow up imaging.

Background: Limb body wall complex is a rare congenital anomaly. Incidence is between 1 in 14,000 to 1 per 31,000 pregnancies. The three essential characteristic features of body stalk anomaly includes:

- Encephalocele or exencephaly or facial clefts.
- Thoraco or abdominoschisis.
- Limb deformity.

Our case includes deformed lower dorsal, lumbar and sacral spine, gastroschisis, absent right lower limb, rocker bottom foot noted in left lower limb.

Imaging Findings:

- **USG:** Lungs not imaged, gastroschisis, absent right lower limb, rocker bottom foot, deformed spine.
- **X-RAY:** Kyphosis of spine, left rocker bottom foot, absent right lower limb, lung hypoplasia.

**MRI:** Lower half of body not developed, liver, spleen and almost entire bowel loops are seen outside the peritoneal cavity, spalding sign seen in skull, short umbilical cord.

Conclusion: This report documents one such patient who came for target scan, and the relevant features of the developing fetus were picked up by ultrasonography with post termination follow up imaging thereby confirming the diagnosis.

Abstract ID: 51

ABSTRACT TITLE: MORBIDLY ADHERENT PLACENTA: MAGNETIC RESONANCE IMAGING (MRI) AS A SAVIOUR

PRESENTING AUTHOR: ASHISH BANSAL

CO-AUTHOR: GEETIKA SINDHWANI, AANCHAL BHAYANA, VARSHA AGARWAL, BB THUKRAL

Learning Objectives: To correlate the grey scale ultrasound (US), Color Doppler and MRI features in spectrum of morbidly adherent placenta, with the intraoperative findings.
Background: The prevalence of morbidly adherent placenta including placenta accreta, increta and percreta, has risen many folds these days primarily due to the increasing number of cesarean sections being done. Placenta previa is also a well-known risk factor. Since, catastrophic maternal outcomes are associated with this entity, an early and accurate diagnosis plays a vital role for the appropriate management of such pregnancies.

Imaging findings: We present cases demonstrating the spectrum of morbidly adherent placentae and their imaging findings. On US, placenta previa were observed in all the cases, with loss of retroplacental hypoechoic halo, thinned out myometrium at uterovesical junction and numerous placental lakes. Colour Doppler showed dilated tortuous vascular channels with turbulent flow at the utero-vesical junction and turbulent flow within the lakes. Subsequently, MRI was performed to substantiate the sonographic findings, which revealed loss of uterine pear shape, placenta previa, heterogenous placenta with T2 hypointense placental bands and focal thinning of the myometrium at uterovesical junction in all cases. Based on imaging, diagnosis of placenta accreta and percreta were made which were confirmed intraopertively.

Conclusion: Morbidly adherent placenta leads to significant maternal morbidity and mortality. Therefore, an early diagnosis using US and Doppler as primary screening modality and MRI to better document invasion, can help in obviating the devastating outcomes.

Abstract ID: 74

ABSTRACT TITLE: DYNAMICS OF FOLLICULOGENESIS - SONOGRAPHIC ASSESSMENT AND APPLICATIONS IN INFERTILITY MANAGEMENT

PRESENTING AUTHOR: MONICA KANSAL

CO-AUTHOR: (None)

Purpose: To Analyse the Sonographic Findings in Patients with impaired Folliculogenesis and Understand Dynamics Underlying.

Materials and Methods: 80 patients who were keen to conceive and were undergoing Follicle monitoring at our clinic between April 2017 to July 2018 were selected for the study. Age of patients was between 25-35 years. The selected patients were studied in their natural cycles and were not on any Ovulation induction medications.

Exclusion: Patients undergoing Controlled Ovarian Stimulation protocols and were already scheduled for IVF were excluded from study.

The monitoring of follicle growth started with a Baseline scan on D2/3 with monitoring of growth every alternate day from D10 onwards until the follicle size reached 18 mm followed by daily monitoring.

Results:

Natural Cycles Normal Folliculogenesis Impaired Folliculogenesis 80 3149
Impaired Numbers 10 Impaired Follicle Growth 26 Impaired Ovulation 13

Conclusion

- Polycystic Ovarian Disease is the Commonest Cause of Impaired Folliculogenesis in Females of Reproductive Age Group.
- Sonographic Assessment of Folliculogenesis Can Help Identify the Underlying Cause of Ovulatory Dysfunction.
• Helps In Guiding Choice of Therapy.
• Response To Treatment is Monitored By Sonography To Assess Restoration of Normal Folliculogenesis.

Limitations:
• Other Causes of Infertility Need to Be Ruled out in Patients with Normal Folliculogenesis.
• Correlation with Hormonal Assays and other Investigations may be Required In Some Cases.

Abstract ID: 77

ABSTRACT TITLE: USG EVALUATION OF GYNECOLOGICAL MASSES AND CORREALTION WITH MDCT

PRESENTING AUTHOR: SHANTALA
CO-AUTHOR: DR RAMESH C PATTANSHETTY, DR BHUSHAN LAKHKAR

Purpose:
1. To assess the relative role of USG and CT in the evaluation of gynecological masses.
2. To note the advantages of CT over USG in evaluation of gynecological mass lesions.
3. To assess the role of CT in evaluating sonologically indeterminate masses.

Methods and Material:
Patients (>18 yrs) attending our hospital with clinical suspicion of gynecological mass & patients detected with gynecological mass incidentally on USG, are considered.

All patients included in the study will undergo abdomen & pelvis USG with low frequency (3-5 MHz) and/or transvaginal USG with TVS probe (5-8 MHz).

All MDCT scans were obtained using double phase contrast study protocol with informed consent prior to administration of oral & rectal contrast for bowel opacification & non-iodine contrast for IV administration. Scanning area included from level of the xiphisternum to proximal 1/4th of shaft of femur. Reconstructed images were obtained and evaluated.

Results:
In a series of 45 cases, 57.7% were arising from uterus, 40 % were arising from ovaries & 2.2% from vagina. Among uterine masses, fibroid (65.5%) is commonest and among ovarian masses, benign neoplasms (55.5%) were common followed by other cystic lesions of ovary (27.5%) & malignant were least common.

Conclusion:
Although USG is the initial modality used in evaluation of clinically suspected gynecological mass, cross sectional imaging modality such as CT has advantage over USG, as it provides multiplanar imaging, high spatial resolution & large field of view.

CT can provide supplemental diagnostic information in cases of suboptimal / inconclusive USG examination.
Abstract ID: 111

**ABSTRACT TITLE** : RUPTURED ECTOPOCS PRESENTED WITH PAIN ABDOMEN IN EARLY PREGNANCY, REVIEW OF ULTRASOUND PICTURES & CORROBORATION WITH INTRA OPERATIVE FINDINGS.

**PRESENTING AUTHOR** : JYOTIBASH SAHOO

**CO-AUTHOR** : DR SHUBHENDU PAL CHOUDHURY

a) Dr Jyotibash Sahoo, MD, b) Dr Shubhendu Pal Choudhury, DGO

(a Sr DMO, Dept. of Radiology, SER/KGP, b- Add CMS, Dept. of Obstetric and Gynecology, SER/KGP)

South Eastern Railway Divisional Hospital, Kharagpur, WB, 721301

**Learning Objectives**: To describe and correlation of Ultrasound pictures of ruptured ectopic pregnancy presented with early abdominal pain with intra operative findings and its documentations.

**Background**: Ectopic pregnancy accounts 1 - 2% of all pregnancies and is the most common cause of pregnancy-related mortality in the first trimester. Initial evaluation includes hormonal assays and pelvic ultrasonography. History of pelvic pain along with an abnormal β-HCG level, positive UPT and absence of intrauterine gestational sac on USG, should trigger an evaluation for an ectopic pregnancy.

**Imaging findings**: Six cases of ectopic pregnancy (5 ruptured & 1 unruptured) presented with pain abdomen/vaginal bleed in early pregnancy in our institution within eight months. USG shows absence of intrauterine gestational sac, adnexal mass and intraperitoneal collection of blood. Few of them show extrauterine gestational sac. One shows unruptured live tubal pregnancy with recorded FHR. All except one were confirmed with intra operatively.

**Conclusion**: Ectopic pregnancy is the implantation of the conceptus outside of the uterine cavity. The most common site is the fallopian tube. When a female of reproductive age group presents with pelvic pain and vaginal bleed along with palpable adnexal mass, fluid collection in POD with absence of intrauterine gestational sac on USG, then ruptured ectopic should be considered first unless otherwise proved. Although all the signs may not be present every time. Color Doppler study may reveal a highly vascular ‘ring of fire’ appearance surrounding the tubal ring.

Abstract ID: 121

**ABSTRACT TITLE** : IMAGING OF RESIDUAL/ RECURRENT CARCINOMA CERVIX FOLLOWING CHEMORADIOThERAPY

**PRESENTING AUTHOR** : AKASH KUMAR B Y

**CO-AUTHOR** : DR. DEVIMEENAL J, DR. CHIRTRARASAN P, DR. GOPINATHAN K

**Learning Objectives**: 
- Discuss the imaging features of residual/ recurrent lesions following chemoradiotherapy for carcinoma cervix.
- Role of MRI sequences in imaging of carcinoma cervix following radiotherapy, and to discuss the follow up.
- Discuss the sites of recurrence.
Background:

- Cervical cancer is the fourth most common cancer in women worldwide.
- Approximately 30% of patients with invasive cervical carcinoma die of recurrent or residual disease.
- Recurrence is defined as local regrowth of tumor, presence of distant metastases, or a combination of both 6 months after completion of treatment.
- Residual disease is that which is evident within 6 months of primary treatment.
- Two-thirds of cases recur within the first 2 years following initial treatment.
- Imaging at about 6 months after treatment is most reliable for accurate assessment, but this time point is late for surgical intervention.
- So, a follow up MRI after 1 month will accurately assess residual lesion for which surgical intervention can be done.

Imaging findings:

- T1WI – Intermediate signal intensity
- T2WI – Most important sequence, and demonstrates homogenous or heterogeneous intermediate to high signal intensity mass on a background of established low signal intensity change reflecting radiation-induced fibrosis
- DWI – May add on for the diagnosis of residual/ recurrent lesions, but restriction is not seen in all the cases
- DCE – Not used routinely because cervical enhancement after intravenous gadolinium contrast agent administration can be seen in post radiation fibrosis, post radiation inflammation, and necrosis.

Conclusion:

- A follow up MRI after 1 month will accurately assess residual lesion for which surgical intervention can be done.
- T2WI is the most important sequence for evaluating residual/recurrent lesions.
- Following radiotherapy, recurrence is most commonly seen as a mass within the cervix.

Abstract ID: 181

ABSTRACT TITLE: FETAL TRANSCEREBELLAR DIAMETER TO ABDOMINAL CIRCUMFERENCE RATIO (TCD/AC) AND TO FEMUR LENGTH RATIO (TCD/FL) IN THE ASSESSMENT OF NORMAL FETAL GROWTH

PRESENTING AUTHOR: K. ASHOK HUSSAIN

CO-AUTHOR: DR. A.Y. LAKSHMI, DR. SILPA KADIYALA, DR. M.HINDUMATHI

Introduction: Intrauterine growth retardation (IUGR) is a major risk factor for perinatal mortality and morbidity. Transcerebellar diameter to abdominal circumference ratio (TCD/AC) is a gestational age independent parameter. IUGR due to uteroplacental insufficiency can present as isolated femur length reduction. So transcerebellar diameter to femur length ratio (TCD/FL) can be useful in early detection of IUGR.
Aims and Objective: To evaluate the accuracy of TCD/AC, utility of TCD/FL in normal pregnancy at varying periods of gestation for assessment of fetal growth and to derive a cut-off value in our study population.

Material and Methods: In this prospective study, 200 patients presenting for routine antenatal check up with cumulative ultrasound age (CUA) between 14-40 weeks were included. TCD/AC and TCD/FL was calculated in all patients. TCD/AC and TCD/FL were studied for individual subgroups formed according to CUA.

Result: In our study, TCD and AC shows strong correlation throughout pregnancy. TCD/AC dispersed normally with mean value of 14.06 and SD of 0.69, cut off value for TCD/AC is 15.44. TCD and FL also shows similar strong correlation. TCD/FL is dispersed normally throughout pregnancy with mean value 64.427 and SD of 4.127. TCD/AC in subgroups also shows similar mean and SD as compared to entire study population. TCD/FL in subgroups between 18-40 wks shows similar mean and standard deviation as compared to entire study population.

Conclusion: Our study indicates strong correlation between TCD and AC, TCD and FL throughout the pregnancy with constant TCD/AC. A cut off value of mean +/- SD (15.44) for TCD/AC and (Mean + 2SD) arrived at 72.681 for TCD/FL could be used as a growth parameter for detection of IUGR. TCD/FL may specially be useful in detection of subset IUGR which present as isolated femur length shortening.

Abstract ID: 193

ABSTRACT TITLE: ROLE OF ULTRASONOGRAPHY IN EVALUATION OF GESTATIONAL AGE BY TRANSCEREBELLAR DIAMETER

PRESENTING AUTHOR: PHILIP MATHEW

CO-AUTHOR: (None)

Purpose of Study:
1. To evaluate the usefulness of transverse cerebellar diameter as against the conventional parameters of biparietal diameter and femur length in normal pregnant women between 15 to 40 weeks and clinically suspected IUGR cases.
2. To derive nomogram for estimating the gestational age of the fetus from the measured transverse cerebellar diameter.

Methods: To study 100 pregnant women (out of which 70 are normal pregnancies and 30 clinically suspected IUGR cases) between 15 to 40 weeks of gestation. For each patient BPD, HC, AC, FL and TCD were measured. From the above measured parameters gestational age was computed by the ultrasound machine based on Hadlock tables. TCD was compared with BPD, HC, AC and FL in normal pregnancy. Comparison was then made between measured TCD, BPD, HC, AC, FL values and gestational age in both normal and IUGR pregnancies. IUGR cases were TCD, BPD, HC, AC and FL measurements less than the 5th percentile for the gestational age when compared with normograms derived from normal pregnancies were analyzed with Fischer’s exact test.

Results: It is observed that there is statistically significant curvilinear relationship between TCD and gestational age in normal pregnancies. Gestational age estimated by transverse cerebellar diameter measurements correlated well with gestational age estimated by BPD, HC, AC and FL.

In IUGR pregnancies TCD correlated well with gestational age as predicted with last menstrual period. Correlation between other biometric parameters and gestational age was less strong.
Interpretation and Conclusion: TCD shows good correlation with gestational age and can be used as a single growth parameter to predict the gestational age in cases where LMP is uncertain.

TCD has an added advantage in IUGR pregnancies as it correlates well with gestational age compared to other growth parameters.

**Abstract ID: 197**

**ABSTRACT TITLE**: VENOUS DOPPLER SONOGRAPHY - CAN IT BE THE LAST SAY IN IUGR FETUSES?

**PRESENTING AUTHOR**: ADITI VARMA

**CO-AUTHOR**: M K NARULA

**Purpose**: Doppler velocimetry of different feto-placental vascular areas have been used to assess fetal well being with the aim of preventing neonatal sequelae. We evaluated the role of Ductus Venosus and Umbilical Vein Doppler in IUGR fetuses and correlated with perinatal outcome.

**Materials and Methods**: 50 pregnant women with singleton pregnancy admitted to our hospital with intrauterine growth restricted fetuses were evaluated by Doppler sonography of fetal and maternal vessels including Ductus Venosus and Umbilical Vein. Doppler parameters were used in predicting perinatal outcome. Pregnancy outcome was evaluated in terms of univariate and multivariate parameters and statistical tests applied were- Analysis of Variance and Multiple regression analysis, using SPSS software.

**Results**: Venous Doppler parameters get deranged late in IUGR pregnancies. This knowledge allows us to continue certain pregnancies with deranged arterial and normal venous Doppler indices in cases where we need to give time for fetal lung maturity or fetal weight gain. However, perinatal outcome worsens with this prolongation and NICU care is must for such fetuses with deranged Venous Doppler.

**Conclusion**: Serial monitoring of Venous Doppler parameters can be helpful in IUGR cases, especially when arterial Doppler is deranged and the pregnancy needs to be prolonged. However, caution is needed and both the Gynaecologist and Neonatologist must be prepared.

**Abstract ID: 219**

**ABSTRACT TITLE**: SIRENOMELIA- THE TALE OF A MERMAID: A CASE REPORT

**PRESENTING AUTHOR**: SHWETA R POOJARY

**CO-AUTHOR**: DR VEDARAJU KS, DR ARJUNPRAKASH, DR ARUL DASAN

**Introduction**: Sirenomelia, also known as mermaid syndrome, is a rare fetal limb anomaly with a prevalence of 0.98 per 1,00,000. It has a strong association with the VACTERL malformations. It is associated with poor survival rates and is often underdiagnosed in antenatal ultrasound examinations.

**Case Study**: A 19yr old primigravida presented at 20 weeks 2 days period of gestation was referred to our hospital with severe oligohydramnios for further management. On clinical examination liquor was severely reduced.

The ultrasound examination was suggestive of single fused lower limb with absent fibulae. Other findings included anhydramnios, duodenal atresia, bilateral renal agenesis, non-visualisation of bladder and single umbilical artery.
The patient and her relatives were informed about the poor prognosis and advised for fetal termination. Patient was induced and delivered the baby.

On physical examination the baby had Potter’s facies with prominent infra-orbital folds, flattened nose, small slit like mouth and low set ears. Pectus excavatum was noted. External genitalia were not visualised. Single fused lower limb was noted.

A radiograph was taken which revealed a single fused lower limb with two femurs, two tibiae and absent fibulae.

Autopsy was declined by the parents. The intrapartum and postpartum course was uneventful.

Conclusion: We report a rare case -Sirenomelia associated with genitourinary, gastrointestinal and anorectal anomalies. It is a lethal and rare congenital anomaly. When diagnosed antenatally, termination is offered. Therefore regular antenatal ultrasound examinations including the anomaly scans at 20-22 weeks can help in earlier detection and termination of such cases.

Abstract ID: 224

**ABSTRACT TITLE**: ROLE OF DYNAMIC CONTRAST ENHANCED AND DIFFUSION WEIGHTED MRI IN EVALUATION OF ENDOMETRIAL LESIONS

**PRESENTING AUTHOR**: MALVIKA GULATI

**CO-AUTHOR**: ANJU GARG, RASHMI DIXIT

**Purpose**: To compare findings of conventional MRI, DCE MRI and DWI in benign and malignant endometrial lesions and to assess stage of disease in patients with endometrial carcinoma.

**Materials and Methods**: 40 adult female patients with sonographically suspected endometrial lesions and subsequent pathological examination (17-benign, 23-malignant) underwent MRI abdomen and pelvis including DWI and DCE sequences.

**Results**: Conventional MR findings found to have significantly higher frequency in benign lesions were: Brightly hyperintense signal on T2WI, smooth tumor/endo-myometrial interface, and presence of well-defined cystic areas (p<0.01). Size of the lesion, T1WI signal, heterogenous SI and presence of central fibrous core showed no statistically significant difference. The mean ADC values of benign and malignant lesions were found to be 1.31 ± 0.11 x 10-3 mm2/sec and 0.73 ± 0.06 x 10-3 mm2/sec respectively. Using ROC curve, cut off ADC value of <0.859 x 10-3 mm2/sec was found (sensitivity 91.3%, specificity 100%, PPV 100 %, NPV 93.2% and AUC 0.99) for predicting malignant endometrial lesions. Increasing trend of enhancement on TIC was found to have a sensitivity of 87% and specificity of 70.6% for benign lesions. Diagnostic accuracy, sensitivity, specificity for local staging of endometrial malignancies on T2WI alone was found to be 68.4 %, 42.9% and 83.3% respectively which improved to 78.9%, 71.4% and 83.3% respectively on combined T2+DWI+DCE-MRI.

**Conclusion**: Newer functional MR techniques of DWI and DCE-MR can significantly add to conventional MR imaging in differentiating benign from malignant endometrial lesions and increase the accuracy of MRI in local staging of malignancies.
**Abstract ID: 254**

**ABSTRACT TITLE**: 3D AND 4D ULTRASOUND - AN ESSENTIAL TECHNOLOGICAL ADVANCEMENT

**PRESENTING AUTHOR**: AAKANKSHA AGARWAL

**CO-AUTHOR**: DR BD CHARAN, DR MUKESH MITTAL, DR USHA JAIPAL

**Learning Objective**: Under the Medical Termination of Pregnancy Act of 1971, legally abortion is allowed up to 20 weeks of gestation. Diagnosis of congenital anomalies before this is of utmost importance, thus necessitating Level 2 scan at 18-20 weeks. Use of 3D and 4D technology helps in confirming structural anomalies in the foetus in addition to facilitating counselling of the bereaved couple.

**Background**: Level 2 scanning in antenatal scanning refers to a detailed scan focusing on major foetal anomalies and helps in timely intervention, if needed in an affected foetus. Undiagnosed fatal anomalies lead to missed abortions, intrauterine foetal deaths, postnatal mortality and increased maternal morbidity and mortality. We performed a prospective study to form a picture about the missed cases of congenital anomalies, which if scanned earlier in pregnancy could have resulted in timely intervention and reduce maternal physical and mental morbidity.

**Materials and Methods**: A prospective study was carried out over a period of 2 months including 6272 women with a positive urine pregnancy test, more than 4 months of amenorrhea and singleton pregnancy. They were screened for major anomalies not including cardiac/thoracic anomalies, after taking written consent for not determining sex of the foetus. 3D/4D scanning was used to confirm suspected structural anomalies and for counselling the patient. 27 cases of grievous congenital anomalies were identified. Amongst them, the most common were CNS anomalies followed by abdominal wall defects. Acrania/exencephaly/anencephaly were the most common CNS anomaly followed by spinal wall defects.

**Conclusion**: Most of these cases presented either as intrauterine foetal death in later gestation or were still born. Identification of such anomalies before 20 weeks of gestation will allow timely intervention in the form of termination if needed and reduce maternal morbidity and mortality.

**Abstract ID: 257**

**ABSTRACT TITLE**: PLACENTAL THICKNESS: A NEW PARAMETER FOR GESTATIONAL AGE ESTIMATION

**PRESENTING AUTHOR**: MANIKA CHHABRA

**CO-AUTHOR**: PURNIMA AGGARWAL, BHARTI GOEL, SUMAN KOCHHAR

**Purpose**: The best possible antepartum care and successful outcome of pregnancy is based on accurate estimation of Gestational Age (GA). Routine antenatal sonography includes biometry for foetal growth evaluation and GA estimation. The aim of our study was to measure Placental Thickness (PT) and correlate it with GA estimated by foetal biometric parameters - Abdominal Circumference (AC) and Femur Length (FL), using ultrasonography, in order to establish the usefulness of PT in accurate prediction of GA.

**Materials and Methods**: Prospective cross-sectional study was conducted on 92 normal antenatal females (13-28 weeks of gestation) after excluding maternal, foetal and placental disease. Placental thickness was measured at level of umbilical cord insertion, using 1-5 MHz convex ultrasonography transducer. Mean PT, its standard deviation and 95% confidence interval was calculated for each week of gestation. Pearson’s correlation coefficient and regression equation were applied. Value of p<0.05 was considered statistically significant.
Results: In our study, value of placental thickness increased with increasing gestational age. PT ranged from 12.1mm to 49.5mm and mean thickness was 23.6±6.1mm. There was positive correlation between mean PT(mm) and GA(weeks) calculated by AC and FL. The relation was highly significant (p value 0.009).

Conclusion: Placental thickness is a reflector of foetal growth and is key factor in perinatal outcome. Placental thickness can be easily measured and follows linear relation with gestational age. So, variations in placental thickness can be used in screening complications during pregnancy. In patients with unreliable history/unknown dates, placental thickness can be a new parameter to reliably predict gestational age and monitor foetal growth in utero.

Abstract ID: 265

ABSTRACT TITLE: TO DIFFERENTIATE VARIOUS OVARIAN MASSES BASED ON MORPHOLOGICAL APPEARANCE ON MRI.

PRESENTING AUTHOR: BHERU DAN CHARAN

CO-AUTHOR: DR USHA JAIPAL

Learning Objectives: To demonstrate MRI findings in neoplastic and non-neoplastic ovarian masses based on morphological appearance.

Background: Characterisation of ovarian lesions have great importance in their therapeutic management. There is multidisciplinary approach in differential diagnosis of ovarian masses based on imaging finding and laboratory test. Ovarian neoplasms may be benign, or malignant. Using an MRI imaging-guided approach based on morphological appearance, classification of adnexal masses into four main groups: unilocular cyst, multicystic predominantly solid, cystic and solid. We describe MR signal intensity features and enhancement behaviour to differential diagnosis of ovarian lesions.

Imaging Findings: Using MRI imaging based on morphological appearance, we classified ovarian masses into four groups unilocular cyst, multilocular cyst, cystic and solid, predominantly solid. We further evaluate to obtain anatomic information and to study morphological and signal intensity characteristics of the mass, both T1- and T2-weighted and Fat-saturated T1-weighted images are helpful to detect haemorrhagic areas, fat tissue, elevated protein content, and collagenous tissue, and enhancement behaviour of lesion. MRI is also useful in detecting local invasion and high contrast resolution with excellent soft tissue contrast.

Conclusion: MRI is an useful tool to determine the characteristic of an ovarian mass, and to detect local invasion. Advantages of MRI are the high contrast resolution and lack of ionizing radiation exposure. Although there are overlapping imaging features, MRI aids in making a specific diagnosis or narrowing differential diagnosis, thereby enabling more accurate clinical management.
Abstract ID: 304

ABSTRACT TITLE : RADIOLOGICAL IMAGING SYMPTOMATIC PATIENTS IN FIRST TRIMESTER OF PREGNANCY
PRESENTING AUTHOR : PAYAL SOJITRA
CO-AUTHOR : DR. HARSHAD SHAH, DR. NIRMALA CHUDASAMA, DR. RASESH VYAS.

Aims and Objectives: To Prove Imaging Accuracy in Symptomatic Patients in First Trimester of Pregnancy.

Materials and Methods:
The Study Was Done Using Ge Logiq Ultrasound Machine.
Total of 350 symptomatic patients (majority belonged to low socio economic status) were scanned during the period of one year.
Patient with negative findings were scanned after 3-4 weeks again.
Patient were scanned only in full bladder.

Results: More than 32.5% of patients out of symptomatic patients were found to have some kind of reason for which patient had to terminate pregnancy due to various pathologies.

Conclusion: ultrasound scanning is non-invasive, painless & accurate method to find out cause of symptom(s) (sudden pain, bleeding, etc.) & Accordingly further management can be planned.

Abstract ID: 310

ABSTRACT TITLE : A RARE CASE OF CERVICAL ECTOPIC PREGNANCY
PRESENTING AUTHOR : VANDANA V. AHLUWALIA
CO-AUTHOR : DR. SUNANDA SAMANTA, DR. HARI SINGH, DR. PRATISH KUMAR SINGH

The term ectopic pregnancy implies to the implantation of blastocyst at any site barring endometrium of uterine cavity. Cervical pregnancy being the rarest form accounts for only 0.2 % of all ectopic pregnancies with serious clinical implications. Being a rare entity it may be misdiagnosed for an ongoing abortion or abnormal vaginal bleeding and can result in increased morbidity and mortality owing to its tendency to bleed catastrophically during curettage.

We present a case of a 35-year-old female G3 P1 A1 admitted to Obstetrics and Gynaecology department with complaints of amenorrhea for 1 and half months and vaginal spotting and lower abdominal pain for 1 week. The patient had a history of one caesarean section at full term and one abortion through dilatation and curettage.

Contrast: Enhanced MRI revealed retroverted uterus with a well-circumscribed smooth margined T2/STIR homogenously hyperintense cystic structure in the endocervical canal invading anterior cervical stroma with circumferential avidly enhancing trophoblastic tissue. An incomplete rim of perilesional T2 dark signalled hemosiderin deposits and the haemorrhagic residue was evident displaying susceptibility artefacts. No evidence of intracystic soft tissue or foetal pole visualised.

Gentle surgical curettage of trophoblast and implanted gestational sac was performed with placement of inflated Foley’s catheter as cervical tamponade. Findings were subsequently confirmed on histopathology.
Abstract ID: 312

**ABSTRACT TITLE**: SONO-MAMMOGRAPHY IN PATHOPHYSIOLOGY OF PREGNANCY AND LACTATION

**PRESENTING AUTHOR**: VANDANA VERMA AHLUWALIA

**CO-AUTHOR**: DR. PRERNA SINGH SAHARAN, DR. SUNANDA SAMANTA, DR. ANKITA CHAUHAN

Clinical diagnosis of breast disorders in the pregnant and lactating patient is difficult due to hormonal changes, non-specific and disappearing lumps, asymmetrical glandular proliferation and obscured inflammatory and mitotic pathologies.

**Sono**: Mammographic diagnostic criteria in a patient with positive clinical findings should increase the certainty of benign diagnosis in a large number of patients and increase the suspicion of carcinoma in a small number of patients, thus avoiding unnecessary biopsies.

High-resolution ultrasound with Colour Doppler can be helpful in certain specific lumps like lactating adenoma, in different stages of galactocele evolution, subareolar pathologies in addition to inflammatory infective and ductal mastitis and pregnancy-associated breast cancer.

We will be presenting diagnostic pearls and pitfalls in pregnancy and lactation specific breast disorders in pictorial spectra of sono-mammographic findings with MRI correlation in few of them.

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Abstract ID: 313

**ABSTRACT TITLE**: TO STUDY VARIOUS CLINICAL AND IMAGING PRESENTATIONS OF ECTOPIC PREGNANCY WITH TRANSVAGINAL ULTRASONOGRAPHY AND COLOR DOPPLER

**PRESENTING AUTHOR**: PALLAVI A.LOKHANDE

**CO-AUTHOR**: DR.SIDDHANT LOLGE, DR.SUSHIL KACHEWAR, DR.D.L.LAKHKAR,DR.MARATHE.

**Aim**: To study various clinical and imaging presentations of ectopic pregnancy with transvaginal ultrasonography and Color Doppler.

**Methods**: A prospective study of 50 patients was carried in the Department of Radio-diagnosis, Vikhe Patil Memorial Hospital, and Ahmednagar.

Females with amenorrhea, first trimester transvaginal bleeding, abdominal pain with clinically suspected ectopic pregnancy were included.

**Results**: Of 60 cases examined, we had total 8 cases of ectopic pregnancies out of which 2 cases were of live tubal ectopic pregnancy, 3 cases of ruptured ectopic and 2 case of unruptured tubal ectopic pregnancy and 1 case of scar ectopic pregnancy.

Laparotomy was performed in all cases which confirmed USG findings.

**Conclusion**: Transvaginal ultrasonography with good equipment when appropriately performed by an experienced radiologist using a proper methodology and standard guidelines has proved to be highly useful diagnostic and a reliable with good sensitivity and specificity for ectopic pregnancy. It thus has become an indispensable tool for the diagnostic, management and follow up of various presentations of ectopic pregnancy.
Discussion: Transvaginal Ultrasonography is helpful to narrow down the differential diagnosis in patients suspected to be suffering from ectopic pregnancy. It is highly sensitive in diagnosing the ectopic pregnancy in emergency. There are various clinical presentations of ectopic from severe abdominal pain, vaginal bleeding to apparently normal patient, Transvaginal sonography is boon to the obstetrician in diagnosing it.

Abstract ID: 316

ABSTRACT TITLE: ULTRASONOGRAPHIC FINDINGS OF MOLAR PREGNANCIES IN FIRST TRIMESTER.
PRESENTING AUTHOR: PALLAVI A.LOKHANDE
CO-AUTHOR: DR.SIDDHANT LOLGE, DR.SUSHIL KACHEWAR, DR.D.L.LAKHKAR, DR.MARATHE

Objective: Hydatidiform moles are now being diagnosed earlier in first trimester gestation. We studied the various appearances of hydatidiform mole and ability of ultrasound to detect them

Materials and Methods: A study was done in 50 female patients with first trimester vaginal bleed with abdominal pain. After taking consent all cases subjected to transabdominal and Transvaginal USG using standard protocols. USG was performed with the use of Mindray Diagnostic Ultrasound system DC-7, Philips Envisor C HD.

Observations included 14 hydatidiform moles. All patients then subjected to sonological evaluation followed by blood flow analysis using Doppler sonography showing ring of fire sign. Results of ultrasound are correlated with operative and histopathological findings.

Methods: we reviewed Ultrasonographic evaluation of first trimester hydatidiform moles diagnosed at our institute Vikhe Patil Medical College, Ahmednagar.

Results: Of the 14 patients in our study, the mean gestational age at the time of sonography was 8 to 12 weeks. The initial ultrasonographic interpretation was a complete mole (9) and partial mole (5)

Conclusion: The majority of first trimester hydatidiform moles shows typical sonographic appearance so that it can be easily diagnosed on ultrasonography.

Abstract ID: 334

ABSTRACT TITLE: COMPARATIVE STUDY OF USG AND MRI FOR EVALUATION OF ADNEXAL MASSES
PRESENTING AUTHOR: SANJIVANEE INGOLE
CO-AUTHOR: (None)

Introduction: An estimated 5 - 10% of women undergo surgery for suspicious adnexal masses, less than 25% of which prove to be malignant. Ultrasonography (US) is the accepted primary imaging technique for evaluating adnexal masses because of its wide spread availability, relatively low cost and high sensitivity in the detection of masses. Magnetic resonance imaging (MRI) has been shown to have potential for tissue characterization of adnexal masses, and contrast-enhanced MRI has been reported to be more accurate than US for assessing them

Purpose:
1. To evaluate accuracy of ultrasound and magnetic resonance imaging in characterizing adnexal masses.
2. To determine which patients may benefit from magnetic resonance imaging.
**Materials and method**: A prospective study was performed with 40 women between referred to our hospital with clinically suspected adnexal mass. Each patient underwent ultrasound examination, followed by MRI within a period of 1 week. These participants had a laparotomy when-ever indicated and on the basis of the surgical and/ or pathological findings were categorized as having benign or malignant masses. Lesions with absolute benign nature were followed up for final results.

**Findings and Interpretation**: MRI is a better imaging modality to identify and characterize adnexal lesions and is also helpful in detecting malignant potential of a particular lesion. It also plays a role in oncological staging which helps to a great extent in treatment planning and management.

USG however is sensitive in picking up the lesions and helps as an initial imaging modality for screening of adnexal lesions. USG is also widely available and is of low cost as compared to MRI. MRI however, helps in problem solving and further evaluation of indeterminate cases and cases with suspicious malignancy which was not recognized on USG.

Women who clinically have a relatively low risk of malignancy but who have complex sonographic features may benefit from MRI.

**Abstract ID: 359**

**ABSTRACT TITLE**: THE ROLE OF RADIOLOGISTS IN TREATMENT PLANNING FOR CARCINOMA CERVIX

**PRESENTING AUTHOR**: JANISI S

**CO-AUTHOR**: DR.K.GOPINATHAN, DR.J.DEVIMEENAL, DR.P.CHIRTRARASAN

**Purpose**: To study the role of MR in staging & extent of ca cervix , follow up after external beam radiotherapy to assess the response, for the placement of the applicator in brachytherapy ,to assess the complications of brachytherapy & to look for residual lesions after radiotherapy. MR with its excellent soft tissue contrast with clear definition of tissue planes,clinical target volumes & organs at risk are clearly identified.

**Materials and Methods**:

Sample size : 80

Data collection: Ca cervix patients , undergone EBRT & brachytherapy

Duration of the study : 1 year (June 2017-June 2018)

Type of Study : Cross sectional study

Inclusion criteria: Females with age group 25-75 biopsy proven ca cervix patients .

**Results**: MR precisely identifies parametrial invasion, extent of vaginal involvement, presence of hydroureteronephrosis, lymphadenopathy,free fluid & bone lesion.

Tumor is slightly T2 hyperintense relative to the healthy cervix which helps in identification of residual lesion. Differentiates radiotherapy related changes in pelvic organs from residual tumor .

Positioning of the applicator tip,interstitial brachytherapy needles,intra cavitary delivery device are exactly made out.

Inaccurate positioning of the probe causing perforation in the uterine fundus are made out.
Conclusion: The radiologists play an important role in planning ca cervix treatment. MRI guided intracavitary brachytherapy is the best modality. This technique provides excellent visualization of intracavitary brachytherapy devices, allows accurate localization of residual tumour. It is important for the radiologist to be familiar with correct probe positioning & complications.

Abstract ID: 374

ABSTRACT TITLE : SONOGRAPHIC EVALUATION OF POLYCYSTIC OVARIIES: COMPARING OVARIAN VOLUME & MORPHOLOGY; IN ACCURATELY MAKING THE DIAGNOSIS?

PRESENTING AUTHOR : SUDHANSHU TONPE
CO-AUTHOR : SANDEEP KATTA

Purpose: Polycystic ovaries (PCO) are a common problem among women. As sonographic examination of such cases is easy, available, cheap and less invasive than hormonal assessment, it is commonly used in patients with suspected PCO. However, in practice, sonographic findings are sometimes equivocal when some patients have normal ovarian volume but with abnormal ovarian morphology. This study is aimed to compare the advantage of measuring ovarian volume in patients with PCO versus the ovarian morphology and whether one finding alone could make the diagnosis.

Material & Methods: This is a retrospective review of ultrasound of a total of 180 women evaluated with Transabdominal (TAS) and Transvaginal (TVS) ultrasound for assessment of ovarian volume and morphology. Ninety patients with clinically and laboratory diagnosed PCO and an equal number of age matched controls were enrolled in the study from 2017 through 2018 in a single institution.

Results: A total of, 16 (8.8%) ovaries showed normal morphological appearance while the rest (91.1%) showed morphological picture of PCO in the form of detection of 10 or more cysts of 2–8 mm in diameter peripherally arranged around an hyperechoic stroma.

Conclusion: Ovarian morphology is more reliable than ovarian volume in diagnosing women with polycystic ovarian syndrome.

Abstract ID: 378

ABSTRACT TITLE : DIFFUSION WEIGHTED MAGNETIC RESONANCE IMAGING IN CHEMORADIO- THERAPEUTIC RESPONSE EVALUATION IN CERVICAL CANCER

PRESENTING AUTHOR : RAGHAVENDRA H K
CO-AUTHOR : DR. ALPANA MANCHANDA DR. ANJU GARG DR. KISHORE SINGH DR. GAURI GANDHI

Purpose: Standard treatment for advanced cervical cancer is concurrent chemo-radiotherapy. The ADC of cervical cancer is known to increase during and after chemoradiotherapy such that early alterations in ADC can be used to predict early therapeutic response. The present study was undertaken to evaluate the role of DW-MRI in chemotherapeutic response evaluation in carcinoma cervix.

Materials and Methods: 16 inoperable patients with biopsy proven cervical carcinoma were included in this prospective study. All patients underwent MRI pelvis thrice [baseline MRI, post chemotherapy and post chemoradiotherapy (CTRT)] on a 3 Tesla MR Scanner. Conventional MR sequences and diffusion weighted MR sequences were performed with generation of ADC maps.
Results: There was increase in mean ADC values during and after chemoradiotherapy (on baseline MRI was 0.82±1.0 x10^-3 mm^2/s, postchemotherapy MRI 0.96±0.06 x10^-3 mm^2/s and 1.25±0.18 x10^-3 mm^2/s on post CTRT MRI). Patients with complete resolution of tumor on post CTRT MRI(n=13) showed significant increase in mean ADC values on CTRT MRI from baseline MRI compared to patients with residual tumor (0.50 x10^-3 mm^2/s vs 0.17 x10^-3 mm^2/s). ADC threshold value of 1.15 x10^-3 mm^2/s was used to distinguish between residual tumor tissue and tumor free cervical tissue after chemoradiotherapy with a sensitivity and specificity of 92.3% and 100% respectively.

Conclusion: DW-MR imaging can provide additional information regarding the tissue characteristics of cervical carcinoma. Change in ADC values during chemoradiotherapy provide prognostic information and help in differentiating between residual tumor tissue and healthy cervical tissue after chemoradiotherapy at a high sensitivity and specificity.

Abstract ID: 379

ABSTRACT TITLE: FETAL STRUCTURAL ANOMALIES ON ANTENATAL ULTRASOUND.
PRESENTING AUTHOR: ANISH SUNDAR RAJ
CO-AUTHOR: DR. K.KANAKARAJ, MD

Aim: To assess the role of high resolution ultrasound(US) in reviewing fetal structural anomalies and to discuss potential diagnostic pitfalls and limitations.

Methods: A prospective study of 310 antenatal women who came for antenatal US during a period of 3 months were carried out in Department of Radio-diagnosis,Sree Balaji Medical College&Hospital, Chennai. Antenatal women with gestational age from 11 – 38 weeks are included and less than 11 weeks are excluded in this study, respectively.

Results: Of 310 antenatal cases,We had 3 cases of Arnold-Chiari type II malformation, 3 cases of Congenital pulmonary airway malformation (CPAM), 2 cases with Cleft lip & cleft palate, 2 cases of club foot, 1 case of Meckel-Gruber syndrome, 1 case of open lip Schizencephaly, 1 case of Posterior urethral valve with bladder outlet obstruction, 1 case of Thanatophoric-dysplasia, 1 case of Truncus-arteriosus and 1 case of Edwards syndrome.

Conclusion: Ultrasound at 11–14 weeks gestation, with nuchal translucency measurement and a detailed survey of fetal anatomy, plays an important role in early diagnosis of fetal anomalies. Target scan at 18–20 weeks of gestation remains an important screening tool for detecting fetal abnormalities.

Discussion: Ultrasound is important in evaluation of fetal anatomy and also usually performed in the first trimester (up to 13 weeks 6 days gestation) for dating, determination of the number of fetuses, and assessment for early pregnancy complications and also done in second trimester to detect the fetal anomalies and for appropriate management. A proper knowledge of the ultrasound features of fetal development is necessary to avoid potential pitfalls in diagnosis.
Abstract ID: 410

ABSTRACT TITLE: CORRELATION OF NT WITH BPD AND CRL IN FETUSES BETWEEN 11 TO 14 WEEKS OF GESTATION BY ULTRASONOGRAPHY

PRESENTING AUTHOR: ANIKET M ZOPE

CO-AUTHOR: SUSHIL G KACHEWAR, SUHAS S GHULE, DILIP L LAKHKAR, VINOD M MARATHE, TEJAS M TAMHANE

Purpose: To study the correlation between NT with CRL and BPD measurements in fetuses between 11 to 14 weeks of gestation, which could be a valuable tool in assessing the significance of NT in a population visiting our hospital.

Materials and Methods: It was a preliminary cross-sectional study done on 100 fetuses between 11 to 14 weeks of gestation.

Transabdominal ultrasonography was done using a convex array probe of 2-5 MHz on a high resolution ultrasound machine.

The standard protocol for measuring NT, BPD & CRL was followed.

Results: As gestation increased the mean NT appears increasing. The statistical analysis showed strongly significant correlation with a p value of <0.01.

There was no statistically significant correlation between NT with CRL (p: 0.446) and BPD (p: 0.586) measurements at 11 to 12 weeks of gestation.

Statistically no significant linear correlation between NT with CRL (p:0.356) and NT with BPD (p:0.196) was observed at 13 to 14 weeks of gestation.

Using indirect Pearson method we observed that there is an overall moderate statistical correlation between these 3 parameters (NT vs. CRL; r: 0.47, and NT vs. BPD; r: 0.31).

Conclusion: We conclude from our study that NT increases with gestation and there is good statistically significant linear correlation with CRL during 12 to 13 weeks of gestation.

Correlation with CRL was not significant during 11 to 11 weeks 6 days of gestation.

Though BPD is best parameter for assessment of gestational age after 12 weeks of gestation, correlation between NT and BPD was poor, hence CRL is the only best biometric parameter for assessing the significance of NT measurement during 11 to 14 weeks of gestation.

Abstract ID: 418

ABSTRACT TITLE: STUDY OF FETOMATERNAL ARTERIAL DOPPLER IN EARLY ONSET PRE ECLAMPSIA

PRESENTING AUTHOR: ANJU VERMA

CO-AUTHOR: DR SHAILI TOMER DR R. S. SOLANKI DR ABHA SINGH DR SUSHMA NANGIA

Objective: To study the Doppler parameters of the uterine artery, umbilical artery and middle cerebral artery (MCA) in women with early onset preeclampsia (PE) and its correlation with fetal and maternal outcomes.
Background: Impaired placental perfusion caused by vascular abnormalities precedes clinical manifestation of PE and can be detected by Doppler US. Early-onset PE is commonly associated with IUGR, abnormal uterine and umbilical artery Doppler evaluation and adverse maternal and neonatal outcomes.

Doppler ultrasound evaluation of resistivity index (RI), pulsatility index (PI) & systolic/diastolic (S/D) ratio of the uterine artery, umbilical artery and MCA has been considered a useful method for prediction of PE and adverse pregnancy outcomes.

Imaging Findings: Total 21 cases of early onset PE (<34 weeks of pregnancy) with singleton live pregnancy were included in my study. Abnormal high resistance flow in umbilical artery was noted in 19 cases (90.47%) with AEDF in 9 cases (42.8%). Out of these 19 cases, 14 ended up in preterm delivery & low birth weight (66.6%), 5 in early neonatal death (23.8%) and 2 in (intrauterine death) IUD (9.5%).

Uterine artery showed abnormal high resistance flow in 16 cases (76.1%), out of them 13 cases (61.9%) showed the presence of the early diastolic notch.

MCA showed deranged Doppler parameters only in 1 case (4.7%) with abnormally low resistance flow which resulted in IUD.

Only 4 cases completed a full-term pregnancy and resulted in normal vaginal delivery (19%), all of them showed normal uterine artery Doppler parameters, however, umbilical artery showed high resistance flow in all but no AEDF noted.

Conclusion: Doppler studies of fetoplacental circulation can help in the monitoring of compromised fetus and also in predicting neonatal morbidity and mortality. This may be helpful in determining the optimal time of delivery in complicated pregnancies.

Abstract ID: 435

ABSTRACT TITLE: A RARE CASE OF AMNIOTIC BAND SYNDROME PRESENTING AS ECTOPIA CORDIS AND MULTIPLE FACIAL ANOMALIES.

PRESENTING AUTHOR: PALLAVI A. LOKHANDE

CO-AUTHOR: DR. SUSHIL KACHEWAR, DR. D.L. LAKHKAR, DR. REKHA PANPATIL

Case report: 19 weeks pregnancy presented to the department of radio-diagnosis. On ultrasound ectopia cordis with multiple facial anomalies were noted. The fetus was electively aborted and findings were confirmed.

Discussion: Amniotic band syndrome shows a varied presentation. Entrapments of fetal limbs or digits being common among them. Rare presentations of amniotic syndrome have been reported in medical literature like Adams Oliver syndrome. Amniotic band syndrome presenting with ectopia cordis was also been reported. Facial anomalies associated with amniotic band syndrome are extremely rare.

Hence we are presenting with a rare case scenario i.e. Amniotic band syndrome presenting as ectopia cordis with midline facial anomalies.
Abstract ID: 486

**ABSTRACT TITLE**: SEVERITY ASSESSMENT OF ACUTE PANCREATITIS USING COMPUTED TOMOGRAPHY SEVERITY INDEX AND MODIFIED COMPUTED TOMOGRAPHY SEVERITY INDEX: CORRELATION WITH CLINICAL OUTCOMES AND SEVERITY GRADING AS PER REVISED ATLANTA CLASSIFICATION

**PRESENTING AUTHOR**: LIKHITHA N

**CO-AUTHOR**: DR. RAVI N, DR. ARUL T DASAN

**Aims**:
- To evaluate placental thickness with respect to gestational age and fetal weight by using ultrasonography
- To correlate placental thickness with respect to gestational age and fetal weight
- To derive normogram of placental thickness in comparison with fetal gestational age

**Materials and Method**: A Prospective comparative study of was done on pregnant women between 11-40 weeks of gestation in department of radiodiagnosis, Bangalore medical college and research institute. The grey scale real time ultra-sonographic examinations were performed using PHILIPS IU 22 machine and the probe used for the study is 3.5MHZ convex curvilinear transducer.

**Results**: Placental thickness has positive correlation with gestational age. The gestational age and placental thickness increases in a linear manner from 16-36 weeks of gestational age and then decreases by 1-3mm after 36 weeks.

**Conclusion**: Fetal weight increases in relation with the placental growth and placental thickness is an indicator of the fetal growth. Placental thickness can be used as an additional tool to be routinely carried out during the anomaly scan

Abstract ID: 523

**ABSTRACT TITLE**: “OUT OF BOUNDS’-IMAGING SPECTRUM OF ECTOPIC PREGNANCIES-PEARLS AND PITFALLS”

**PRESENTING AUTHOR**: SHREYAS RAO G

**CO-AUTHOR**: DR. VEDARAJU K.S, DR. ARUL T DASAN, DR. KAMESH G

**Aims and Objectives**:
- To review the spectrum of sonologic features of tubal and nontubal sites of ectopic pregnancy.
- To familiarize the imaging features of potential mimickers of ectopic pregnancy.

**Background with Imaging Findings**: Gray scale ultrasound study and color Doppler study with spectral waveform tracing was performed on Patients who presented with amenorrhea, bleeding, pain abdomen with positive UPT using our Philips Affiniti 50 and Samsung A35 ultrasound machines.

- Each subtype of ectopic spectrum shows varied features on sonography and present with varied complications.
- Tubal pregnancy is the most common location of ectopic and ampulla being the most common site.
• Cornual ectopic is most commonly associated with catastrophic hemorrhage.
• Cesarean scar pregnancy most often presents with uterine rupture and severe hemodynamic compromise.
• Abdominal pregnancy is most commonly associated with assisted reproductive techniques and is associated with highest maternal mortality in comparison with other ectopics.
• Complex adnexal cysts, ruptured corpus luteum, torsion ovarian cyst are few of the conditions whose sonographic features mimic ectopic pregnancy.

Conclusion: As ectopic pregnancy can have devastating outcomes, its imperative for the radiologists to familiarize themselves with classic and atypical features of tubal and nontubal forms of ectopics.

Abstract ID: 530
ABSTRACT TITLE: “MRI EVALUATION OF PELVIC TUMORS IN FEMALE WITH HISTOPATHOLOGICAL CORRELATION”
PRESENTING AUTHOR: RAKSHITH R N
CO-AUTHOR: DR. ARUL DASAN .T, DR SAMARTH S GOWDA, DR SHWETA RP

Aims & Objectives:
- To determine the origin and characterization of sonographically inconclusive uterine and adnexal masses.
- To differentiate utero ovarian lesions as neoplastic and non neoplastic

Materials and Methods: Total of fifty cases were included over a study period of June 2017 to May 2018 who presented with gynaecological complaints or sonographically inconclusive adnexal or uterine masses. All patients underwent pelvic MRI examination on 1.5 Tesla SIEMENS MAGNETOM AVANTO scanner. Intravenous contrast was used if indicated. Patients with any contra indication to MRI were excluded. Patients were later followed up with Histopathological examination results.

Results: Out of 50 patients studied, 11 patients had uterine fibroid (22%), 7 patients had serous cystadenoma of ovary (14%), 5 patients had mucinous cystadenoma of ovary (10%), 2 patients had adenomyosis (4%), 5 patients had endometrial carcinoma (10%), 1 was normal study (2%) and rest had miscellaneous adnexal pathologies.

Conclusion: It can be said that due to excellent depiction of pelvic anatomy and absence of ionizing radiation MRI is an excellent tool for assessment of disorders of uterus and ovary. MRI is a better modality for detection and characterisation of various pelvic pathologies and staging patients with carcinomas.

Abstract ID: 560
ABSTRACT TITLE: “FIRESOME TWOSOME”!!- COMPLICATIONS OF TWIN PREGNANCY
PRESENTING AUTHOR: ARPITHA K J
CO-AUTHOR: DR RAVI N, DR ARUL DASAN, DR SHREYAS G RAO

Learning Objectives:
- To present the pictorial review of complications associated with twin pregnancy.
- To emphasize the importance of ultrasound in early diagnosis and management of those cases.
Background: Pregnant women with twin gestation presented to our antenatal USG section at vanivilas hospital for routine scan were examined using Philips IU 22 and Samsung A35 ultrasound machines. Complications associated with twin gestation were examined and images were saved.

Imaging Findings: Twin gestations with unique complications such as twin oligohydramnios-polyhydramnios sequence (TOPS), twin-to-twin transfusion syndrome (TTTS), acardiac twins (twin-reversed arterial perfusion sequence), conjoined twins, co-twin demise and heterotopic pregnancies were undertaken for this study.

Conclusion: With rapid developments in assisted reproductive technology and an increasingly aging maternal population, the incidence of multiple births has increased. Multifetal gestations are high-risk pregnancies with higher antenatal complications with perinatal mortality and morbidity. Precise prenatal ultrasonographic diagnosis of the type and complications of multifetal gestation, and any complications arising, is thus very important for antenatal care and the prediction of fetal outcome. The purpose of this study is to describe the prenatal ultrasonographic and pathologic findings of the unique complications arising in twin pregnancy.

Abstract ID: 579

**ABSTRACT TITLE**: “CAN WE PREDICT FETAL OUTCOME THROUGH FETAL VELOCIMETRY IN HYPERTENSIVE PREGNANT WOMEN?”

**PRESENTING AUTHOR**: PRACHI SHAH

**CO-AUTHOR**: DR.MONA SHAHSTRI, DR. NEHAL DIWANJI, DR. NIPA PATIDAR, DR. DHAGASH PATEL, DR.ASHISH SACHDEVA

**Purpose:**

- Record the pulsatility index and systolic/diastolic ratio of fetal umbilical artery and middle cerebral artery during third trimester of pregnancy and evaluate its usefulness in prediction of adverse fetal outcome.
- Calculate the ratio between the pulsatility index values of middle cerebral artery and umbilical artery
- Correlate fetal weight with the pulsatility index, systolic/diastolic ratio of fetal umbilical artery and middle cerebral artery, and middle cerebral artery/umbilical artery pulsatility index.
- Find association between the pulsatility index, systolic/diastolic ratio of fetal umbilical artery and middle cerebral artery, and middle cerebral artery/umbilical artery pulsatility index ratio and fetal outcome.

**Inclusion criteria**: A Prospective study consisting of 50 antenatal women clinically diagnosed pregnancy induced hypertension were included in the study.

**Exclusion criteria:**

- Pregnant female with congenital anomalies in the fetus.
- Patient lost to follow-up.
- Flow velocity waveforms were recorded from the umbilical artery and fetal middle cerebral artery and the pulsatility index and S/D ratio was noted.
- Fetal outcome of each case was noted.

**Results And Conclusion:**

- Umbilical artery PI and S/D are negatively related with fetal weight, which means that abnormal indices
in umbilical artery have high likelihood of low fetus weight.

- Umbilical artery PI is more sensitive, the ratios of indices between MCA and Umbilical artery are more specific in detection of poor fetal outcome than individual artery indices.
- The association between umbilical artery, MCA indices and cerebroplacental ratio with fetal outcome shows significant association with fetal outcome.

Abstract ID: 590

ABSTRACT TITLE: ‘THE GUT WRENCHING FETAL CONTORTIONIST’

PRESENTING AUTHOR: SAMARTH S GOWDA

CO-AUTHOR: DR. T. ARUL DASAN, DR. CHANDRASHEKAR. H. M

Learning Objectives: A contortionist is someone who twists and bends their body into strange and unnatural positions. As gut wrenching as this may to be watch, we present here, a rare case of a similar ‘fetal contortionist’ of sorts, the diagnosis of which is partly dependent on the presence of the evisceration of the ‘gut’. Limb body wall complex defect is a multisystem congenital malformation, which has an incidence of ~0.32 per 10,000 births. Traditionally, the diagnosis has been based on the Van Allen et al criteria, which includes the presence of any 2 of the 3 following anomalies:

- Exencephaly or encephalocele with facial clefts
- Thoraco and/or abdominoschisis
- Limb defects

Associated defects of the spine (kypho-scoliosis), facial clefts, short umbilical cord, neural tube defects and abnormalities of the urogenital organs can be found.

Background: A 28 year old primi gravid mother presented to our Antenatal USG section at Vani vilas hospital for her routine fetal anomaly scan. Antenatal ultrasonography was performed using our ‘Philips IU 22’ and ‘Samsung A35’ ultrasound machines, following which a fetal MRI was performed in our 1.5T ‘Siemens Magnetom Avanto model B5’. Postnatal radiographs of the fetus were obtained.

Imaging Findings: Antenatal Ultrasound showed severe thoraco-lumbar kyphoscoliosis, thoraco-abdominoschisis, bilateral club feet and a lumbosacral meningocele. MRI better demonstrated the lumbosacral meningocele and the thoraco-abdominoschisis. Post-natal radiographs confirmed the thoraco-lumbar kyphoscoliosis and the malrotated bilateral feet.

Conclusion: Utilizing the multitude of radiological investigations that we have on hand, we can assess and confidently diagnose the rarest of the rare of these congenital multisystem malformations, as has been done in our case. Shedding light upon the rather unexplored territory of this little heard of fetal contortionist, can be of valuable importance in the vast expanse that we call medicine.
Abstract ID: 607

ABSTRACT TITLE: RARE CASE OF PENTOLOGY OF CANTRELL ASSOCIATED WITH LUMBOSACROMENINGOCELE AND LIMB ANOMALIES

PRESENTING AUTHOR: SUBRAMANIAN A

CO-AUTHOR: PROF.J.DEVIMEENAL, PROF.P.CHIRTRARASAN, PROF.K.GOPINATHAN

Learning Objective: To demonstrate the ultrasound findings of RARE CASE OF PENTOLOGY OF CANTRELL ASSOCIATED WITH LUMBAR MENINGOCELE AND LIMB ANOMALIES [bilateral club foot] and confirmation with Autopsy findings

Background: The pentalogy of Cantrell is an extremely rare phenomenon with an incidence estimated at around 6 per million live births.

It was first described by James R Cantrell in 1958.

Both sporadic and genetic causes are proposed. Prognosis depends on the severity of the defects and the associated cardiac anomalies.

Imaging Findings: Two-dimensional sonography is sufficient for the diagnosis of this condition.

On sonographic examination, the foetus with biparietal diameter and femur length corresponding to 16 weeks was visualised:

- The foetus had a large defect in supraumbilical anterior abdominal wall with herniation of liver, stomach and small intestines.
- The herniated organs were contained by a thin membrane. [Omphalocele]
- Lower sternal defect.
- Ectopia of the foetal heart (ectopia cordis) with absent pericardium with cardiac activity -150–155 beats per minute.
- Bilateral club foot
- Lumbosacral meningocele

Conclusion: Two-dimensional ultrasound is the best modality to diagnose and decide the prognosis of the condition. Awareness of this rare condition enables proper counselling to the parents.

Abstract ID: 608

ABSTRACT TITLE: FETAL INTRA-ABDOMINAL UMBILICAL VEIN VARIX- A CASE REPORT AND REVIEW OF LITERATURE

PRESENTING AUTHOR: TAPENDRA NATH TIWARI

CO-AUTHOR: DR. N.K. KARDAM

Learning Objectives:
- To evaluate FIUVV and associated malformations.
- To evaluate the prognosis and antenatal monitoring.
Background: Fetal intra-abdominal umbilical vein varix (FIUVV) is rare. The incidence is from 0.4 to 1.1/1000. It accounts for about 4% of the malformations of the umbilical cord. Two forms: the isolated FIUVV and that associated with other malformations, these two forms have a different prognosis. We report the observation of a FIUVV vein diagnosed precociously at 37 weeks and we propose to discuss the prognosis, complications.

Imaging finding: A 20-year-old attended a routine antenatal ultrasound at 37 weeks of gestation for her first pregnancy. A cystic structure (20x20 mm) was detected in the fetal abdomen, just beneath the abdominal wall at the level of the bladder. Color Doppler examination confirmed it to be vascular in nature with the umbilical vein leading to it, suggesting a diagnosis of FIUVV. A detailed and meticulous fetal morphological study was done.

Teaching points: it is defined as an intra-abdominal umbilical vein diameter at least 1.5 times greater than the diameter of the intra-hepatic umbilical vein or an intra-abdominal umbilical vein diameter exceeding 9mm. Several differential diagnosis like choledochal cyst, liver cyst, urachal cyst and mesenteric cyst. A recent review showed the good prognosis of isolated form even if diagnosed early in pregnancy. In such cases, antenatal follow-up to term is sufficient.

Abstract ID: 611

ABSTRACT TITLE: NONCOMMUNICATING RUDIMENTARY HORN AND UNICORNUATE UTERUS PRESENTING AS ACUTE ABDOMEN IN A YOUNG GIRL- A CASE REPORT

PRESENTING AUTHORITY: TAPENDRA NATH TIWARI

CO-AUTHOR: DR. KUSHAL GEHLOT, DR. N.N.KARDAM

Learning Objectives: To analyse gynecological and reproductive morbidities associated with unicornuate uterus with noncommunicating rudimentary horn.

Background: Unicornuate uterus with a rudimentary horn is the rarest congenital anatomic anomaly of the female genital system, causing many obstetrical and gynecologic complications. The frequency of this pathology is approximately 1/100 000. rudimentary horn usually develops following insufficient development of mullerian ducts. These patients present with dysmenorrhea, dyspareunia, and chronic pelvic pain because of endometriosis and rarely with acute abdominal symptoms following distention and torsion of the noncommunicating rudimentary horn. The case of a patient referred for acute abdomen after distention of a noncommunicating rudimentary horn is presented herein.

Imaging finding: A 18-year-old girl came with complain of severe abdominal pain and distension for USG examination in the department of radiodiagnosis, RNT medical college. Her age at menarche was 13, and she had severe dysmenorrhea since age 14. Abdominal ultrasonography revealed a small uterus and a hypoechogenic solid tubular right pelvic mass. Magnetic resonance imaging (MRI) showed a centrally cystic solid mass in the right pelvic region suggestive of non communicating rudimentery horn with blood collection in the cavity.

Teaching points: Uterine anomalies mimicking an acute abdomen as appendicitis must be kept in mind in postmenarchal young patients. MRI examination as a complement to ultrasound should be the imaging modality used to make the correct diagnosis. In cases of unicornuate uterus with a cavitory communicating or noncommunicating rudimentary horn, surgical removal of the rudimentary horn is indicated to avoid potential complications.
Abstract ID: 625

ABSTRACT TITLE: ANTENATAL DIAGNOSIS OF MECKEL-GRUBER SYNDROME- A CASE REPORT
PRESENTING AUTHOR: TAPENDRA NATH TIWARI
CO-AUTHOR: DR. N.K.KARDAM, DR. K.GEHLOT

Learning Objectives: For early diagnosis of this entity and to evaluate prognosis of MGS.

Background: Meckel-Gruber Syndrome was first described by J R Meckel in 1822. It is an autosomal recessive disorder, and is caused by the failure of mesodermal induction. The typical triad of Meckel-Gruber Syndrome (MGS) involves meningo-encephalocele, polycystic kidneys and postaxial polydactyly. The worldwide incidence varies from 1 in 1.300 to 1 in 140.000 live births. we report a case of MGS presented for routine antenatal USG examination at 16 weeks to the dept. of radiodiagnosis, RNT medical college, Udaipur.

Imaging Finding: A women of 25 year age came for antenatal USG, findings were a fetus with occipital encephalocele, bilateral enlarged echogenic kidney and polydactyly. Patient also had severe oligohydroamnios. The patient was counselled regarding the lethal outcome of MGS and termination of pregnancy was done. Post-abortion macroscopic examination revealed multiple congenital anomalies including occipital encephalocele, and polydactyly.

Teaching Points: Meckel ruber syndrome has to be differentiated from other syndromes. The most likely syndrome to be confused with MGS is trisomy 13. Although the dismal outcome is the same for both, the recurrence rate is different. Trisomy 13 is mostly sporadic with low recurrence rate whereas MGS has 25% recurrence rate. Other syndromes similar to MGS are trisomy 18, Joubert syndrome, Bardet biedl syndrome and Smith emli pitz syndrome. GS is a lethal disorder. One cannot speak about survival of the fetus because of the pulmonary hypoplasia. The parents should be counseled about prognosis of the fetus and the outcome. Counselers should strictly give information about the recurrence risk for the next pregnancies.

Abstract ID: 656

ABSTRACT TITLE: MAGNETIC RESONANCE IMAGING OF PLACENTA AND ITS ABNORMALITIES
PRESENTING AUTHOR: ANUSHA SURESH
CO-AUTHOR: (None)

Learning Objectives: 1. To identify the different disorders of abnormal placental villous adherence like accreta, percreta and increta.
2. To correlate with risk factors of abnormal placental villous adherence.
3. Appropriate examination indications and recommendations for optimizing image acquisition and interpretation.

Background: The frequency of placenta accreta has increased by more than 10-fold in the past 30 years to approximately three cases per 1000 deliveries. Accurate prenatal identification of affected pregnancies allows optimum management. MRI sequences with high temporal resolution and good contrast-to-noise ratios have made placental imaging possible.

Imaging findings: Imaging features associated with placenta accreta include placenta previa, lacunae, abnormal color Doppler imaging patterns, loss of the retroplacental clear space, and reduced myometrial thickness. An irregular bladder wall has been described with placenta percreta.
Conclusion:

1. MRI is of added diagnostic value in confirming and characterizing disorders of abnormal placental villous adherence.
2. MRI increases the accuracy of the workup of high-risk patients and aids in multidisciplinary delivery planning to improve maternal outcome.

Abstract ID: 659

ABSTRACT TITLE: SECOND TRIMESTER ULTRASOUND SCAN IN DIAGNOSIS OF FOETAL ANOMALIES
PRESENTING AUTHOR: ANKIT B. MANGAL
CO-AUTHOR: DR. U.V. KAKDE

Introduction: Congenital foetal anomalies are one of the most threatening complications which are prevalent in the society associated with severe morbidity and mortality in the new born foetus or neonates. Ultrasound is the best possible non-invasive technique available to detect any congenital anomalies in pregnant women which will help to identify the severity of the disease, its outcome leading to pregnancy termination or gives an opportunity for foetal therapy or better neonatal care.

The study would determine the sensitivity and specificity of ultrasound modality in evaluating congenital foetal anomalies. Many modalities are available to detect congenital anomalies at an early stage like laboratory & imaging studies, out of which sonography has emerged as the investigation of choice. Ultrasound being non-invasive is safe and hence can be used repeatedly. It is quick, inexpensive, and sensitive causing no discomfort to the patient at any time of gestation. Foetal anomaly scan is usually carried out at second trimester of pregnancy.

Materials & Methods: The study was carried out on 25 subjects at R.D. Gardi Medical College, Ujjain. Logiq P6 Pro and Mindray DC N3 ultrasound machines with tracker were used.

Result & Conclusion: Various advantages, like detection of anencephaly as early as at 14 weeks of gestation, with few limitations are also encountered.

Ultrasound is a noninvasive, safe and simple modality, coupled with reproducibility, as often needed and underlines the importance of antenatal ultrasound for early detection and management of foetal anomalies.

Keywords: Second Trimester Ultrasound, Foetal Anomaly Scan

Abstract ID: 661

ABSTRACT TITLE: SONOGRAPHIC EVALUATION OF PELVIC PAIN IN THE FIRST TRIMESTER OF PREGNANCY: A PROSPECTIVE STUDY
PRESENTING AUTHOR: RIYA SAMANTA
CO-AUTHOR: DR. RAMA ANAND, DR. R.S. SOLANKI, DR. REENA YADAV

Purpose: Pelvic pain is common in first trimester with causes ranging from pathologies requiring routine follow-up to complexities needing urgent management. Imaging is often needed to clarify the clinical picture and expedite the diagnosis. Our purpose is to study the sonographic features of various conditions presenting with pelvic pain in first trimester, find out the proportion of each etiology and correlate the
sonographic findings with clinical/per-operative findings as very limited number of such comprehensive studies have been done till date and reports on a study on proportion of individual causes of pelvic pain are lacking.

**Materials and Methods:** Study was conducted in Lady Hardinge Medical College from November 2016 to March 2018. 67 patients with pelvic pain in first trimester underwent pelvic sonography. The sonographic findings were correlated with clinical/per-operative findings.

**Results:** Ectopic pregnancies formed the largest group comprising of 45(67.2%) of total study population; fallopian tubes being the most common site-38/45(84.4%) followed by cervix(6.8%), caesarean scar site(4.4%), ovarian(2.2%) and rudimentary horn pregnancy(2.2%). Early pregnancy failures were next in majority-5/67(7.5%). Other causes-haemorrhagic corpus luteal cysts(isolated)(6%), subchorionic hemorrhage(4.4%), simple ovarian cyst(1.5%), dermoid(1.5%), fibroid(1.5%), ovarian torsion with ruptured tubal ectopic(1.5%) and acute appendicitis(3%). Only four (6%) patients had normal early intrauterine pregnancies.

**Conclusion:** Ultrasonography is an excellent imaging modality with a high diagnostic accuracy(94%) and sensitivity(100%) for detecting the cause of first trimester pelvic pain in women presenting with pelvic pain. Thus, all women who experience pelvic pain in first trimester of pregnancy should undergo a sonographic evaluation.

**Abstract ID: 667**

**ABSTRACT TITLE:** CERVICAL ECTOPIC PREGNANCY: CASE SERIES

**PRESENTING AUTHOR:** RIYA SAMANTA

**CO-AUTHOR:** DR. RAMA ANAND, DR. R.S. SOLANKI, DR. REENA YADAV

**Purpose:** Cervical ectopic pregnancy is defined as implantation in the cervical canal. It usually aborts in the first trimester. Removal of placenta in these cases may result in massive hemorrhage because of lack of contractile tissue in cervix. It can be misinterpreted as abortion in progress with the gestational sac passing through cervix, so, a correct diagnosis is very important. We will be discussing the diagnostic ultrasonographic features of cervical pregnancy which will help in reaching a correct and timely diagnosis for appropriate management.

**Materials and Methods:** Ultrasonographic features of cervical pregnancy were analyzed in 3 patients using Philips Electronics India Ltd iU22 Intelligent Ultrasound System with C5-2 convex and C9-5 transvaginal transducer. The status of uterus, endometrial cavity, cervix, site of gestational sac passing through cervix, so, a correct diagnosis is very important. We will be discussing the diagnostic ultrasonographic features of cervical pregnancy which will help in reaching a correct and timely diagnosis for appropriate management.

**Results:** All 3 cases presented in late first trimester with pelvic pain and vaginal bleeding. One had a past history of multiple D & C which is an important risk factor for cervical ectopic pregnancy. Per Vaginal examination revealed “ballooned out cervix” in 2 of the 3 cases, normal mobile uterus, free and nontender bilateral fornices. The sonographic features observed in cervical pregnancy were: “Hourglass/figure of eight” configuration of uterus, gestational sac in the cervical canal, normal appearance of LUS, closed internal os and the presence of cardiac activity below the internal os(diagnostic of cervical pregnancy). Two patients were treated by suction and evacuation. One patient received injection KCl for fetoreduction before evacuation. Post treatment sonography revealed minimal collection in cervix.
Conclusion: Cervical pregnancy is a rare form of ectopic pregnancy which needs correct and timely diagnosis. Ultrasonography is the imaging modality of choice for appropriate diagnosis, management and follow-up after treatment.

Abstract ID:670

**ABSTRACT TITLE**: MRI OF PELVIC ENDOMETRIOSIS : A COMPREHENSIVE REVIEW
**PRESENTING AUTHOR**: DEEKSHA BHALLA
**CO-AUTHOR**: NIDHI PRABHAKAR, VEENU SINGLA, TULIKA SINGH, MS SANDHU, VANITA SURI, NEELAM AGGARWAL

**Learning Objectives**: Our exhibit aims to describe the spectrum of MRI findings in pelvic endometriosis.

**Background**: Endometriosis is a common gynecologic disorder and common cause of pelvic pain and infertility among reproductive age women. MRI is a noninvasive imaging tool for identifying the disease and provides a comprehensive evaluation of disease extent.

**Imaging Findings**: MRI Imaging protocol includes T2 weighted sequence in axial, coronal and sagittal planes, T1 weighted sequence with and without fat suppression, diffusion-weighted and gadolinium-enhanced images. Endometriosis is seen as areas of altered signal intensity showing T1 intermediate to hyperintense and T2 heterogeneous signal. ‘T2 shading’ sign is pathognomonic. Few endometriotic lesions show restricted diffusion. Contrast enhancement maybe seen, which is peripheral or septal in cases of cystic disease. In solid deposits, heterogeneous enhancement is seen. Associated adenomyosis may be seen in a variable number of patients.

**Conclusion**: MRI is the mainstay of imaging for the diagnosis and comprehensive evaluation of endometriosis, allowing accurate detection of the extent of involvement and complications. Knowing the MRI characteristics of endometriosis will help the radiologist in differentiating endometriosis from other benign or malignant lesions of the pelvis and guide the treatment as well as laparoscopic examination of endometriosis.

Abstract ID:706

**ABSTRACT TITLE**: 3D ULTRASOUND , HYSTEROSALPINGOGRAPHY(HSG) AND MRI COMPARISON IN CASES OF MULLERIAN DUCT ANOMALIES.
**PRESENTING AUTHOR**: REVATI VISHNUKUMAR TEKWANI
**CO-AUTHOR**: DR. HEMANGINI THAKKAR, DR. PADMA BADHE, DR. SHILPA SANKHE

**Purpose**: Diagnosis of Mullerian Duct Anomalies(MDAs) is clinically important because of the high associated risk of infertility, endometriosis, and miscarriage, such that an estimated 15% of women who experience recurrent miscarriages are reported to have MDAs. Accurate MDA recognition and classification are critical because treatment varies by the anomaly subtype.

**Aim**: This is a study to evaluate accuracy of respective modality viz 2D and 3D ultrasound, HSG and MRI. MRI is considered gold standard for comparing the other two modalities.

**Methods and Material**:
- Study design : it is a prospective study.
- Sample size: the sample size will be that of atleast 20 and maximum 30 cases
- Inclusion criteria:
  1) All the patients referred in gynaecology out patient department (OPD) which are suspected to have MDA by clinical examination and history taking and have been advised USG, HSG and MRI by the gynaecologists.
- Exclusion criteria: For USG as such there is no exclusion criteria.

For HSG:
2. Patients who are pregnant.
3. Patients with surgical correction of mullerian anomalies
4. Patients with history of active genital tuberculosis, active genital infection.
5. Hypersensitivity to contrast agents.
6. Active bleeding from the vagina and suspected malignancy.

For MRI
1. Implanted pacemaker
2. Ferromagnetic aneurysm clips
3. Metallic foreign bodies and many more.

Results: Majority of the cases were separte and bicornuate. HSG showed overall accuracy of 75% . The 3D showed overall accuracy of 97.2%.

Conclusions: We recommend 3-D transvaginal ultrasonography as an important step in the assessment of the uterine cavity in patients with a suspected Mullerian Duct anomaly after 2D ultrasound has been performed. Before MRI 3D Ultrasound has to be done due to obvious disadvantages with MRI. It should be preserved as a problem solving tool and for patients in whom 3D transvaginal sonography is not possible.

Abstract ID: 727

ABSTRACT TITLE: ROLE OF COLOR DOPPLER AND SPECTRAL FLOW ANALYSIS IN PREGNANCY INDUCED HYPERTENSION AND ITS CORRELATION WITH PERINATAL OUTCOME.

PRESENTING AUTHOR: PUNEET MALLHAN

CO-AUTHOR: DR. KAMINI GUPTA, DR. KAVITA SAGGAR, DR. ASHIMA TANEJA

Purpose: To analyse the role of color doppler and spectral flow analysis in patients with pregnancy induced hypertension [PIH] to predict perinatal outcome.

Materials and Methods: Grey scale and color doppler ultrasound of 20 pregnant females with diagnosis of PIH and gestation of more than 28 weeks was done on Phillips IU22 machine using convex (3-5MHz) probe in the department of Radiodiagnosis at DMCH, Ludhiana. Fetal parameters and doppler indices of uterines, umbilical and fetal MCA were correlated with gestational outcome.

Results: Most patients in present study were multiparous. 5 patients were scanned before 28 weeks of gestation and 15 after 28 weeks. Doppler indices of uterine arteries were deranged in all patients diagnosed before 28 weeks. Out of them, 2 had brain sparing effect. Out of 15 patients scanned after 28 weeks, 13
had persistent diastolic notch in uterine arteries and altered S/D ratios of umbilical artery. Fetal outcome was severely altered in the form of perinatal death and fetal distress at birth in 6 patients with severely deranged doppler parameters. Rest of the patients with mild to moderately deranged doppler parameters, were associated with pre-term deliveries and low birth weight newborns.

Conclusion: We conclude that Color doppler can significantly contribute to early diagnosis and management of PIH. It can predict the severity of fetal outcome so that early interventions can be done.

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3. Doppler changes in PIH.Dr. Vijaykumar Mane, Dr. Vidya A Gaikwad, Dr.Shailaja Mane, Dr. Namrata Kulkarni, Dr. AparnaPingle, Dr. Preeti Pandey. International Journal of Applied Research 2016; 2(2): 541-544.

Abstract ID:747

ABSTRACT TITLE: PRENATAL DIAGNOSIS OF CONGENITAL HIGH AIRWAY OBSTRUCTION SYNDROME (CHAOS) ASSOCIATED WITH FRASER SYNDROME:

PRESENTING AUTHOR: PURAN

CO-AUTHOR: DR.KUSHAL GEHLOT

Background and Aim: Congenital high airway obstruction syndrome (CHAOS) is a rare and fatal congenital anomaly of multifactorial inheritance caused by obstruction of fetal airway because of laryngeal or tracheal atresia, subglottic stenosis, laryngeal cyst or laryngeal web; laryngeal atresia is the most frequent cause. CHAOS is mostly an isolated finding or may be seen with syndromes like Fraser, cri du chat and velocardiofacial syndrome.

We aimed to report our experience about CHAOS in association with Fraser syndrome (cryptophthalmos syndactyly syndrome). Fraser syndrome(FS) is a rare autosomal recessive disorder with incidence of 0.043/10,000 liveborn infants and 1.1/10,000 stillbirths. FS is characterized by cryptophthalmos,cutaneous syndactyly, laryngeal and tracheal malformations, urogenital abnormalities, craniofacial dysmorphism, musculoskeletal defects and mental retardation with marked inter- familial clinical variability.

FS can be diagnosed on clinical examination, pre-natal ultrasound or perinatal autopsy.

Case report: A 26-year-old pregnant healthy female (G2P1A0) with 20 weeks gestation came for routine antenatal scan. Ultrasonography findings revealed large echogenic lungs compressing the heart in between, inverted diaphragms, dilated airways distal to the obstruction, gross fetal ascites and subcutaneous edema. Further evaluation showed - Oligohydramnios, microphthalmia, bilateral renal agenesis and single limb syndactyly.

Conclusion: Prenatal early and accurate diagnosis offers a window of opportunity for parental counselling and multidisciplinary management using procedures such as EXIT(ex-utero intrapartum procedure), fetoscopic tracheostomy or elective termination of pregnancy.
Abstract ID: 759

**ABSTRACT TITLE**: MOLAR PREGNANCY IN CAESAREAN SCAR

**PRESENTING AUTHOR**: POOJA G KULKARNI

**CO-AUTHOR**: DR GANESH K

**Background**: A 32 year old women presented with painless vaginal bleeding for one month. She had a history of caesarean section in her previous pregnancy.

Imaging findings revealed AV malformation in endocervix

Patient underwent total abdominal hysterectomy.

Specimen sent for histopathology, which revealed features of invasive mole at the caesarean scar.

**Imaging Findings**: An Ultrasound scan was performed which demonstrated normal adnexae with no free fluid, an empty uterine cavity, empty cervical canal and a large 40mm X 4.5mm diameter heterogenous mass in the anterior part of the uterus in relation to the previous caesarean scar. Colour doppler revealed abnormal blood flow within the endometrium and peripherally and in the region of the mass.

**MRI**: MRI revealed peripherally hyperintense and centrally hypointense lesion on coronal and sagittal T2-weighted image in the anterior wall in the lower uterine segment at the site of the caesarean section scar.

Post gadolinium administration, the lesion demonstrated peripheral contrast enhancement on T1-weighted fat-suppressed axial images.

**Conclusion**: CSS choriocarcinoma is an extremely rare entity. Imaging and a timely diagnosis are the keys to its successful treatment and the prevention of complications. By presenting a choriocarcinoma case within the CSS, we aimed to draw the attention of both radiologists and clinicians, who should consider this rare entity in the differential diagnosis of cesarean scar pregnancies.

Abstract ID: 762

**ABSTRACT TITLE**: ECCENTRIC PRESENTATIONS OF ECTOPIC

**PRESENTING AUTHOR**: GIRISH BORAIAH

**CO-AUTHOR**: DR. BABU PHILIP (PROFESSOR AND HEAD), DR. V RAVI HOISALA (PROFESSOR AND FORMER HEAD)

**Introduction**: Diagnosis of ectopic pregnancy is a day to day affair in clinical practice and in radiology. Presentation of the ectopic pregnancy can be varied. Ectopic pregnancy stands as differential for abdominal pain in reproductive age group females.

**Aims and Objectives**: To delineate different ultrasound imaging findings in ectopic pregnancy and thus educate the viewer to prompt and accurate diagnosis.

**Materials and Methods**: Ultrasound imaging of clinically and histopathologically proven ectopic over a period of many years were used to highlight the different imaging presentations.

**Results**: Cases of ectopic pregnancy with both typical and atypical imaging showed some important key findings which can lead us to confirm ectopic and rule out other diagnosis.
Conclusion: Ectopic pregnancy though a common occurrence these days with in-vitro fertilisation and other causes still is a daunting task to come to diagnosis. Utilisation of the different imaging findings improves the confidence of diagnosis of ectopic pregnancy, leading to early diagnosis with best care to the patient.

Abstract ID:769

ABSTRACT TITLE : ULTRASOUND AND CT EVALUATION OF SPECTRUM OF GERM CELL TUMORS OF OVARY
PRESENTING AUTHOR : SOWMYA JAGADISH
CO-AUTHOR : DR. NANJARAJ C P, DR. N L RAJENDRA KUMAR, DR. SHRUTI MANKANI

Aims: To study the ultrasound and CT imaging features of germ cell tumors of the ovary.

Materials and Methods: USG machine – Affinity 50/70 and high-speed dual slice CT – GE healthcare system were used. Subjects were females who underwent the ultrasound and computed tomography of the abdomen in Department of Radio-diagnosis, MMCRI

Results: Mature teratoma shows a hyperechoic mass, the tip of iceberg sign, dermoid plug and dermoid mesh, fat-fluid (hair-fluid) level on ultrasound and calcification, fat attenuation within the lesion on CT.

Endodermal sinus tumor has elevated serum Alpha-fetoprotein, shows solid cystic mass with a vascular pedicle on imaging.

Dysgerminoma, the most common malignant ovarian germ cell neoplasm with elevated serum LDH shows multiloculated solid mass with fibrovascular septa on ultrasound and areas of calcification, necrosis & hemorrhage on CT.

Choriocarcinoma has elevated serum beta HCG, on imaging shows large heterogeneous mass with areas of necrosis and hemorrhage, and evidence of hypervascular metastasis to other organs – lungs, liver, brain, bone, etc.

Conclusion: Germ cell tumors are the most common ovarian malignancy in children and young adults. They account for 15-20% of ovarian neoplasms with 95% being benign cystic teratoma. Ultrasound and CT are useful modalities in the evaluation and in the diagnosis of germ cell tumors. However, HPE is diagnostic.

Abstract ID:813

ABSTRACT TITLE : UTERINE DIDELPHYS WITH OBSTRUCTED HEMIVAGINA WITH HAEMATOMETROCOLPOS: A RARE CONGENITAL CAUSE OF LOWER ABDOMINAL PAIN IN YOUNG FEMALE.
PRESENTING AUTHOR : GURPREET SINGH SANDHU
CO-AUTHOR : 2.DR TULIKA SINGH,ADDITIONAL PROFESSOR 3.DR VEENU SINGLA ,PROFESSOR

Learning Objectives: To study clinical presentation ,embryology,imaging findings of rare mullerian duct anomaly ( Uterine didelphys) and its management.

Background: Uterus didelphys is a very rare mullerian duct anomaly with prevelance of ~8.3% of all mullerian duct anomalies . Didelphys uterus results due to complete failure of fusion of mullerian ducts leading to two separate uterine cavities and cervices .Renal anomalies are generally seen with mullerian duct anomalies.
We report a young female presenting with lower abdominal pain and dysmenorrhoea diagnosed to have uterine didelphys with obstructed hemivagina with haematometrocolpos on MRI and managed by excision of vaginal septum and relieved of symptoms.

**Imaging Findings:** Ultrasound showed two separate uterine horns and cervices with no obvious communication between them. There was presence of a vaginal septum as confirmed on examination which resulted in obstructed left moiety with collection and mobile internal echoes in the endometrial and cervical canal. MRI pelvis better delineates the two uterine horns and cervix with no obvious communication between the endometrial cavity. The obstructed endometrial cavity and cervical canal are dilated and show T1 and T2 hyperintense contents within likely blood products with abrupt narrowing at the level of upper vagina likely due to vaginal septum. Thus confirming the diagnosis of uterine didelphys with haematometra and haematocolpos.

**Conclusion:** Uterus didelphys is a rare mullerian duct anomaly which can be diagnosed by imaging non-invasively. The condition needs to be diagnosed at an early age to prevent abdominal symptoms, infertility and obstetric complications and requires surgical management in symptomatic patients.

**Abstract ID: 871**

**ABSTRACT TITLE:** EVALUATION OF PLACENTAL THICKNESS AS A SONOLOGICAL INDICATOR FOR ESTIMATION OF GESTATIONAL AGE

**PRESENTING AUTHOR:** SUSHMA H

**CO-AUTHOR:** DR M R SHASHIKUMAR, DR N L RAJENDRA KUMAR, DR C P NANJARAJ, DR DESHMANE PANKAJ

**Purpose:**
- Estimation of placental thickness using ultrasound, measured at insertion of the umbilical cord.
- Comparison of gestational age with placental thickness.

**Materials and Method:**
- The study included 300 antenatal cases of more than 10 weeks of gestation attending Mysore Medical College and Research Institute and referred to radio diagnosis department.
- Gray scale real time ultrasonographic examinations were performed using a Philips Affinity 70 and 50 system & 3.5MHz convex array transducer.

**Results:**
1. Age distribution: Range: 18-38 years. (Mean age - 25 years).
2. Distribution of placental position: Anterior placenta was noted in 90 cases, posterior 83 cases, fundal and lateral in 72 and 55 cases respectively.
3. Relationship between gestational age and placental thickness: From 11 to 35 weeks placental thickness (in mm) almost matched gestational age in weeks. Thereafter from 36 – 40 weeks placental thickness was lower by 1 – 3 mm. Mean values of placental thickness show a perfect increasing linear trend with increasing gestational age and almost matching it.
4. Relationship between gestational age and placental thickness for different placental locations:
- Cases were categorized into two groups based on placental location.
- Group I: Anterior and Lateral placentae combined.
- Group II: Posterior and fundal placentae combined.
Thickness of the placenta did not vary relative to placental location.

**Conclusion:** Relationship between the placental thickness and gestational age is linear and direct. Placental thickness (in mm) measurement can be important additional parameter for estimating gestational age along with other parameters especially from 11 to 35 weeks of gestation.

**Abstract ID: 896**

**ABSTRACT TITLE**: INFERTILITY EVALUATION - A MULTIMODALITY APPROACH  
**PRESENTING AUTHOR**: EESHA RAJPUT  
**CO-AUTHOR**: (None)

**Aim:**

a) To evaluate and analyse multimodality findings in patients of primary and secondary infertility.

b) To reiterate MRI as a problem solving tool in complicated cases of infertility.

**Methods:** The study was carried out at a tertiary care 600 bedded hospital equipped with Logic P6 USG machine, 16 slice CT and 1.5T MRI. The inclusion criteria were patients presenting with infertility (primary or secondary).

**Results:** The findings were myriad and included

A) Ovarian causes - PCOD, dermoid, cyst adenoma

B) Uterine causes - leiomyoma, endometriosis, adenomyosis, Mullerian duct anomalies

C) Peritoneal causes - mass lesions, ascites

D) Tubal causes - hydrosalpinx, tubal block

Complete and accurate evaluation was only possible due to a multimodality approach. However, MRI acted as a problem solving tool in many cases.

**Conclusion:** Pelvic causes of infertility can be multiple. Disadvantages of techniques like HSG, USG, CT make MRI a sanctum sanctorum for all case under evaluation for infertility, especially complicated cases wherein MRI is used as a problem solving tool. Nevertheless, adequate history and a multimodality approach should be adopted to elude incorrect diagnosis.
Abstract ID:936

**ABSTRACT TITLE**: A RARE CASE—CONGENITAL HIGH AIRWAY OBSTRUCTION SYNDROME PRENATALLY DIAGNOSED BY MULTIMODALITY APPROACH

**PRESENTING AUTHOR**: ADITI A. PATEL

**CO-AUTHOR**: DR. HARSHAD SHAH, DR. NIRMALA CHUDASAMA, DR. RASESH VYAS

**Introduction**: Congenital high airway obstruction syndrome (CHAOS) is a rare fetal anomaly caused by fetal airway obstruction.

Airway obstruction may be complete or near complete. CHAOS has been considered fatal condition, as it may lead to still birth or death shortly after delivery. However, due to advancement in imaging, more cases are being detected in prenatal period.

**Learning Objective**: To study the imaging findings of prenatal CONGENITAL HIGH AIRWAY OBSTRUCTION SYNDROME.

**Case Summary**: A 25 year old female (gravida 2, para 0) was referred for routine 2nd trimester antenatal anomaly USG scan at 18 weeks of gestational age. She had past history of spontaneous missed abortion at 10 weeks, 1.5 years back. She had good medical history and doesn’t have consanguinous marriage. There was no significant family history of babies born with congenital anomalies.

**Imaging Findings**:
- USG features reveal single live intrauterine fetus having voluminous & echogenic bilateral lungs causing flattening of both domes of diaphragm and centrally placed small compressed heart, dilated trachea & main bronchi with gross ascites. However, amniotic fluid index (AFI) was normal.
- T2W MRI IMAGES confirms exact level of laryngeal stenosis, dilated trachea and main bronchi, enlarged voluminous both lungs, inverted both dome of diaphragm and ascites.

**Conclusion**: USG shows typical findings however MRI is superior in terms of identifying the exact level of obstruction as well as in identifying extrinsic causes & helpful in case of any interventions.


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Abstract ID:955

**ABSTRACT TITLE**: ACCESSORY CAVITATED UTERINE MASS (ACUM) : A MULLERIAN ANOMALY IN WOMEN WITH OTHERWISE NORMAL UTERUS

**PRESENTING AUTHOR**: TULIKA SINGH

**CO-AUTHOR**: DR SANGEETA DEURI, DR VEENU SINGLA, DR RASHMI BAGGA

**Background**: Accessory cavitated uterine mass (ACUM) is an isolated accessory uterine cavity in a setting of normal uterus and ovaries. It characteristically presents at a younger age with severe dysmenorrhoea . USG is the first modality of investigation while MRI is highly accurate in pre operative diagnosis. We present the USG and MR imaging findings in a case of ACUM

**Case Report**: 31 year women presented with severe dysmenorrhoea for past 3 – 4 years. USG pelvis showed a well-defined anechoic lesion with thick echogenic wall in relation to the left myometrium . MRI pelvis
showed a well-defined, rounded, non-communicating cavitated mass measuring 3 × 4.3 cm noted along the left uterine wall. The cavity was lined by T2-hypointense endometrium with hemorrhagic contents within. The uterine cavity was normal in shape and size, normal B/L cornua. Based on the above findings, a diagnosis of ACUM was considered. For confirmation, the patient was advised diagnostic laparoscopy, however she denied further investigation.

**Learning Point:** ACUM is a rare mullerian anomaly needs to be distinguished from cavitating leiomyoma and cystic adenomyosis. They are lined by endometrial epithelium. It needs to be classified separately as the uterine cavity is otherwise normal unlike other Mullerian anomalies. Knowledge of ACUM as an entity is important as ACUM is a treatable cause of severe dysmenorrhea in young female.

**Conclusion:** ACUM is a rare Mullerian anomalies that cause severe dysmenorrhea in young women. For the diagnosis of ACUM, MRI is useful, and the normal endometrial cavity is decisive.

**Abstract ID:**960

**ABSTRACT TITLE:** MR IMAGING IN MULLERIAN DUCT ANOMALIES: A PICTORIAL REVIEW

**PRESENTING AUTHOR** : TULIKA SINGH

**CO-AUTHOR** : DR NIDHI PRABHAKAR, DR VEENU SINGLA, DR VINEETA SURI

**Learning Objectives:** Diagnosis of mullerian duct anomalies is clinically important because high associated risk of infertility, endometriosis and miscarriage. MR Imaging plays important role in differentiating subtypes of MDAs. We present MR Imaging features of mullerian duct anomalies pictographically with its embryologic development and classification.

**Background:** MDAs are a broad and complex spectrum of abnormalities in which patients often present with primary amenorrhea, infertility, obstetric complications, and endometriosis. Patients suspected of having an MDA are often initially referred for pelvic ultrasonography (US). However, MR imaging is the imaging standard of choice over US and HSG, because it is noninvasive, does not involve ionizing radiation, has multiplanar capability and allows excellent soft-tissue characterization.

**Findings and Procedure Details:** In this review, we retrospectively reviewed the MR imaging of patients of mullerian duct anomalies with discussion of the embryology and different subtype of MDAs, and MR imaging protocol. In addition, we also describe the differentiating points between different subtype of MDAs, with its associated anomalies and potential complications.

**Conclusion:** MRI gives the exquisitely details both the uterine cavity and external contours and has shown excellent correlation with clinical MDA subtype diagnosis. In some rare anomalies sometime, the classification is uncertain or multiple subtypes of MDA are present, it is best to describe the anomalies rather than forcing them into class. Few limitations of MRI is visualization of small rudimentary horns and delineation of vaginal anomalies like longitudinal vaginal septum.
Abstract ID: 969

ABSTRACT TITLE: ULTRASOUND APPEARANCES IN ECTOPIC PREGNANCY: FINDING THE FUGITIVES

PRESENTING AUTHOR: SHANKHNEEL SINGH

CO-AUTHOR: SMITA MANCHANDA, PRIYANKA NARANJE

Learning Objectives:

• To look at the spectrum of ultrasonographic appearances in cases of ectopic pregnancy
• To identify key imaging findings of ectopic pregnancy in absence of positive clinical history

Background:

• Ectopic pregnancy is the implantation of a fertilized ovum outside the uterine cavity.
• Classic clinical findings include abdominal pain with bleeding per vaginum. History of amenorrhoea or positive UPT may not be forthcoming in some cases.
• Risk factors for having an ectopic pregnancy include in-vitro fertilization, previous ectopic pregnancy, tubal intervention, pelvic inflammatory disease, endometriosis, intrauterine contraceptive device and congenital uterine anomalies.
• It is important to differentiate from early pregnancy and abortion.

Imaging findings:

• Transvaginal sonography (TVS) is the mainstay for diagnosis.
• Signs of ectopic pregnancy on TVS include:
  o Uterus: Empty uterine cavity with Pseudogestational sac/Decidual cyst (20% cases) or thickened echogenic endometrium
  o Tubes and ovaries: Complex adnexal mass with “tubal ring sign/ bagel sign” and “ring of fire sign”
  o Peritoneal cavity: Free fluid in pelvis/hemoperitoneum
• USG appearance can vary according to the site of ectopic pregnancy:
  o Tubal, interstitial/ cornual, ovarian, cervical, scar, abdominal ectopic and heterotopic
• Key points to differentiate: Unruptured ectopic/ Tubal abortion/ Ruptured ectopic

Conclusion:

• Pelvic sonography is central to diagnosis of ectopic pregnancy and it is necessary to recognize its signs early to prevent catastrophic outcomes and early treatment.
• Current treatment guidelines include medical and surgical management and hence it is important to identify tubal abortion and unruptured ectopics early.
Abstract ID:980

ABSTRACT TITLE: ROLE OF ULTRASOUND AND MAGNETIC RESONANCE IMAGING IN ADNEXAL MASSES - A COMPARATIVE STUDY.

PRESENTING AUTHOR: N NITYA

CO-AUTHOR: DR. M.VENKATESH, DR.V.N.NARVEKAR

Objectives: To assess the relative role of ultrasound and magnetic resonance imaging in the evaluation of adnexal mass lesions and compare them with clinical outcome or operative findings.

To note advantages and limitations of one modality over the other vis-a-vis in the evaluation of adnexal mass lesions.

To assess the role of magnetic resonance imaging in the evaluation of sonographically diagnosed indeterminate masses.

Materials and Methods: A prospective study is done on thirty female patients referred to the department of Radiodiagnosis, Narayana medical college, Nellore from Obstetrics and gynaecology, General medicine and General surgery departments. All patients with clinically suspected adnexal masses will be examined using a Philips clearview 550 ultrasound machine with a 4MHz transducer for transabdominal ultrasound or a 9MHz transvaginal transducer and will be advised a 3T Magnetic resonance imaging of the pelvis using surface coils and contrast as and when necessary.

Summary: This study is designed to evaluate the accuracy of ultrasound and Magnetic resonance imaging in characterising the adnexal masses and to determine which patient may benefit from magnetic resonance imaging because though ultrasound is the imaging modality of choice, it has few shortcomings like limited field of view, obscuration of pelvic organs by the presence of bowel gas, inherent limitation dependent on patient size and experience of the operator. MRI is noninvasive, has no risk of radiation, requires no anaesthesia and is less operator dependent and is the next step in assessment of sonographically indeterminate masses. Also MRI because of it’s excellent soft tissue contrast, larger field of view and direct multilanelar capability can better delineate and characterise normal pelvic anatomy and adnexal pathology.

Abstract ID:993

ABSTRACT TITLE: ULTRASONOGRAPHIC ESTIMATION OF FOETAL GESTATIONAL AGE BY HUMERUS LENGTH AND ITS COMPARISON WITH FEMUR LENGTH

PRESENTING AUTHOR: GEDA ANUSHA

CO-AUTHOR: DR.SUNEETHA,DR.VENKATESH

Objectives of the Study:

- The objectives of this study are to estimate foetal gestational age by measuring humerus length on ultrasonography in second and third trimesters of normal pregnancies

- To compare it with conventional parameter femur length for verification of its accuracy and usefulness in foetal biometry
Methodology:

Source of data: The main source of data will be patients attending the department of Radiodiagnosis, Narayana Medical College, Nellore.

Study Design: Hospital based prospective cross-sectional study.

Sample Size: This prospective cross-sectional study includes 100 healthy women with uncomplicated pregnancy.

Statistical Methods: Percentages and Proportions. Statistical methods will be framed in consultation with biostatistician.

Summary: In obstetrics, ultrasonography is noninvasive, very accurate and easily available tool for assessment of foetal gestational age. Among the many parameters presently in use for foetal gestational age assessment, foetal long bone measurements are reliable indicators for gestational age in second and third trimesters of gestation. Therefore, foetal femur and humerus lengths can be good parameters for gestational age assessment.

The humerus length measurement for assessing foetal gestational age can be undertaken in all routine antenatal biometry as foetal humerus can be imaged and measured after 12 weeks: From the observations of this study, it can be concluded that humerus length is a good parameter for estimation of foetal gestational age. Compared with femur length, humerus length is similar and reliable in estimation of foetal gestational age. Humerus length can be used as an additional parameter for estimation of gestational age in routine foetal biometry.

Abstract ID: 998

ABSTRACT TITLE: SPECTRUM OF IMAGING FINDINGS IN MULLERIAN DUCT ANOMALIES: A PICTORIAL REVIEW

PRESENTING AUTHOR: APARNA SINGH

CO-AUTHOR: DR. KULDEEP MENDIRATTA, DR. MUKESH MITTAL, DR. USHA JAIPAL

Learning Objectives: To describe types of Mullerian Duct Anomalies (MDAs): a broad and complex spectrum of abnormalities that are often associated with primary amenorrhea, infertility, obstetric complications, and endometriosis.

To describe radiological findings of various subtypes of MDAs which present with a myriad of complaints.

To discuss and to show imaging findings of complications that arise in MDAs.

Background: Patients suspected of having an MDA are often initially referred for pelvic ultrasonography (US). Magnetic resonance (MR) imaging is typically reserved for complex or indeterminate cases. Diagnosis of MDAs is clinically important because of the high associated risk of infertility, endometriosis, and miscarriage, such that an estimated 15% of women who experience recurrent miscarriages are reported to have MDAs.

Imaging findings: In this study we present a pictorial review of various Mullerian duct anomalies encountered at our institute. We also highlight various complications which arise in MDAs and how they present on imaging. Hysterosalpingography, though routinely used in evaluation of infertility, has limited role in role in diagnosis of MDAs since it requires assessment of external uterine fundal contour. Thus we focus on ultrasound findings, which is also preferred in younger patients or acute cases because it is readily available,
inexpensive and does not involve radiation exposure. Magnetic resonance (MR) imaging is typically reserved for indeterminate cases or complications and remains the imaging standard of reference.

Conclusion: HSG has limited role in evaluation and classification of uterine anomalies and initial imaging is typically with US. Expected US findings include normal-appearing ovaries without identification of a normal uterus. MR imaging is considered the ideal imaging modality as it provides clear anatomic detail of both the internal uterine cavity and the external contour. In addition MR imaging is able to readily evaluate the patient for concurrent renal anomalies associated with MDAs.

Abstract ID:1007

ABSTRACT TITLE: SONOMORPHOLOGY AND COLOUR DOPPLER CHANGES IN KIDNEYS AND RENAL ARTERY IN WOMEN WITH PREGNANCY INDUCED HYPERTENSION (PIH).

PRESENTING AUTHOR: G S RUJANA

CO-AUTHOR: DR.M.VENKATESH, DR.V.N.NARVEKAR, DR.VEDHARAJU, DR.RAMA KRISHNA RAO BARU, DR.P.SUNEETHA,

Purpose: To evaluate the sonomorphology of kidney in normal pregnant woman and woman with pregnancy induced hypertension. To evaluate changes in Resistivity index (RI), Pulsatility index (PI) and Acceleration time (AT) of renal artery in normal pregnant women and women with PIH

Materials And Methods: A prospective study involved 30 normotensive patients and 30 pregnant women with Pregnancy induced hypertension in our Department of Radio-diagnosis at Narayana Medical College and hospital by Philips ultrasound machine with convex probe of frequency ranging from 2-5 Hertz.

Cut off value of 0.7 for RI, 1.2 for PI, AT >100 msec were taken to differentiate between normal and abnormal values.

Two cardinal features for inclusion criteria include normotensive and non-proteinuria 20 weeks pregnant woman shows increased blood pressure more than 140/90 mmHg with proteinuria >300 mg/24hrs.

Patients with pre-existing hypertension, renal disease, Diabetes mellitus and patients with active urinary tract infection are excluded.

Results: Most pregnant woman with pregnancy induced hypertension fall in 20-35 yrs age group, but women >35 yrs also significantly contribute to pregnancy induced hypertension. Renal volume was increased in pregnancy induced hypertension subjects of our study group.

Peak systolic velocity, PI and RI were higher in patients with Pregnancy induced hypertension

Conclusion: Sonomorphology and renal doppler is clinically relevant in the diagnosis and follow up of renal complications in patients with pregnancy induced hypertension.
Abstract ID: 1042

Title: Ultrasound findings in caesarean scar pregnancy: a rare type of ectopic pregnancy

Topic: Women’s Imaging

Learning Object: To present the pictorial essay of the ultrasound findings in a rare entity of caesarean scar pregnancy

Background: Caesarean scar pregnancy due to implantation in a previous caesarean section scar is the rarest location for ectopic pregnancy. There are only few case reports of this in the literature but its incidence is rising because of increase in rate of caesarean sections. It can lead to life threatening complications like uterine rupture and massive bleeding. Early diagnosis followed by medical or surgical intervention is required.

We present pictorial essay of ultrasound findings of six patients who were diagnosed as scar pregnancy

Imaging findings: Ultrasonography with color doppler is advocated as a very reliable imaging modality for diagnosis of scar pregnancy. Imaging findings include

- empty uterine cavity and cervical canal
- gestational sac with trophoblastic reaction in anterior uterine wall at the site of previous caesarean scar
- Increased color flow signals at the implantation site
- This condition should be differentiated from incomplete abortion and cervical pregnancy.

Conclusion/Teaching points: This type of pregnancy may become complicated with uterine rupture and life-threatening haemorrhage. To avoid complications of scar pregnancy, one should be aware of the imaging findings of this rare entity.

Abstract ID: 1046

ABSTRACT TITLE: CORRELATION OF PLACENTAL THICKNESS WITH GESTATIONAL AGE AND FETAL GROWTH PARAMETERS ON ULTRASONOGRAPHY

PRESENTING AUTHOR: PULAK BANSAL

CO-AUTHOR: (None)

Purpose: The placenta is a highly vascular fetal organ, maintains the feto-maternal circulation via umbilical cord. If the fetal growth is compromised it is due to the abnormal functioning of the placenta which can be detected by the abnormal placental measurements.

AIM is to estimate placental thickness in second and third trimester pregnancies and correlation with fetal gestational age and fetal growth parameters and it’s role in predicting low birth weight (LBW) & intra-uterine growth retardation (IUGR).

Materials and Methods: Cross-sectional study of 300 pregnant women between 13 to 40 weeks was conducted, attending antenatal clinics in the Department of Obstetrics and Gynecology and referred in Department of Radiodiagnosis in NKPSIMS. Biparietal diameter, abdominal circumference, head circumference, femur length and placental thickness were measured by USG by using a 3.5 MHz transducer. Placental thickness was measured at the level of umbilical cord insertion.
**Results**: Mean & Standard Deviation for each week of gestation shows that placental thickness in mm is equal to gestational age in weeks during 13-40 weeks. Pearson's correlation coefficient (r=0.98) and P value (<0.01) for the study suggests significant relationship between placental thickness and gestational age suggesting that this study is significant.

**Conclusion**: The placental thickness has a linear relationship with gestational age. So, measurement of the placental thickness is a significant parameter for estimation of fetal age along with other parameters particularly with unreliable or unknown LMP. It is therefore suggested that measurement of placental thickness should be carried out routinely during obstetric ultrasound scans.

**Learning Objectives**: 1) To demonstrate normal anatomy with important structures on four different cardiac views. 2) To learn the described scanning technique for fetal cardiac screening sonography. 3) To differentiate cardiac anomalies from normal hearts on each cardiac screening view.

**Background**: Cardiac defects are the most common congenital abnormality occurring in 5-9 per 1000 births and constitute important cause of childhood mortality. Despite the widespread use of ultrasonography as a screening tool, the prenatal detection rate is suboptimal. Medical society guidelines mandates evaluation of the four-chamber view of the heart and the cardiac outflow tracts in all second- and third-trimester obstetric scans since it improved detection rates to 80%–84%. This presentation aims to simplify fetal cardiac screening sonography to aid early diagnosis of significant cardiac defects.

**Imaging findings/Procedure Details**: After determining visceral and cardiac situs, first obtain four chamber view in true axial view of chest. Then slightly move transducer towards fetal head without changing angle to have three-vessel view. Again starting with four chamber view, rotate your thumb towards baby’s left shoulder for LVOT view. From LVOT view, rotate your thumb 90° away from baby’s left shoulder, then slightly angle transducer towards fetal head to obtain RVOT view.

**Teaching points**: Use of the systematic approach outlined in this article should allow more confident determination of normal versus abnormal heart thus enabling early referral for expert evaluation.

Abstract ID:1098

**ABSTRACT TITLE**: EVALUATION OF POST MENOPAUSAL BLEEDING BY ULTRASONOGRAPHY AND MRI

**PRESENTING AUTHOR**: PULAK BANSAL

**CO-AUTHOR**: (None)

**Purpose**: Post-menopausal bleeding is Noncyclical, excessive, spotting or prolonged bleeding with Incidence of 4-11%.

Common causes of post-menopausal bleeding include ovarian, uterine, cervical and vaginal.

The aim is to evaluate utility of Ultrasound and MRI in determining the causes of Post-menopausal Bleeding and correlate Imaging findings with Histopathology.

**Materials and Methods**: A cross sectional study of 100 patients was done in the Department of Radio-diagnosis, NKPSIMS Nagpur. All patients with complaints of bleeding PV after at least 12 months of amenorrhea, above the age of 40 years were included in this study. Perimenopausal women with bleeding PV and PMB on hormonal therapy were excluded.

**Results**: Various causes of post-menopausal bleeding were determined with their sensitivity and Specificity on USG and MRI.

On USG fibroids, cervical masses and ovarian masses had the highest sensitivity and specificity of almost 100%. However endometrial carcinoma, polyps and adenomyosis had low values (67%).

MRI was found to have high sensitivity (100%), however had low specificity for CA endometrium (60%) and adenomyosis (65%)

**Conclusion**: Primary investigation of choice for screening is USG. However, for better delineation, characterization and soft tissue involvement MRI is the choice of modality.

MRI is more sensitive, specific and accurate than USG in diagnosing the extrauterine extensions in cervical mass and myometrial invasion in CA endometrium.

Abstract ID:1100

**ABSTRACT TITLE**: EFFICACY OF TRANS-CEREBELLAR DIAMETER & TRANSCEREBELLAR DIAMETER TO HEAD CIRCUMFERENCE RATIO IN ASSESSMENT OF ASYMMETRICAL INTRAUTERINE GROWTH RETARDATION

**PRESENTING AUTHOR**: RAUNAK THAKARE

**CO-AUTHOR**: (None)

**Purpose**: The incidence of IUGR is increasing and becoming one of the most common causes of perinatal mortality in general obstetric population.

The aim of study is to establish: (1) The correlation of normal foetal TCD relative to advancing gestational age; (2) To evaluate the efficiency of TCD/AC ratio and to compare its accuracy with HC/AC ratio in detecting the SGA foetus.
Materials And Methods: Prospective, cross-sectional study. Pregnant women of gestational age from 14 - 40 weeks were examined. Sample size was 499 women out of which 40 were IUGR foetuses. HC, BPD, AC and FL, TCD and TCD/AC and HC/AC ratio were calculated.

Results: Mean & Standard Deviation for each week of gestation shows that TCD in mm is equal to gestational age in weeks during 14-23 weeks

TCD/AC ratio was an age independent parameter that was used in diagnosis of IUGR due to good diagnostic accuracy (91.98 %) and specificity (95.42 %). The p-value for this study is <0.0001, suggesting that this study is significant. TCD/AC ratio had a better diagnostic accuracy and diagnostic validity compared to HC/AC in predicting asymmetric IUGR.

Conclusion: TCD measured in mm is almost equal to GA in weeks up to 23rd week. Therefore TCD acts as a reliable predictor of gestational age and can be used in cases of unknown gestational age. HC/AC and TCD/AC ratios are gestational age independent parameters . TC/AC had a better diagnostic accuracy and is more reliable as compared to HC/AC.

Abstract ID:1113

ABSTRACT TITLE : SONOGRAPHIC EVALUATION OF CONGENITAL FETAL ANOMALIES:A PERSPECTIVE STUDY

PRESENTING AUTHOR : ARVINDER SINGH

CO-AUTHOR : (None)

Objectives: The objectives of this study was to detect fetal malformations sonographically, to evaluate associated anomalies and outcome of pregnancy.

Materials & methods: A perspective study of was done on pregnant ladies for various congenital anomalies using Sonoline SL-2 Machine & Toshiba SSA using 3.5MHz transducer.

Results: A total of 124 fetuses were found to have major congenital malformations in pregnant women referred for routine US fetal well being. The mean incidence of fetal malformations was 1.14% with maximum no. of 96 (77.41%) during 3rd trimester of pregnancy. The majority of cases were in age group 21-25 years (51.6 %) with youngest women of 18 years and oldest 38 years. Most of the fetal malformations were seen in primigravida (45.96 %) with commonest anomaly was ventriculo-megaly 41 cases (27.33%) followed by anencephaly 39 cases (26%).

The common associations was polyhydramnios 28 (71.79%) cases in NTDs and oligohydramnios 4(66.66%) cases of renal anomalies. Foetal malformations had predilection female fetuses with male to female ration of 1:1.15. The overall mortality of malformed fetuses was 90% especially with NTDs and skeletal dysplasias.

Conclusion: Ultrasound should be done between 16-20 weeks in routine practice in high risk pregnancies. This leaves adequate time for determining the outcome and fate of pregnancy. Hence, it would be worth to aware the practitioner about advantage of early scanning in pregnancy.

Keywords: Congenital Anomalies: Sonography: Antenatal
**Abstract ID:1140**

**ABSTRACT TITLE**: IMAGING SPECTRUM OF GYNECOLOGICAL MASSES IN PEDIATRIC AGE GROUP  
**PRESENTING AUTHOR**: HEENA RAJANI  
**CO-AUTHOR**: DR SHABNAM BHANDARI GROVER, DR PRATIMA MITTAL, DR NEHA ANTIL, DR POOJA JAIN, DR GEETIKA KHANNA

**Purpose**: The purpose of our research is to highlight the characteristic imaging findings which can clinch the diagnosis of gynecological masses encountered in the pediatric age group.

**Material and Methods**: A descriptive observational study was conducted in thirteen girls (below 18 years) in a tertiary care centre over last one year, with signs and symptoms attributable to pelvic pain and palpable mass in lower abdominal region. Initial imaging evaluation was performed by trans-abdominal ultrasound in all. Seven of these patients with gynaecological masses, were further assessed with MRI – conventional and dynamic contrast enhanced study. CT abdomen was performed in three other patients with malignant disease for staging purpose. The final imaging diagnosis was correlated with histopathology.

**Results**: The imaging spectrum encountered by us, included one case each of the following: ovarian cyst in new born, immature teratoma, endometrioma, serous papillary cystadenocarcinoma and Sarcoma Botryoides. Two patients had mature cystic teratoma and six patients had adnexal torsion.

**Conclusion**: Gynaecological masses in the paediatric population show characteristic imaging features which can help arrive at a confident pre-operative diagnosis. Furthermore, imaging diagnosis is crucial in planning the surgical approach, which can either be laparoscopic resection for benign lesion and a radical staging surgery for malignant masses.

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**Abstract ID:1206**

**ABSTRACT TITLE**: TOPIC-A RARE CASE OF TUBERCULOUS PYOMETRA IN A YOUNG FEMALE PRESENTING WITH SECONDARY AMENORRHEA  
**PRESENTING AUTHOR**: MOHSINA ISLAM BORA  
**CO-AUTHOR**: BHARGAV DAS

**Objectives**: To present a rare case of pyometra associated with tuberculosis in a young female presenting with secondary amenorrhea

**Background**: A 32 year old woman presented with vague lower abdominal discomfort & history of secondary amenorrhea for ultrasound examination followed by CT examination which led to the detection of pyometra along with other features of genital & abdominal tuberculosis.

**Imaging Findings**:  
- Pyometra  
- Bilateral hydro/pyosalpinges  
- Multistation necrotic abdominal lymphadenopathy  
- Changes in caecum & IC junction  
- Ascites
**Discussion & Summary:** Pyometra, an accumulation of pus in the uterine cavity, is an uncommon condition that has a reported incidence of 0.01%-0.5% in gynecologic patients. Tuberculosis is a chronic infectious disease and still a serious health problem worldwide.

In genital TB, endosalping is the primary site of involvement in 90-100% of cases and then it can spread to the peritoneum, endometrium, ovaries, cervix, and vagina. Our patient presented with secondary amenorrhea & imaging evaluation revealed features of genital & abdominal TB. Cases of tuberculous pyometra are rare, but sporadic cases of postmenopausal tuberculous pyometra have been reported. Review of published literature showed case reports of pyometra in ‘post-menopausal’ women & a single case of HPE proven tuberculous pyometra in reproductive age group. Thus, this is a unique case of ‘tuberculous’ pyometra in a ‘young’ patient presenting as secondary amenorrhea; and hence suspicion of genital tuberculosis, even in AFB negative cases should also be considered in young females with pyometra.

**Abstract ID:1225**

**ABSTRACT TITLE: TITLE**: ACCURACY OF TRANSCEREBELLAR DIAMETER IN ESTIMATION OF FETAL GESTATIONAL AGE.

**PRESENTING AUTHOR**: PRACHI SHAH

**CO-AUTHOR**: DR. MONA SHASTRI, DR. EKTA DESAI. DR. NIPA PATIDAR

**Purpose:**
- To assess the usefulness of fetal transcerebellar diameter as an independent parameter for gestational age assessment in the second and third trimester of pregnancy.
- To derive nomogram for estimating the gestational age of the fetus from ultrasonographically measured transverse cerebellar diameter in Indian population.

**Inclusion Criteria:**
- Healthy women with uncomplicated pregnancy between the 15th week of gestation and term.

**Exclusion Criteria:**
- Unknown or inaccurate date of last menstrual period
- Irregular menstrual cycles
- Oligohydramnios
- Polyhydramnios
- Any maternal or fetal abnormality

**Materials and Methods:** This is a prospective cross sectional study consisting of 100 normal singleton gestations in the period of 15 to 40 weeks. Average gestational age of all the fetuses was calculated by using bi parietal diameter, head circumference, abdominal circumference and femoral length.
Fetal transverse cerebellar diameter was measured. Correlation of TCD was done with other measured parameters as well as with estimated gestational age of fetus. Cerebellar grading was done by ultrasonography.

Result: We observed a linear correlation between transverse cerebellar diameter and gestational age (correlation coefficient r=0.992, p<0.001).

Ultrasonography showed progressive changes in cerebellum from grade I to grade III with advancing gestational age.

Conclusion:
- In the normally developing foetus, the TCD increases in a linear fashion with advancing gestational age.
- Transverse cerebellar diameter can be used as a reliable parameter in the estimation of fetal gestational age.
- Its grading can be used in evaluation of development of fetus.

Abstract ID:1226

ABSTRACT TITLE: PRENATAL DIAGNOSIS OF TRANSPOSITION OF THE GREAT VESSELS
PRESENTING AUTHOR: PRACHI SHAH
CO-AUTHOR: DR.MONA SHASTRI, DR. EKTA DESAI, DR.MONA CHITARA, DR.AVNI BHATT, DR.DHAGSH PATEL

Women’s Imaging is one of the most common cyanotic heart diseases, and most affected neonates are undiagnosed as fetuses.
- The sequelae of the complex congenital heart diseases could be severe if undiagnosed before birth.

Objective:
- To analyze the most relevant anomalies, seen in a sequential segmental transverse views approach to imaging the fetal heart, that provide clues to the diagnosis of complete transposition of the great vessels.
- To study various spectrum of anomalies associated with it.

Methods:
- We reviewed retrospectively all the cases of Transposition of great vessels diagnosed in our center.
- Digital video clips and STIC volumes were reviewed.
- The abnormal features on four-chamber, five-chamber, three vessel (3V) and three vessels and trachea (3VT) views were analyzed.
Results:

- The study population consisted of 15 fetuses with transposition of great vessels.
- The gestational age ranged from 13 to 32 (mean, 23) weeks.
- The maternal age ranged from 25 to 42 (mean, 31) years.
- 7 cases demonstrated significant atrio-ventricular septal defect.
- Two cases demonstrated hypoplastic heart syndrome.
- At the level of the five-chamber view a straight course arterial vessel arose from the left ventricle with lateral branches in all fetuses. In the 3V view, the ascending aorta was seen reaching more anteriorly than was the pulmonary artery in six cases. At the level of the 3VT view, two vessels (transverse aortic arch and superior vena cava) rather than three were seen in all cases.

Conclusion: Our proposed sequential segmental approach to imaging the fetal heart apparently allows, in five chamber and 3VT views, clear and confident signs to be detected that aid diagnosis of Transposition of great vessels and various associated anomalies.
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