

35th Annual Radiological Conference
7th - 9th February 2020, Lahore, Pakistan
(Scheduled to be held on 13th - 15th December 2019 in Rawalpindi, Pakistan)
ABSTRACTS

ORAL PRESENTATIONS (O)

SCIENTIFIC SESSION (SSI): Central Nervous System

O-1

Role of modern neuroimaging in stroke

Mobeen Shafiq

Armed Forces Institute of Radiology and Imaging (AFIRI), Rawalpindi, Pakistan.

O-2

Orbital Tumors Imaging: A practical radiological approach

Kiran Hilal

Department of Radiology, The Aga Khan University Hospital (AKUH), Karachi, Pakistan.

Email: kiran.hilal@aku.edu

LEARNING OBJECTIVES:

1. To discuss advanced imaging update/current imaging guidelines for orbital orbit benign and malignant tumors
2. To discuss imaging features of tumors o in the eye and orbit
3. To learn how to reach the final diagnosis

Ocular and orbital masses in adults and children represent a spectrum of benign and malignant lesions that can be challenging to diagnose and treat. They play major role in ophthalmology.

Tumors manifesting posterior to the globe are not detectable by ophthalmoscopy, and cross-sectional imaging is often necessary for diagnostic work-up. Radiologists should be familiar both with the anatomy of the eye and orbit and with the imaging features of the most common intra and extra ocular tumors.

High-resolution MRI has emerged as an important imaging modality for pretreatment assessment, staging and pre surgical mapping and planning t. The role of CT is limited especially in children.

Clinical presentation of these tumors is proptosis and visual decline. This needs to be investigated by MRI in order to characterize the type of lesion. A systematic discussion will include the most important intra-ocular and orbital masses, and specific signs on imaging will be reviewed with new imaging updates.

O-3

How patient can help in diagnosing head and neck cancers

Shaista Riaz

Canada

Email: drshaistariaz@hotmail.com

PURPOSE: Computed tomography (CT) is commonly used as the first line imaging technique for the evaluation of head and neck emergencies and at many centers, it is also the first line technique used for the evaluation and staging of non-thyroid malignancies below the level of the hard palate. However, the optimal use and diagnostic value of CT for the evaluation of the neck is technique dependent. In this exhibit, we will review different basic and advanced techniques for acquiring a high diagnostic quality CT scan of the neck.

APPROACH/METHODS: The exhibit will review basic and advanced CT techniques. First, different approaches for contrast injection and timing will be reviewed. This will be followed by a discussion of different dynamic maneuvers for improving lesion visualization including (1) open mouth and

angled techniques, (2) tongue out technique, (3) use of a tongue depressor, (4) puffed cheek, modified Valsalva and Valsalva maneuvers, and (5) phonation views. The exhibit will conclude with a discussion of advanced dual-energy CT (DECT) technique applications for the evaluation of the head and neck.

FINDINGS/DISCUSSION: Optimal technique is central for obtaining a high-quality diagnostic scan and interpretation. Supported by diagrams, the exhibit will provide practical information on how to perform different dynamic maneuvers and how to incorporate these into the workflow in a seamless fashion. Indications for performing and potential advantages of different maneuvers will be discussed, with specific examples demonstrating utility or visualization of an otherwise obscured abnormality. For DECT, the utility and applications of different advanced reconstructions will be discussed. Barriers and workflow challenges will be reviewed and suggestions provided for seamless workflow friendly implementation.

SUMMARY/CONCLUSION: CT is frequently the first line or main imaging technique used for the characterization of head and neck pathology. This educational exhibit will provide an in depth practical overview of the optimal technique for obtaining a high diagnostic quality CT of the neck using both standard single-energy CT and advanced DECT techniques.

O-4

MRI diagnosis of CNS manifestations of phakomatosis

Aqsa Gul

Department of Radiology, Mayo Hospital, Lahore, Pakistan.

O-5

Diagnostic accuracy of diffusion weighted sequences of magnetic resonance imaging (MRI) in the patients of acute brain infarct

Akhter Javed, Zain ul Abedeen

University Institute of Radiological Sciences and Medical Imaging Technology, The University of Lahore, Lahore, Pakistan.

Email: akhtarjaveeduol28@gmail.com

Stroke is typically the most frequent cause of disability and fifth leading cause of death. In the past, early detection of acute brain infarct may be challenging for non-invasive diagnostic imaging, but recent advancement in diagnostic imaging makes it possible. The purpose of this study was to assess the diagnostic accuracy of diffusion weighted imaging (DWI) and apparent diffusion coefficient (ADC) sequences of magnetic resonance imaging (MRI) for acute brain infarct patients.

OBJECTIVE: To check the diagnostic accuracy of diffusion weighted sequences of magnetic resonance imaging (MRI) in the patients with an acute brain infarct.

METHODS: In this cross-sectional study of 70 patients data were collected from the Department of Radiology Children's Hospital & Institute of Child Health Lahore. Seventy patients of acute infarct without age and gender discrimination were selected by convenience sampling. A 1.5- Tesla MRI Philips Ingenia machine was used to collect data. The patients were included in this study if they had clinical evidence of infarct presenting within 6 hours to one week, abrupt onset of focal neurological symptoms compatible with stroke, clinical evidence of arterial territory infarct with corresponding hypo attenuation on CT and patients with transient ischemic attacks. Patients having any contraindications of MRI, coagulopathy, brain abscess and brain Tumor were excluded.

RESULTS: Out of 38 patients with acute brain infarct, 37 were hyper intense on diffusion weighted imaging (DWI) while one patient was iso-intense on

DWI. This shows 97.4% sensitivity for acute infarct patients. It means that DWI is highly sensitive for detection of acute infarct. Similarly for evaluating the specificity of DWI, Out of 32 non-infarcted patients, 2 patients were hyper intense on DWI & 30 patients were iso-intense to brain on DWI. Which shows 93.8 % specificity for acute brain infarct. This shows that DWI is highly specific for detection of acute infarct. For evaluating the sensitivity of Apparent Diffusion Coefficient (ADC) 38 patients with infarct were studied. Out of these 35 were hypo intense and 3 patients were iso-intense on ADC, shows sensitivity of 92.1%. It means that apparent diffusion coefficient (ADC) is less sensitive than diffusion weighted imaging (DWI).

Similarly, the specificity of apparent diffusion coefficient (ADC) out of 32 non-infarcted patients 30 patients were iso- intense and 2 patients were hypo intense shows specificity of 93.8%. Study results shows that specificity of DWI and ADC is same in case of acute brain infarct.

CONCLUSIONS: Diffusion weighted sequences of MRI are highly accurate in detection of acute brain infarction. Diffusion weighted imaging (DWI) has superior sensitivity over the apparent diffusion coefficient (ADC) for the detection of acute brain infarction but has same specificity like ADC.

O-6

“Normal looking abnormal brain: A review of abnormalities in blindspots of CT brain”

Maria Rauf, Adnan Arif, Saira Shafiq, Belqees Yawar Faiz, Madiha Saeed Wahla
 Department of Radiology, Shifa International Hospital, Islamabad, Pakistan.
 Email: mari23392@gmail.com

Brain imaging techniques provide the ability to non-invasively map the structure and function of the brain. Though CT is the earliest, fastest and convenient first line modality to evaluate the abnormality within the normal looking brain. There are certain blind spots where pathological findings are commonly missed along with the subtle radiological findings which are commonly misinterpreted by the radiologist, specially the one with the limited experience.

METHOD: Aim of our study is to determine such blindspot areas (cerebral sulci, dural sinuses, orbits, cavernous sinuses, meckel cave, skull base, brainstem, parapharyngeal soft tissue, basal cisterns and craniovertebral junctions) and enlist the cases encountered at Shifa International Hospital which were most commonly missed / misinterpreted by retrospectively reviewing 1200 consecutive CT brain over a period of one year from June 2018 to June 2019.

RESULTS: Out of these, 150 CTs showed missed /misinterpreted findings which are further characterized into;
 TRAUMATIC(fractures, subdural and subarachnoid hemorrhage)= 40.7%
 ISCHEMIC (hyperacute infarcts) = 29.3%
 VASCULAR (aneurysms and dural sinus thrombosis)= 20.7%
 NEOLASTIC (meningioma, glomus tumor, CP angle schwannoma) = 9.3%

CONCLUSION: Knowledge of anatomical features of these blind spots and use of appropriate window width and level settings while evaluating CT images are important for avoiding false negative results in a normal looking brain. Also systematically reviewing the blind spots using comprehensive check list is key to avoid such errors.

O-7

Diagnostic accuracy of callosal angle in the determination of normal pressure hydrocephalus

Adnan Naeem
 Department of Radiology, The Aga Khan University Hospital (AKUH), Karachi, Pakistan.
 Email: adnan.naeem@aku.edu

PURPOSE: The purpose of this study is to determine the relationship between normal pressure hydrocephalus and callosal angle. To determine cutoff point

of callosal angle for normal pressure hydrocephalus.

METHOD AND MATERIALS: In our study, we included patients above 40 years, presenting with complains of gait disturbance or cognitive impairment such as confusion/drowsiness. These patients underwent MRI brain. Patients showing ventricular enlargement (evans index of more than 0.3) were included in study. Patients with obstructive hydrocephalus, space occupying lesion or increased intracranial pressure were excluded from our study. Callosal angle measurement was performed in coronal section of MRI brain on anteroposterior commissural plane at the level of posterior commissure. Confirmatory diagnosis of normal pressure hydrocephalus was considered in patients in which therapeutic lumbar puncture was done and there was symptoms improvement. Initially 150 patients with suspicion of normal pressure hydrocephalus were selected. Of these, 23 patients were having the confirmatory diagnosis of normal pressure hydrocephalus. 23 patients were selected as normal controls. Criteria for normal control was patients above 40 years of age with no history of gait disturbance and cognitive impairment, performing MRI examination in which there is no space occupying lesion. Analysis of callosal angle was performed using one-way (ANOVA) and Tukey posthoc analysis. Statistically significant level was set at $p < 0.05$.

RESULTS: Patients with confirmatory diagnosis of NPH showed significantly decreased values of normal pressure hydrocephalus compared to control group. Mean callosal angle for NPH group is 75.4 ± 14.66 and mean callosal angle for control group is 120 ± 12.53 . When taking 89 degrees of callosal angle as cutoff value, the sensitivity of 82%, specificity of 100% was obtained. When taking 99 degree as cutoff value, the sensitivity of 95%, specificity of 95 % is obtained.

CONCLUSION: Our study showed significantly reduced callosal angle values in patients with NPH. It was also shown that we can take 99 degree as cutoff value for callosal angle in NPH with high sensitivity and specificity compared to some previous studies in which 89-degree cutoff was used. Determination of accurate diagnosis of normal pressure hydrocephalus is important on imaging since it can help us preventing from unnecessary lumbar punctures.

O-8

Diffusion tensor imaging in preoperative planning and characterization of brain neoplasms

Hassan Bokhari, Asim Shaukat
 Department of Radiology, Faisalabad Medical University, Faisalabad, Pakistan.
 Email: drhassanbukhari@hotmail.com

BACKGROUND AND PURPOSE: DTI is an MR imaging measure of brain tissue integrity. It gives precise information about the involvement and integrity of the white matter tracts in the immediate region surrounding tumors. The purpose of our study is to evaluate the role of DTI in characterization and preoperative assessment of brain neoplasm.

MATERIALS AND METHODS: 26 patients with intracranial neoplasm were included in this study which was conducted during a 1 year period 01 July 2018 till 29 June 2019 in the settings of Allied hospital Faisal abad. Conventional MRI before and after IV Gadolinium administration was done followed by DTI and diffusion tensor tractography, with FA and ADC value measurements of different white matter tracts in direct relation to the tumor. The machine used was 1.5 T GE signa voyager .The values obtained were compared to the normal unaffected tract in the contralateral side.

RESULTS: White matter involvement by a tumor was classified according to the criteria of displacement, infiltration, disruption or edema. Patients were classified into two main groups according to the tumor type: benign and malignant groups. Prevalence of tract displacement was higher among benign group in comparison to the malignant group with significant difference in between by using chi-square test (P value < 0.05). While prevalence of disruption was higher among the malignant group, in comparison to the benign group significant difference was noted in between by using chi-square test. (P value < 0.05).

CONCLUSION: The information provided by DT imaging further defined precise relationships between the sub cortical white matter structures and the cerebral neoplasm. This potentially has a role in tumor characterization, and more importantly in surgical planning.

O-9**The spectrum of findings on neuroimaging in liver transplant patients with neurological symptoms; Our experience at Shifa International Hospital, Islamabad**

Belqees Yawar Faiz, Areeba Imtiaz, Adnan Arif
 Department of Radiology, Shifa International Hospital, Islamabad, Pakistan.
 Email: docadnanarif@gmail.com

PURPOSE: To determine the prevalence of abnormalities on neuroimaging in post-liver transplant patients with neurological symptoms encountered at Shifa International Hospital.

METHODS: This is a retrospective study of post-liver transplant patients with neurological symptoms from 2012 to 2017. Patients having CNS disease prior to transplant were excluded. The findings of MRI and CT scan stored in radiology data base were recorded. The early (within 12 weeks) and late (after 12 weeks) complications were evaluated.

RESULTS: Our study included 108 patients with neurological symptoms out of total 709 post-liver transplant cases. 80 (74.07%) were males and 28 (25.9%) were females.

92 (85%) patients experienced symptoms in early phase with seizures being the most common presenting complaint. In early phase, 40 patients (43.47%) showed no abnormality on imaging. Most common abnormality encountered was ischemic infarct in 14 (15.2%) followed by intracranial bleed in 12 (13.04%) patients. Infections and PRES constituted 09 (9.7%) patients each. 03 (3.26%) had central pontine myelinolysis while brain edema was observed in 02 (2.17%) cases. Cavernous sinus thrombosis, brain metastasis and hydrocephalus were noted in 01 (1.08%) patient each.

16 (14.8%) patients presented in late phase with 07 (43.75%) having negative scans. In late phase, infections constituted 04 (25%) and spinal metastasis was seen in 02 (12.5%) patients. There was 01 (6.25%) case each of infarct, intracranial bleed and cerebral edema.

CONCLUSION: Our study showed the post-liver transplant neuroimaging to be normal in most patients with neurological symptoms. This will aid the clinicians to consider other factors like metabolic, hepatic and neuropsychiatric as the underlying etiology of these symptoms. However, most common early and late neurological complications including ischemic infarcts and infections respectively should also be sought for in such cases.

O-10**MRI Lumbosacral Spine--Is The Work Load Really Justified? Audit of Indications and Referral Pattern at A Tertiary Care Hospital**

Aqsa Faryad, Ali Mansoor, Mahjabeen Tariq, Sadaf Arooj, Mahjabeen Masood
 Department of Radiology, Mayo Hospital, Lahore, Pakistan.
 Email: docaqa92@gmail.com

PURPOSE: The purpose of this study is to evaluate the clinical indications of MRI for lumbosacral spine, referral sources and appropriateness of requests with respect to Appropriateness criteria of American College of Radiology for MRI in low back pain patients.

MATERIALS AND METHODS: This study was conducted in MRI center of Radiology Department, Mayo Hospital Lahore which is a tertiary care hospital and a primary referral hospital in Punjab. From July1, 2019 to August31, 2019 about 1285 MRIs were done, of which 303 (23%) were MRI lumbosacral spine for low back pain. We included 200 patient between age 18-20 years who were referred from different sources with complaint of low back pain within a period of 2 months in our study. These were then assessed for indications and appropriateness criteria.

RESULTS: Out of 200 patients who underwent MRI lumbosacral spine for LBP within period of 2 months, 32.5% requests were "usually appropriate", 24.5% "may be appropriate" and 43% were "usually not appropriate" according to Appropriateness criteria of American college of Radiology.

CONCLUSION: Judicious use of MRI in patients with low back pain is necessary to avoid wastage of resources and burden on healthcare facilities.

O-11**How to report MRI of retinoblastoma patient; what information does the paediatric ophthalmologist actually needs**

Kiran F Farooq
 Department of Radiology, Fauji Foundation Hospital / Foundation University Medical College Islamabad, Pakistan.
 Email: drkiranfarooq@gmail.com

Retinoblastoma is the most common paediatric intraocular tumour. It usually presents as leukocoria and strabismus in children between 1-5 years of age. Around 47-58 percent of leukocoria cases in children are due to retinoblastoma, making it the leading cause of white pupillary reflex.

Though retinoblastoma is a life-threatening disease, it is curable with early diagnosis and appropriate treatment. Establishing the best management of retinoblastoma and differentiating it from other causes of leukocoria is imperative for preservation of visual function. Persistent Hyperplastic Primary Vitreous (PHPV) is the second most common cause of leukocoria making it an important differential to rule out.

MRI is the investigation of choice when evaluating patients with suspected retinoblastoma; it is indicated in evaluation of all ocular tumours. The tumour mass usually appears hyperintense to vitreous on T1, hypointense to vitreous on T2 weighted sequences and shows significant post-contrast enhancement. Scleral and choroidal involvement, optic nerve invasion (laminar / post laminar) and status of extra ocular muscles and lacrimal glands is also evaluated. Details provided by MRI can also be useful in mapping a treatment plan.

For the past 7 years we are doing MRI of suspected retinoblastoma patients. The main differential is PHPV. There is loss of vision in both cases but retinoblastoma needs enucleation and neo adjuvant /adjuvant chemotherapy while PHPV is a benign condition. Vast majority of our patients are referred from Al- Shifa eye trust which is one of the largest tertiary care eye trust in the country. We do approx. 5-7 patients per week. We also use complimentary ultrasound to confirm our diagnosis and for additional findings. In ECR 2019 I did an oral poster presentation titled "Diagnostic accuracy of ultrasound in differentiating Retinoblastoma from Persistent Hyperplastic Primary Vitreous in paediatric leukocoria patients with MRI as gold standard". I will be discussing what MRI sequences should be used for visualization different layers of the eye and would be sharing our checklist for reporting as well as report template.

O-12**Role of medical imaging in the alzheimer disease**

Shumaila Seemi Malik
 Department of Radiology, Services Institute of Medical Sciences/SHL, Pakistan.

Alzheimer disease (AD) accounts for 50%-70% of all cases of dementia in the elderly population. Age is a strong risk factor, with the disease affecting approximately 8% of individuals over the age of 65 and 20 -40 % over the age of 85 years. Traditionally, Alzheimer disease has been clinically characterized predominantly by memory deficits, at least in initial stages. Diagnosis of AD primarily depends on two major features; mesial temporal lobe atrophy (especially hippocampus and entorhinal cortex) and temporoparietal cortical atrophy. Brain volume measurements, assessed with segmentation, demonstrate that patients with Alzheimer disease have accelerated rates of brain volume loss, typically around twice normal (1% vs ~0.5% per year) particularly in mesial temporal lobe. The primary role of MRI in the diagnosis of Alzheimer disease is the assessment of volume change particularly in mesial temporal lobe which can yield a diagnostic accuracy of up to 87%. More recently, a variety of imaging modalities including structural and functional MRI and positron emission tomography (PET) studies of cerebral metabolism with fluoro-deoxy glucose (FDG) and amyloid tracers such have shown characteristic changes in the brains of patients with AD, and in prodromal and even presymptomatic states that can help rule-in the AD pathophysiological process. In our clinical setting MRI not only differentiates different types of dementia but also help in early diagnosis of AD.

SCIENTIFIC SESSION (WI): Women's Imaging O-13

Risk assessment screening and imaging guidelines

Ayesha Isani Majeed

*Department of Radiology, Pakistan Institute of Medical Sciences (PIMS),
Islamabad, Pakistan.*

Email: ayeshamajeed_1@hotmail.com

Pakistan has one of the highest incidence of breast cancer in South Asia with one in every nine women bring at the risk of developing breast cancer (Globocan). Where do we stand today in Pakistan which is a middle to low income country with a total population of 207,684,626 with 101,344,632 of them being women according to the 2017 Pakistan Census. Out of these, 19,960,379 are women over 40 years who fall in the screening age group. Pakistan has no established breast cancer screening programme and keeping in view the above population figures we need to initiate a national programme at once. The Radiological Society of Pakistan (RSP) should be at the helm of this initiative and the creation of the Breast Imaging sub society (Breast Radiological Society of Pakistan) of the RSP is the first initial step towards a national consensus on a uniformly practiced screening guideline for the entire country.

The basic steps towards this endeavor of ours starts with risk assessment. There are different risk assessment models and we have to choose which one to implement keeping in view the demographics, screening patterns and early age of onset in our population. The different risk assessment models commonly practiced are:

1. Gail model
2. Claus model
3. Tyrer Cruzik model

This then is followed by screening which is how non-symptomatic women undergo screening as part of the basic health system delivery. The screening is at specialized breast care clinics which have a certain protocols to follow that include guidelines for referrals and how to make performas from clinical leads. These are all intrinsic responsibilities of a screening programme and need to be implemented diligently.

The third component for completing a holistic picture is imaging guidelines. The imaging guidelines we are following in Pakistan are generally the American College of Radiology guidelines. For us to make our own guidelines required a lot of research and data collection before we can embark on this task. The reason for choosing the American College of Radiology guidelines is the high incidence of breast cancer with the younger age groups being affected as the justification for it. In my talk I would like to share with you our work at the Federal Breast Cancer Screening Centre where we have started a pilot screening programme in Islamabad which we hope can be emulated in the rest of the country. All the above factors of risk assessment, screening and imaging guidelines are being implemented in the centre as part of a screening programme. This includes:

1. A health education programme with a community component
2. Free mammography screening for all women over 40 years of age, belonging to all socioeconomic strata
3. Genetic screening in high risk patients

The details of the work done from 2015 to 2019 are briefly as:

1. An intensive 2 year community based health education programme with training of Lady Health Workers as part of the programme (details in the lecture)
2. Extensive breast cancer awareness campaigns especially in 2019 as the Ministry of National Health Services, Regulations and Coordination appointed me as the focal person for breast cancer awareness which has further strengthened the programme
3. 5000 mammograms performed to date
4. 6000 ultrasounds performed to date
5. 600 breast cancer patients identified
6. 100 patients analysed for BRCA1 patients (results published) with a further analysis of another 60 histopathologically proven patients of breast cancer for BRCA1 and BRCA2 underway.

The above data is just the tip of the iceberg and further augments the need for Pakistan to work on establishing its own risk assessment model, a structured breast cancer screening programme and to choose their imaging guidelines

as per the requirements of the population. This pilot project is very important as this will lay down the foundation for similar such centres in every district of the country in order to eradicate breast cancer at the grass root level.

O-14

Practical approach to Breast MRI interpretation (Review Paper)

Sadaf Nasir

*Department of Radiology, Liaquat National Hospital & Medical College,
Karachi, Pakistan.*

Email: dr.sadaf@live.com

Dynamic contrast enhanced magnetic resonance imaging (DCE-MRI) of the breast is being used increasingly in the detection and diagnosis of breast cancer as a complementary modality to mammography and sonography. With the use of modern techniques and protocols, the specificity and positive predictive value of MRI for breast malignancy can exceed that of breast ultrasound and mammography. For more clinically relevant interpretation, it is important to cater three basic components that is, pre-imaging evaluation, interpretation of images using BIRADS lexicon and the determination of BIRADS assessment and management. The systemic approach to interpretation is mandatory for accurate reporting.

In this review the systemic approach to interpret the breast MRI using BIRADS lexicon will be discussed.

O-15

Tomosynthesis a new breast evaluative technique

Anis Rehman

Department of Radiology, Shaukat Khanam Memorial Hospital and Research Centre, Lahore, Pakistan.

O-16

Correlation between primary breast tumor size and prevalence of nodal and distant metastasis on FDG PET/CT at initial staging

Nosheen Fatima,¹ Maseeh uz Zaman,¹ Unaiza Zaman,² Areeba Zaman,³ Rabia Tahseen,⁴ Sidira Zaman⁵

¹ *Department of Radiology, The Aga Khan University Hospital (AKUH), Karachi, Pakistan*

² *Department of Medicine, Sunny Downstate Hospital, New York, USA*

³ *Dr. Ruth Pfau Hospital, Dow University of Health Sciences, Karachi, Pakistan*

⁴ *Department of Radiation Oncology, The Aga Khan University Hospital (AKUH), Karachi, Pakistan*

⁵ *Dow University of Health Sciences (DUHS), Karachi, Pakistan*

Email: maseeh.uzzaman@aku.edu

BACKGROUND: In patients with breast cancer, it is thought that the risk of developing metastases increases monotonically with tumor size, because the larger the cancer at diagnosis, the more cells are available to metastasize with increase disease specific mortality. Purpose of this study was to evaluate this linear relation between primary tumor size and metastases (nodal and non-nodal) using FDG PET/CT.

MATERIAL AND METHODS: We recruited 214 consecutive breast cancer patients who were referred for FDG PET/CT imaging for initial staging. Patients were categorized in to four groups based on primary tumor size (T1: ≤ 2 cm; T2: >2 cm and ≤ 5 cm; T3: > 5 cm; T4: any size involving chest wall or skin). For each group we determined ipsilateral axillary nodal, extra-axillary (including contralateral axillary) nodal, visceral and skeletal metastases seen on FDG PET/CT imaging.

RESULTS: 47/214 patients had T1 tumor and found to have 15% axillary,

47% extra-axillary, 68% visceral and 38% skeletal metastases. 104/214 patients had T2 tumor and found to have 21% axillary, 45% extra-axillary, 61% visceral and 37% skeletal metastases. 34/214 patients had T3 tumor and found to have 26% axillary, 47% extra-axillary, 76% visceral and 35% skeletal metastases. 29/214 patients had T4 tumor and found to have 45% axillary, 69% extra-axillary, 79% visceral and 41% skeletal metastases. On regression analysis, highest positive linear correlation was found for ipsilateral nodal metastasis ($r = 0.945$; significant p-value) followed by extra-axillary nodal ($r = 0.772$), visceral ($r = 0.763$) metastases. No significant correlation was found between primary tumor size and skeletal metastasis ($r = 0.362$).

CONCLUSIONS: We found a linear correlation between primary tumor size and prevalence of metastases to nodes (highest for ipsilateral nodes) and viscera and favoring the conventional linear model. However, no linear correlation was found between prevalence of skeletal metastases and primary breast tumor size.

O-17

Hysterosalpingographic pattern of sub fertility and infertility in women of reproductive age

Anashia Kayani, Tariq Saeed Siddiqui, Rizwan Armed, Raheel Khan, Gul Sanam
Armed Forces Institute of Radiology and Imaging (AFIRI), Rawalpindi, Pakistan.
Email: tariqssr@gmail.com

BACKGROUND: Subfertility describes a prolonged time span to become pregnant whereas infertility is the inability of bearing children when it is wanted for a period of more than one year with properly timed sexual intercourse. Approximately 48.5 million women of reproductive age worldwide suffer from infertility. Hysterosalpingogram can play a vital role in diagnosing structural abnormality of female reproductive tract.

AIM: To evaluate the structural abnormalities of uterus and fallopian tubes in infertile and sub fertile women as elucidated by Hysterosalpingogram. Study design: A prospective, cross-sectional study by convenient based sampling was conducted at Armed Forces Institute of Radiology And Imaging Rawalpindi Pakistan.

METHODOLOGY: 500 women of the reproductive age group referred from Gynaecology and Obstetrics department for workup of anatomical cause of primary and secondary infertility were studied in Armed Forces Institute of Radiology and Imaging Rawalpindi Pakistan conducted from 1st July 2019 to 30th of November, 2019. Detailed history was recorded on a preformed Performa. Hysterosalpingography was performed in pre-proliferative phase. Results were entered in IBM SPSS statistic 25. Percentages and frequency were used to describe the results.

RESULTS: Five hundred Hysterosalpingogram were carried out at our centre during the study period. Out of these, 340 (68.0%) were primary infertility cases while the 160 (32%) were of secondary infertility. Mean age of presentation for infertility was 31 years to 39 years. Bilateral free peritoneal spill was noted in 69.0% of cases. Unilateral tubal blockage was present in 10% and bilateral tubal blockage in 8.0% of patients. Bilateral hydrosalpinx was present in 3% of patients. Patients with uterine congenital anomalies were also evaluated and the frequency of bicornuate uterus was 5%, unicornuate uterus was 5%.

CONCLUSION: HSG is baseline assessment of uterus and tubes with high sensitivity and specificity. Positive HSG cases were more prevalent in secondary infertility; tubal abnormalities were more commonly observed as compared to uterine cavity. Secondary infertility was more associated with older age groups.

O-18

Correlation between femur length estimation on ultrasonography and last menstrual period for prediction of gestational age during third trimester

Maham Munir Awan
Department of Radiology, Institute of Cardiology Multan, Pakistan.
Email: maham.amj@hotmail.com

BACKGROUND: Childbirth typically occurs around 40 weeks from the last menstrual period (LMP). The accurate dating of pregnancy is critically important for pregnancy management from the first trimester to delivery and is particularly necessary for determining viability in premature labor and in postdates deliveries. Femur length measures the longest bone in the body and reflects the longitudinal growth of the fetus.

OBJECTIVE: To determine the correlation between femur length estimation on ultrasonography and last menstrual period for prediction of gestational age during third trimester

MATERIAL & METHODS:

Study Design: It was cross sectional study Setting: Department of Radiology, Chaudhary Pervaiz Ellahi Institute of Cardiology, Multan.

Duration: 6 months i.e. from (October 2018) to (March 2019) Data collection: 100 pregnant females were enrolled. LMP of female and gestational age was noted. Then females underwent ultrasonography. The femur imaged with a 3.5 MHz curvilinear transducer aligned longitudinally along the thigh. Femur length measured by electronic calipers after clear visualization of the ends of the femoral shaft, femur length was noted. All the collected data was entered and analyzed on SPSS version 21.

RESULTS: The mean age of females was 29.33 ± 6.79 years, mean BMI was 25.17 ± 5.64 kg/m². Mean femur length was 31.49 ± 2.427 mm and mean gestational age was 32.09 ± 2.33 weeks. A strong positive correlation found between femur length and LMP = $r=0.747$ ($p<0.05$)

CONCLUSION: The Femur length correlation on ultrasonography had strong correlation with LMP for prediction of gestational age during third trimester.

O-19

Mammography and breast ultrasound correlation: Pearls and pitfalls

Shaista Afzal
Department of Radiology, The Aga Khan University Hospital (AKUH), Karachi, Pakistan.
Email: shaista.afzal@aku.edu

Ultrasound plays a crucial role in the assessment of breast. Previously it had a limited role i.e. differentiation of masses as either solid or cystic, which has now progressed for differentiation of benign from malignant lesion. Breast ultrasound is considered as an adjunct to mammography for screening of average and high risk women especially those with dense breast on mammography which may obscure masses. The ability of US to correlate a benign mass with a mammographic abnormality excludes the need for additional intervention. Alternatively, the presence of a suspicious mass on US justifies histologic evaluation of mass. The added benefit is the provision of US guided biopsies. In addition, ultrasound plays an important role in the evaluation of palpable abnormalities and masses.

In this review, the impact of ultrasound in the imaging of breast and the pitfalls encountered will be discussed. The pearls of technique to enhance the accuracy of the test ie ultrasound breast and the strategy to overcome the false positives and false negatives will be presented with examples from real life case scenarios.

O-20**Diagnostic accuracy of mammography in detection of malignant breast tumor in women under 40 years of age taking histopathology as gold standard**

Farkhanda Fakhar
 Department of Diagnostic Radiology, Faisalabad Medical University,
 Faisalabad, Pakistan.
 Email: farkhanda_fakhar@yahoo.com

INTRODUCTION: The usefulness of mammography in women under 35 years old is controversial, mainly because of great density of the glandular parenchyma and radiosensitivity. However, recent studies reported that mammography was able to detect as many as 90% of the breast cancer cases in women under 35 years old, despite 40-70% with dense parenchyma.

OBJECTIVE: To determine the diagnostic accuracy of mammography in detection of malignant breast tumour in young women, taking histopathology as gold standard.

STUDY DESIGN: Descriptive, cross-sectional

DURATION OF STUDY: 12th April 2018 to 11th April 2019

SETTING: Radiology Department of Allied Hospital Faisalabad and PINUM Cancer Hospital Faisalabad.

METHODOLOGY: A total of 231 women with breast lumps of age 30-39 years were included. Patients with previously diagnosed breast cancer, fungating breast lesion and pregnant women were excluded. Digital Mammography machine GE was used. Mammography of breast was performed on both sides. All patients having suspicious lesion on mammography were undergone biopsy. Biopsy was done in Surgical Department and specimens were sent to hospital's pathology lab. Histopathology was done by senior pathologist who was blinded to results of mammography.

RESULTS: In 134 MMG positive patients, 125 (True Positive) had malignant breast tumour and 09 (False Positive) had no malignant breast tumour on histopathology findings. Among, 97 MMG negative patients, 07 (False Negative) had malignant breast tumour on histopathology whereas 90 (True Negative) had no malignant breast tumour on histopathology. Overall sensitivity, specificity, positive predictive value, negative predictive value and diagnostic accuracy of mammography in detection of malignant breast tumour in young women, taking histopathology as gold standard was 94.70%, 90.91%, 93.28%, 92.78% and 93.07% respectively.

CONCLUSION: This study concluded that diagnostic accuracy of mammography in detection of malignant breast tumour in young women is quite high.

O-21**Accuracy of fetal Transcerebellar Diameter Measurement for estimation of Gestational Age**

Adnan Naeem, Fatima Mubarak
 Department of Radiology, The Aga Khan University Hospital (AKUH), Karachi,
 Pakistan.
 Email: adnan.naeem@aku.edu

PURPOSE: The purpose of this study is to evaluate accuracy of fetal transcerebellar diameter for the prediction of gestational age especially in the second and third trimester.

METHOD AND MATERIALS: In this study, we included cases from 1st-January-2018 to 1st-June-2018. Five hundred female patients with age range of 18-34 years were included. 58 were primigravida rest 348 were multigravida. Scans were performed in second to third trimester 18-32 weeks of gestation.

The scans were performed with help of 5Hz curvilinear probe. Toshiba xario machines were utilized. These ultrasounds were performed by three independent radiologists who had more than 6 years of obstetric ultrasound experience. Ninety patients were in their second trimester and five hundred and ten were in their third trimester. Transcranial diameters were obtained by placing screen calipers at outer margin of cerebellum via track ball. Patients who were not sure of their LMP, having comorbid, IUGR, large babies for gestational age, anomalous babies were excluded. Concordance between actual and predicted gestational age was based on the Pearson correlation coefficient. All statistical analysis were performed on SPSS 16.

RESULTS: Concordance between the actual and predicted gestational age was high ($r = 0.92$; $P < .0001$). This agreement was superior in the second trimester ($r = 0.93$; $P < .0001$) than in the third trimester ($r = 0.81$; $P < .001$). Between 17 and 21 weeks, and between 22 and 28 weeks of gestation, the predicted gestational age ranged between 0 and 4 days, and between 0 and 2 days, respectively, of actual gestational age. Between 29 and 36 weeks of gestation, predicted gestational age was within 5 days of actual gestational age; at 37 weeks of gestation, the predicted gestational age was discrepant by 9 days.

CONCLUSION: This prospective study demonstrates that transcerebellar diameter measurement is an accurate predictor of gestational age, even in the second and third trimester of pregnancy. Therefore, it should be considered as reliable parameter for prediction of gestational age.

O-22**Clinical applications and emerging role of breast MRI**

Rafia Shahzad, Abubaker Shahid, Zeeshan Rashid Mirza, Faisal Ehsan Cheema
 Department of Radiology, INMOL Hospital, Lahore, Pakistan.
 Email: drraftashahzad@gmail.com

MRI of the breast has evolved into an important imaging modality in the detection, evaluation, staging, and management of CA breast. MRI has established value in several clinical settings, including breast cancer screening in selected high-risk patients; problem solving in cases of dense breast tissue, equivocal findings on mammogram or US or discordant pathology results; assessment of multicentricity or bilaterality of a known cancer; determining the efficacy of neoadjuvant chemotherapy; differentiation of scar tissue versus recurrent tumor; and evaluation of metastatic axillary lymphadenopathy with an unknown primary. Breast MRI is currently the most sensitive detection technique for breast cancer diagnosis. Although breast MRI is classically supposed to have a low specificity and a positive predictive value, but with modern techniques and protocols, the specificity and positive predictive value for malignancy can exceed that of breast ultrasound and mammography. At present, dynamic contrast-enhanced MRI (DCE-MRI) is the most sensitive imaging technique for breast cancer diagnosis, and provides brilliant morphological and to some extent also functional information. To compensate for the limited functional information, and to increase the specificity of MRI, additional functional parameters such as diffusion-weighted imaging (DWI) and apparent diffusion coefficient (ADC) mapping, and MR spectroscopic imaging have been investigated and implemented into the clinical routine. The purpose of this review is to focus on the clinical applications and emerging role of Breast MRI in the management of breast cancer.

SCIENTIFIC SESSION (GUT):**O-23****Role of color Doppler ultrasound in renovascular hypertension:**

Safdar Ali Malik
 Al-Noor Institute of Radiology, Lahore, Pakistan.
 Email: drsafdaralimalik@gmail.com

Renovascular disease is a complex disorder, most commonly caused by atherosclerotic diseases and fibromuscular dysplasia. It can be found in one

of three forms: asymptomatic renal artery stenosis (RAS), renovascular hypertension, and ischemic nephropathy. Particularly, the atherosclerotic form is a progressive disease that may lead to gradual and silent loss of renal function. Thus, early diagnosis of RAS is an important clinical objective since interventional therapy may improve or cure hypertension and preserve renal function. Screening for RAS is indicated in suspected renovascular hypertension or ischemic nephropathy, in order to identify patients in whom an endoluminal or surgical revascularization is advisable. Screening tests for RAS have improved considerably over the last decade. While captopril renography was widely used in the past, Doppler ultrasound (US) of the renal arteries, CT Angiography, or magnetic resonance angiography (MRA) have replaced other modalities and they are now considered the screening tests of choice. An arteriogram is rarely needed for diagnostic purposes only. Color-Doppler US (CDUS) is a noninvasive, repeatable, relatively inexpensive diagnostic procedure which can accurately screen for renovascular diseases if performed by an expert. Moreover, the evaluation of the resistive index (RI) at Doppler US may be very useful in RAS affected patients for predicting the response to revascularization. However, when a discrepancy exists between clinical data and the results of Doppler US, additional tests are mandatory.

O-24

Imaging of the prostate

Kashif Shazlee
 Department of Radiology, Indus Hospital, Karachi, Pakistan.
 Email: kashifshazlee@yahoo.com

O-25

Imaging of the Pelvic floor

Nadeem Ahmad
 Department of Radiology, The Aga Khan University Hospital (AKUH), Karachi, Pakistan.
 Email: nadeem.ahmad@aku.edu

Lot of abnormalities are associated with weakness and abnormalities of pelvic floor is both males and females. With the advent of modern imaging technologies and with gradual improvement in software and hardware along with better understanding of the anatomical concepts, over the time, better understanding of pelvic abnormalities and dysfunctions, have been developed. Now, using MRI and ultrasound, many pelvic floor abnormalities and dysfunctions can be evaluated and diagnosed. In many situations imaging can predict the possibility of risk associated with future development of pelvic floor dysfunctions.

This presentation deals with the basic understanding of, and how to do kind of concepts, related to pelvic floor imaging with an understanding of basic anatomical concepts, imaging methodologies and how to diagnose the common abnormalities in both males and female pelvic dysfunctions and diseases.

O-26

CT for renal donor evaluation: Can we skip the venous phase?

Muhammad Salman Rafique, Sana Kundi, Mina Mariam, Ahmed Ziauddin
 Department of Radiology, Pakistan Kidney and Liver Institute and Research Centre, Lahore, Pakistan.
 Email: msalmanrafique@gmail.com

PURPOSE: To retrospectively evaluate if the renal venous anatomy can be discerned on the arterial phase imaging of multidetector row CT (MDCT) of renal donors.

MATERIAL AND METHODS: After institutional review board approval, we evaluated 54 consecutive renal donors (age range, 23-54 years; M:F, 25:29) who had undergone MDCT. Two consultant radiologists assessed the renal venous anatomy on the arterial and venous phase images independently and separately. Once the data was compiled, the cases with disparity in findings were re-evaluated.

RESULTS: Both the radiologists characterized all renal venous anatomy variants correctly on arterial as well as venous phase imaging; circumaortic left renal vein (n=3) and retroaortic left renal vein (n=3). The sensitivity of detection of the accessory renal veins, right gonadal and left lumbar veins on arterial phase images was 96% each whereas that for left gonadal vein was 100%. Cohen's kappa was run to determine interobserver agreement which was substantial (kappa coefficient: 0.9; p<0.005).

CONCLUSIONS: The renal venous anatomy can be assessed on arterial phase MDCT images alone in renal donors. Venous phase MDCT acquisition can be excluded from the protocol in renal donor evaluation.

O-27

Utility of CT KUB in renal colic

Farhan
 Department of Radiology, Bahria Hospital, Karachi, Pakistan.

O-28

Role of T2 and in evaluation of patients with prostate cancer

Nosheen Siddique
 Department of Radiology, Faisalabad, Pakistan.

O-29

Interobserver reliability of the R.E.N.A.L nephrometry scoring system: Preliminary experience from a developing nation

Kumail Khandwala, Dawar Khan, Zainab Hussain
 Department of Radiology, The Aga Khan University Hospital (AKUH), Karachi, Pakistan.
 Email: zainab.hussain@aku.edu

OBJECTIVE: The purpose of this study was to assess the reproducibility of R.E.N.A.L. Nephrometry Score (NS) using interobserver agreement between two body imaging radiologists. The scale assesses the tumor morphology such as Radius, Endo/exophytic property, Nearness to the collecting system, Anterior or posterior site and Location relative to the polar lines.

MATERIALS & METHODS: The study included 49 patients diagnosed with renal cell carcinoma (RCC) who had complete computed tomography (CT) data, R.E.N.A.L. Nephrometry Scores and histopathology results. All patients underwent renal surgery/intervention at our center between January 2008 and December 2018. Radius of the lesion, Exophytic/endophytic properties, Nearness to the collecting system, Anterior or posterior description, and Location relative to the polar lines was used to calculate the score. Tumor complexity was graded as low, intermediate, or high. Two body imaging radiologists evaluated the data.

RESULTS: Interobserver agreement for each of the RENAL-NS parameters respectively and overall complexity of the lesion was calculated. The percent agreement for the morphological components of the scale was 82%, 51%, 84%, 69%, 73% with overall percent agreement of 90%, corresponding to kappa value of 0.83. The Radius, nearness to collecting system and total complexity showed the best agreement. For the cases that were discordant in

terms of the final score, no major implications in surgical planning were observed.

CONCLUSION: The results of this study show that the RENAL-NS is a useful tool to assess the anatomical features of renal tumors and it is easily reproducible, even for less experienced radiologists from a developing nation.

O-30

Audit to assess opacification of the Renal Collecting System during CT urography (CTU)

Aliya Sharif, Ummara Siddique Umer, Aliya Sharif, Syed Ghulam Ghaus, Shahjehan Alam, Muhammad Asif, Aman Nawaz Khan
Department of Radiology, Rehman Medical Institute, Peshawar, Pakistan.
Email: abdullah_ivr@live.com

OBJECTIVE: To determine the opacification of renal collecting system during excretory phase of CT Urography

TARGET: To achieve target opacification score(OS) for each segment as renal calyces and infundibula (CI) 95%, renal pelvis (RP) 98%, upper ureter (UP) 85% and lower ureter (LU)72%.

MATERIAL AND METHODS: 30 consecutive normal CT urography (CTU) cases were reviewed retrospectively at Radiology department of Rehman Medical institute Peshawar from 1st January 2018-December 2018. All CT scans had been done on 128 slice Toshiba scanner. CTU protocol consists of three phases that include noncontrast which is taken from the top of the kidneys through the bladder, nephrographic phase of abdomen and pelvis, taken at 90-100 sec delay after administration of IV contrast and excretory phase taken at 12-15 mins delay when there is adequate opacification and distention of collecting system, ureter and bladder. No prior IV hydration, diuretics or other compression techniques were used. The images were then assessed on PACS and vitrea workstations. The Opacification Score for each segment (renal calyces/infundibulum, renal pelvis, Upper ureter, lower ureter) was collected as either, Satisfactory = 80% Opacification or Unsatisfactory = 79% or less Opacification. The number of satisfactorily opacified segments was then summated and converted into an opacification score (OS) expressed as a percentage.

RESULTS: Opacification scores for Infundibulum and renal pelvis were 100%, Upper ureter 96% while lower ureter score was 64%.

CONCLUSION: Audit results confirm satisfactory opacification of renal calyces, pelvis and upper ureter. Opacification score of lower ureter was below target but still meeting the minimum standard for this audit.

O-31

The detection of non-palpable undescended testis - Diagnostic performance of diffusion weighted MRI

Sadeem Lodhi
Department of Diagnostic Radiology, Nishtar Hospital, Multan, Pakistan.
Email: sadeem1@live.com

Undescended testis not only poses the risk of infertility but also increased incidence of malignancy. Here, we reviewed some cases of non-palpable undescended testis with DWI of MRI mainly to differentiate it from simulating masses like lymph nodes and bowel loops to prevent the misdiagnosis. Information from DWI performed at high b values, compliments the conventional MRI findings in identification and localization of non-palpable undescended testis, therefore, helping in early interventional steps and thus reducing complications.

O-32

Renal artery embolization for haemorrhage and impending haemorrhage

Aman Nawaz Khan, Muhammad Asif, Ummara Siddique Umer, Hania Moiz, Ali Asghar Sahib
Department of Radiology, Rehman Medical Institute, Peshawar, Pakistan.
Email: aman.nawaz@rmi.edu.pk

OBJECTIVE: To review the effectiveness of therapeutic trans-arterial embolization in controlling renal hemorrhagic emergencies irrespective of the cause of emergencies.

METHODS & MATERIALS: 10 vascular angiographies were performed in 10 patients (08 males and 02 females, age range 15-70 years) who were referred with hemorrhagic urological emergencies to the interventional radiology suite of Rehman Medical Institute Peshawar from July 2015 to December 2018. Embolization was performed with coils, polyvinyl alcohol particles and gel foam according to the clinical indication. Data on clinical indication, technique, site and type of bleeding lesions were obtained from a retrospective review of medical records. Success rate, clinical outcome and complications of the procedure were analyzed.

RESULTS: Indications of procedure included renal artery pseudo-aneurysm (03 patients), angiomyolipoma (03 patients), residual renal tumor (01 patient), renal cell carcinoma (01 patient), renal injury due to RTA (01 patient) and severe arterial stenosis (01 patient). Following renal artery embolization, complete hemostasis was achieved in all ten patients. All examinations were negative for active extravasation on post-embolization angiogram. There was no immediate or late serious complications.

CONCLUSION: Trans-arterial renal Emergency embolization is a safe, effective, minimally invasive treatment for renal hemorrhage. Because of the diversified arteriographic presentation of acute renal hemorrhage, proper selection of the embolic agent is a key to successful hemostasis.

SCIENTIFIC SESSION (GI):

O-33

Application of LIRADS in daily radiological practice

Aamer Iftikhar
Department of Radiology, Shaukat Khanum Memorial Cancer Hospital & Research Center, Lahore, Pakistan.

O-34

Imaging of pancreas

Ahmad Murtaza
Aznostics, Lahore, Pakistan.

O-35

ABCs of rectal cancer staging

Imran Niazi
Department of Radiology, Shaukat Khanum Memorial Cancer Hospital & Research Center, Lahore, Pakistan.

O-36**Difference of radiological and pathological diagnosis in liver lesions: Retrospective evaluation of regional Multidisciplinary Team (MDT) verdict**

Aman Nawaz Khan, Khalid Shakeel Babar, Ummara Siddique Umer, Wasif Farman

Department of Radiology, Rehman Medical Institute, Peshawar, Pakistan.
Email: khalidshakeelbabar@gmail.com

PURPOSE: To assess agreements in pathological and radiological diagnosis in MDTs regarding liver lesions.

MATERIALS AND METHODS: Multidisciplinary team (MDT) meetings have been conducted to ensure optimal management options for patients are followed. Hepatopancreatobiliary MDT is conducted every Thursday in radiology department since February 2015. Consultants and residents from different specialties including gastroenterology, radiology, oncology and surgery actively participate in this meeting. Here we present 10 cases in which a probable diagnosis or differential was given on imaging features and liver biopsy was suggested. The results of biopsy were then discussed. The cases in which there was disagreement were re-assessed. The images were reviewed retrospectively, so that they could help us in diagnosis of similar cases and situations in future. The record and comments of meetings were maintained.

CONCLUSION: There was agreement in 4 cases with the biopsy results while the rest of cases were re-assessed. Considerable disparities in MDT evaluations of patients exist and audit should be maintained including Morbidity and mortality meetings in radiology to improve the overall performance.

O-37**Can CT textural analysis (CTTA) reliably differentiate peritoneal tuberculosis from peritoneal carcinomatosis**

Muhammad Awais

Department of Radiology, The Aga Khan University Hospital (AKUH), Karachi, Pakistan.

Email: muhammad.awais@aku.edu

PURPOSE: Tuberculosis (TB) is endemic in most parts of the world, affecting 1.7 billion individuals globally. Peritoneal involvement is the most common form of abdominal TB. The imaging findings in peritoneal TB (PTB) overlap with that of peritoneal carcinomatosis (PC). The objective of the study is to assess whether quantitative CT texture parameters can be used to reliably differentiate PTB from PC.

MATERIALS AND METHODS: All the patients with histologically proven PTB or PC who underwent CT abdomen at our institution from Jan 2010 to Jan 2019 were included for this retrospective study. The DICOM files of the CT scans were analyzed for textural analysis using open source software Lifex version 4.7. Logistic regression and ROC curve analysis was performed to study whether CTTA parameters can reliably differentiate peritoneal tuberculosis from peritoneal carcinomatosis.

RESULTS: A total of 66 patients, 28 with PTB and 36 with PC were included. A total of 44 textural parameters were calculated and independent samples t-test was employed to study the statistically different parameters in both the groups. Subsequently, a predictive model on the basis of Logistic Regression analysis was created using 'GLRLM-HGRE', the parameter which demonstrated maximum difference between the two groups. The model explained 90.1% (Nagelkerke R²) of the variance in omental caking and classified 97% of the cases correctly as PTB. (Sensitivity, specificity, positive predictive value, negative predictive values were 100%, 93.3%, 94.73% and 100%, respectively). ROC curve analysis showed area under the curve of .965 (p = .000 and 95% CI= 0.913-1, respectively) and a cut-off value of 0.43 on the curve yield 100% sensitivity and 94.7% specificity for differentiating PTB from PC.

CONCLUSION: CTTA is reliable in differentiating PTB from PC and GLRLM HGRE may be used as an objective imaging biomarker to different PC from PTB.

O-38**Non-contrast MR venography using the FIESTA pulse sequence in preoperative evaluation of liver donors: Can it replace CT venography?**

Muhammad Salman Rafique, Sana Kundi, Usman Zafar and Tahir Malik
Department of Radiology, Pakistan Kidney and Liver Institute and Research Centre, Lahore, Pakistan.

Email: msalmanrafique@gmail.com

PURPOSE: To assess hepatic venous anatomy on the FIESTA ultrafast pulse sequence in comparison with CT venography in preoperative evaluation of living donors for liver transplantation.

MATERIALS AND METHODS: After institutional review board approval, we retrospectively reviewed 43 venous phase CT scans of living liver donors as well as their non-contrast enhanced FIESTA sequences acquired during magnetic resonance cholangiopancreatography of these patients. Both the hepatic venous and portal venous anatomy was assessed by two consultant radiologists independently. The evaluation included the type of portal venous anatomy, number of accessory hepatic veins and the assessment of the larger tributaries from segment VIII and V. The number of accessory veins joining inferior vena cava separately was counted and paired sample t-test was used to assess differences.

RESULTS: The FIESTA pulse sequence provided with very good anatomical detail, detecting all accessory hepatic veins draining into IVC. It accurately depicted the hepatic and portal venous anatomy in 41 patients showing a sensitivity of 96% (p<0.05). It was inferior to CT venography in 2 patients owing to respiratory artefacts.

CONCLUSIONS: The FIESTA ultrafast pulse sequence can replace the CT venography in the preoperative assessment of hepatic and portal venous anatomy in potential liver transplant living donors.

O-39**Portal vein thrombosis in HCC: Where the CT leads us**

Sehrish Sharif, Zobia, Ali Mansoor, Sadaf Arooj, Mahjabeen Masood

Department of Radiology, Mayo Hospital, Lahore, Pakistan.

Email: sehrish.sharif@yahoo.com

PURPOSE: The purpose of this study was to assess the prevalence of tumor thrombosis in patients with HCC associated portal vein thrombosis

INTRODUCTION: Portal vein thrombosis (PVT) is a multifactorial disorder encountered not only in patients with cirrhosis and hepatic neoplasms but also in patients without liver disease. PVT can be classified as neoplastic or bland according to the tumor's extension into the veins. Among patients with HCC, the frequency of neoplastic PVT is as high as 33%, whereas bland PVT is seen in 20% of patients. Patients with neoplastic PVT are eligible for only palliative or investigational treatment, whereas patients with bland PVT are eligible for liver transplantation. The characterization of PVT as neoplastic versus bland is crucial for accurately determining tumor stage and treatment options for hepatic neoplasms, particularly hepatocellular carcinoma (HCC).

MATERIAL AND METHODS: This study was conducted in Radiology Dept of Mayo hospital LHR, from Jan 2019 to Sep 2019. A total of 80 patients who are biopsy proven HCC with portal vein thrombosis were examined on PACS workstation through triphasic CT. Arterial phase and portovenous phase was obtained in all these patients to see the type of portal vein thrombosis. A thrombus was considered neoplastic when it causes expansion of the involved vessel i.e. ≥ 1.8 cm and clear evidence of enhancement on contrast enhanced CT on arterial phase. Thrombi were assessed on coronal images.

RESULTS: Out of 80 patients 24 patients (30%) were diagnosed as tumoral portal vein thrombosis and 56 patients (70%) were diagnosed as bland portal vein thrombosis.

CONCLUSIONS: In our population bland portal vein thrombosis is more prevalent than tumor thrombosis in patients of HCC.

O-40**Shear wave elastography (SWE): An initial experience in detection of hepatic fibrosis and cirrhosis**

Muhammad Ali, Maria Hassan, Riffat Butt
 Department of Radiology, Dr. Ziauddin Medical University Hospital, Karachi, Pakistan.
 Email: riffatbutt91@gmail.com

INTRODUCTION: Chronic liver diseases affect millions of people worldwide and are frequently encountered in daily practice. Therefore, the estimation of extent of liver fibrosis is very important as it determines the treatment strategy and management of patients with chronic liver disease.

OBJECTIVE: The purpose of this study is to see the prevalence of different stages of liver fibrosis using shear wave elastography.

MATERIAL AND METHODS: This is a prospective cross-sectional study conducted at Dr. Ziauddin Medical University Hospital, Karachi. The study was performed using Toshiba Aplio 500 and an area free of large vessels was selected which provides an image of shear waves travelling through the tissues, in a box form over a conventional B-mode image. Patients were assigned to different fibrosis stages according to their shear wave elastography values as per METAVIR scoring system from F0 to F4. Liver stiffness measurement of <7.1, 7.1-12.0 and >12.0 Kpa will be used as cut off for no fibrosis, significant fibrosis and cirrhosis respectively. Grading of steatosis was also recorded.

RESULTS: Out of 400 patients, 224 (56%) males and 176 (44%) females with age ranged from 18 years to 82 years (mean age 41.27 years). Most of the patients, 216 (54%), showed METAVIR scores of F0/F1/F0-F1, while 74 (18.5%), 12(3%), 54(13.5%) and 44 (21%) had F2, F2-F3, F3 and F4 respectively. 216 (54%) patients had no significant fibrosis, 140 (35%) had significant fibrosis and 44(21%) had cirrhosis. Out of 400 patients 172(43%) of the patients had non fatty liver (Grade 0 steatosis). The rest of the 57% patients had fatty liver, out of these 34% had Grade-I, 16.5% had Grade-II and 6.5% had Grade-III hepatic steatosis.

CONCLUSION: Shear wave elastography can be used as non invasive method alternative to liver biopsy for detection of fibrosis and cirrhosis as it has significant prevalence in our population.

O-41**Hepatocellular Carcinoma Revisited: Challenging Lesions of HCC on Triphasic CT scan confirmed on histopathology**

Zainab Zahur,¹ Uzma Mumtaz,² Ashfa Ameer Khan,¹ Shaista Khurshid,¹ Mariam Malik,¹ Rabia Akram¹

¹ Atomic Energy Cancer Hospital, NORI, Islamabad, Pakistan.

² Department of Radiology, Al-Nafees Medical and Dental College, Islamabad, Pakistan.

Email: dr.zainabzahur@gmail.com

PURPOSE: Hepatocellular carcinoma (HCC) is the most common type of primary liver cancer, which in turns accounts for the sixth most common cancer worldwide. Criteria for diagnosis of hepatocellular for years has been triphasic CT scan abdomen and serum Alfa fetoprotein levels. However not all lesions of HCC are arterialized on CT scan and does not show typical pattern of enhancement. Also different type of HCC shows different pattern of enhancement with quite a variation. In many cases histopathology remains the gold standard and quite often problem solving.

MATERIALS AND METHODS: It's a retrospective cross sectional study conducted at Radiology and Pathology department of NORI hospital. All patients coming to NORI Hospital with undiagnosed primary cancer, equivocal hepatic lesions on triphasic CT scan with differential of HCC and mets mostly having normal liver morphology and serum AFP levels were included in study. Those having typical patterns of HCC and those having predisposing factors like positive viral markers and cirrhotic liver were excluded from the study. Hemangiomas were also not included. Patients undergoing biopsy were divided

into two groups depending on histopathology report. Total of 39 liver lesions were biopsied.

RESULTS: 25 patients had metastatic disease on histopathology report while 14 patients had typical HCC which was later on confirmed on IHC. Most common type was typical HCC with Hep Par positive. Out of 14, 9 patients were males and 6 were females with median age 40-60 years.

CONCLUSION: HCC is very common liver tumor and is even found without cirrhosis and normal AFP levels. Triphasic CT scan may not correctly identify this group of patients and histopathology remains the gold standard.

O-42**Characteristics of appendicoliths that lead to perforated appendicitis in patients undergoing laparoscopic appendectomy**

Mustafa Belal Hafeez Chaudhry,¹ Muhammad Sohaib Khan,² Asad Shakil,¹ Noman Khan,¹ Wasim Ahmed Memon,¹ Muhammad Tayyab ul Hasan Siddiqui²

¹Department of Radiology, The Aga Khan University, Karachi, Pakistan.

²Department of Surgery, The Aga Khan University, Karachi, Pakistan.

Email: mustafa.b.chaudhry@gmail.com

BACKGROUND: Appendicoliths (AL) are associated with an increased incidence of acute appendicitis. A CT Grading for appendicitis (CTGA) has been considered effective in predicting the extent of inflammation and disease course. Perforated appendicitis (PA) is known to be found occur in a significant minority of patients undergoing laparoscopic appendectomy.

OBJECTIVE: Our purpose is to determine the number, shape, density and a more proximal location of AL in the appendix that lead to perforated appendicitis (PA).

MATERIAL & METHOD: A retrospective review of charts, of patients who underwent preoperative CT scan, had appendicitis with AL, followed by laparoscopic appendectomy from 01/2008-12/2015, was completed. Patients were divided into two groups; PA and non-perforated appendicitis (NPA). AL was divided into 2 groups according to its density; high-density AL (HDA) with >200 Hounsfield unit (HU) density and low-density AL (LDA), <200 HU. CTGA was done using radiological parameters including appendix diameter, wall thickness, intraluminal and extraluminal air, periappendiceal fat stranding and fluid, cecal wall thickening, and abscess formation. A normal appendix is considered Grade 0, and most severe, perforated appendix with abscess and pneumoperitoneum on CT was graded as Grade V. The number, density and position of the AL were ascertained and studied in relation to PA on laparoscopy.

RESULTS: Overall 100 patients were included, mean age was 28.8 ± 11.9 years with 74 patients being males. 23 patients were in PA group and 77 in NPA group. Significantly greater proportion of patients in the PA group had; appendicolith location at the base [PA vs NPA: 14 (36%) vs 25 (32%) p-value 0.04], rounded lamellated type of appendicolith [PA vs NPA: 13 (56%) vs 19 (24.6%) p-value 0.04], higher CTGA between III-V [PA vs NPA: 15 (82%) vs 38 (49%) p-value 0.015], increased width of appendiceal lumen [PA vs NPA: 15.5 ± 3.5 mm vs 13.1 ± 8.9 mm) p-value 0.009] and thickness of appendiceal wall [PA vs NPA: 4.8 ± 1.7 mm vs 4.1±1.4 mm) p-value 0.05]. The multiplicity of appendicoliths, HDA and post-op infectious complications were not significantly associated between groups. On multivariate analysis, no significant association was noted, due to small sample size.

CONCLUSION: High CTGA, rounded lamellated shape appendicoliths, and proximal location of AL at appendix base are more likely to cause perforated appendicitis. However, studies with large sample size are needed to establish the true characteristics of appendicoliths resulting in PA.

SCIENTIFIC SESSION : Chest**O-43****Small airways disease: HRCT finding of mosaic lung attenuation and ground glass haze**

Ummara Siddique Umer

*Department of Radiology, Rehman Medical Institute, Peshawar, Pakistan.**Email: ummara_81@hotmail.com***Primary objectives:**

- 1) Understanding the pattern distribution and appearance of mosaic attenuation with ground glass haze on high resolution computed tomography scan (HRCT).
- 2) To recognize specific signs of small airway diseases on HRCT.
- 3) To assess the role of paired inspiratory-expiratory CT scans and multiplanar reconstructions with maximum intensity projection (MIP) and minimum intensity projection (MinIP) in diagnosing small airway diseases.

BRIEF SUMMARY: High-resolution computed tomography (HRCT) is the most useful modality for imaging of small airways disease. Understanding the pattern distribution and appearance of mosaic attenuation with ground glass haze on HRCT scans can often accurately depict disease processes in the small airways and can occasionally lead to a specific diagnosis from among several clinically relevant possibilities. HRCT scans identify the presence or absence of signs of small airway diseases, extent and zonal distribution of HRCT findings, severity of architectural distortion or ancillary findings such as lymphadenopathy and associated pleural or cardiac changes. There is improvement in diagnosing mosaic pattern and centrilobular nodules by use of MinIP and MIP respectively. The diagnosis of air trapping is more confidently made when the images are used in conjunction with expiratory images. Direct signs of small airways disease that appear on HRCT scans are the result of changes in the airway wall or lumen. Abnormal small airways can be seen as tubular, nodular, or branching linear structures on HRCT scans. Indirect signs of small airways disease result from changes in the lung parenchyma distal to the diseased small airway and include mosaic pattern with air trapping and ground glass haze, subsegmental atelectasis, centrilobular emphysema, and air-space nodules.

O-44**Pitfalls of thoracic CT normal anatomic structures that can mimic disease**

Vaqar Bari

*Department of Radiology, Aga Khan University Hospital (AKUH), Karachi, Pakistan.**Email: vaqar.bari@aku.edu*

To learn normal structures on thoracic CT that are commonly mistaken for pathology and to learn characteristic features to help differentiate between normal and abnormal structures.

Normal structures such as pericardial recesses, cisterna chyli, thymus, veins (azygous, axillary) and muscle which can simulate disease. Knowledge of these structures will help in not confusing with pathology.

O-45**Noninvasive imaging of congenital coronary artery anomalies in adults: Role of Multi-Detector CT scan in clinical practice**

Abdul Sattar Anjum

*Department of Radiology, Nishtar Medical University & Hospital, Multan, Pakistan.**Email: drasanjum@gmail.com*

The congenital coronary artery anomalies that present in adulthood are relatively uncommon. However, ectopic origin of a coronary artery from the aorta is a diagnosis that must be excluded in young adult with typically ischemic chest pain or syncope. These anomalies have high clinical profile and the second most common cause of sudden exertion related cardiac death in athletes.

Full non-invasive assessment of congenital coronary arteries anomalies or their exclusion may therefore be advantageous in various circumstances. Multidetector CT has rapidly evolved from the research setting to become a useful clinical tool and must now also be considered for this role. Submillimeter ECG gated MDCT allows rapid acquisition of whole heart with 3-D data in one scan.

Importantly it has superior spatial resolution to MR imaging and as a result it appears to be promising tool for non-invasive diagnostic coronary angiography. The quality of imaging of main coronary arteries and side branches provided by MDCT, may have importance when assessing congenital coronary artery anomalies.

This review discusses the rationale for using MDCT for this indication and examines the advantages and disadvantages of the technique.

O-46**Accuracy and sensitivity of CT guided percutaneous biopsies of pulmonary lesions in oncology patients- A single center experience**

Waqas Ahmad, Hafsa Shahwaiz Babar, Kanza Haq, Khadija Nasir, Imran Khalid Niazi, Ahmad Zia ud Din

*Department of Radiology, Shaikat Khanum Memorial Cancer Hospital & Research Center, Lahore, Pakistan.**Email: waqasrad@gmail.com*

BACKGROUND: CT guided percutaneous biopsy of parenchymal and pleural based pulmonary lesions is the most common method to obtain histopathological diagnosis and is carried out frequently in oncology patients.

OBJECTIVE: Objective of study was to compare site of pulmonary lesions, method and diagnostic accuracy of CT guided biopsy, complications and outcomes.

MATERIALS AND METHODS: We retrospectively collected electronic data of CT guided procedures performed to obtain histological diagnosis of pulmonary lesions from October 2015 to October 2017. Age, gender, primary diagnosis, method of biopsy, location of lesion, complication and outcomes were analyzed.

RESULTS: Over a period of 2 years, 252 (160 males; 92 females) including both pediatric and adult cancer patients underwent CT guided biopsies of pulmonary lesions. 66% were parenchymal lung lesions on initial imaging, 34 % remain pleural based. 4% lesions crossed fissures. 73% had FNAC and trucut both while 21% had FNAC only whereas 7% were subjected to trucut only. Histopathology of 38% came out to be primary lung malignancy, 22% had metastatic disease from lymphoma, GI, breast, lung followed by head and neck primary malignancies, in descending order. 30% results showed benign etiology of lesions. 8% remained inconclusive on final diagnosis. Only 28% patients had pneumothorax as initial complication out of which 5 patients underwent chest intubation with pulmonology follow up.

CONCLUSION: CT guided biopsy of pulmonary lesions remains safe and effective method for histological sampling. FNAC and trucut both had higher efficacy than any of FNAC or trucut alone.

O-47**Audit to assess adequate contrast enhancement in CT Pulmonary Angiograms (CTPA) in patients presenting with acute onset shortness of breath**Muhammad Abdullah, Ummara Siddique Umer, Muhammad Abdullah, Shahjehan Alam, Muhammad Asif, Aman Nawaz Khan, Syed Ghulam Ghaus
Department of Radiology, Rehman Medical Institute, Peshawar, Pakistan.
Email: abdullah_ivr@live.com

PURPOSE: The aim of the audit was to evaluate the adequacy of the angiograms done for diagnosis of pulmonary embolism.

THE STANDARD: Previously published research suggests that a level of 210 Hounsfield Units (HU) is required in the vessel to identify thrombus. Target: According to RCR no more than 10.8% of CTPAs should have less than 211 HU enhancement of main pulmonary trunk. Papers have suggested that 10.8% of CTPAs may be suboptimal based on all causes. Therefore target was set as, no more than 11% of CTPA should be suboptimal.

METHODS AND MATERIALS: This study was done at Radiology department of Rehman Medical Institute. 100 CTPA cases were randomly selected, viewed on Vitrea and PACS workstation using Synapse® (FUJI DICOME VIEWER). Reformation of images was done in different planes. A circular region of interest was measured in the largest axial image of the main pulmonary artery with a diameter of approximately 50% of the vessel. All CT scans had been done on 128 slice Toshiba Aquilion CT scanner. Intravenous contrast was given by a 18 to 20 G IV catheter in the right ante-cubital vein via double chamber power injector and flow rate of 4-5ml/sec followed by a saline chaser. Bolus tracking method followed using ROI on the main pulmonary artery. Main variables to assess were Age, gender, HU of the main pulmonary trunk and the diagnosis. The data was analyzed using SPSS 21. The minimum enhancement of main pulmonary trunk required was set at 211HU. Above than 211 HU considered satisfactory and less than 211HU as not satisfactory.

RESULTS: Results of first round showed 12 CTPA scans with unsatisfactory mean density of contrast in main pulmonary artery (<210 HU) and 88 CTPA scans with satisfactory contrast enhancement in main pulmonary artery (>210HU). 60% patients were female and rest were male. Acute pulmonary embolism was diagnosed in 15%. The reasons of low attenuation of PA were right sided heart dysfunction, Small gauge IV catheter, Slow flow rate, Timing of scan and Inadequate amount of contrast.

CONCLUSION: We concluded from our results that 12% CTPA scans were suboptimal for the diagnosis of pulmonary artery embolism. This showed deviation from the standard. Re-audit will be done after implementing the changes required for adequate scanning.

O-48

Triple-rule-out CT angiography for evaluation of acute chest pain

Shahjehan Alam
Department of Radiology, Rehman Medical Institute, Peshawar, Pakistan.
Email: shahjehan135@yahoo.com

PRIMARY OBJECTIVES:

- 1) Briefly discuss importance of Triple-rule-out computed tomographic (CT) angiography.
- 2) To discuss the indications and patient suitability.
- 3) Role of CT angiography in ruling out aortic, pulmonary and coronary arteries in one scan.
- 4) To present and review CT images of ankle patients with acute chest pain who undergone Triple-rule-out computed tomographic (CT) angiography at our department.

BRIEF SUMMARY: Triple-rule-out (TRO) computed tomographic (CT) angiography can provide a cost-effective evaluation of the coronary arteries, aorta, pulmonary arteries, and adjacent thoracic structures for a patient with acute chest pain. It is most appropriate for the patient who is judged to be at low to intermediate risk for acute coronary syndrome (ACS) and whose symptoms may also be attributed to acute pathologic conditions of the aorta or pulmonary arteries. Although a regular cardiac rhythm remains an important factor in coronary CT image quality, newer multidetector CT scanners with electrocardiographically (ECG) gated imaging can provide high-quality CT studies in patients with a heart rate of up to 80 beats per minute. When performed with appropriate attention to timing and technique, Triple-rule-out CT provides coronary image quality equal to that of dedicated coronary CT angiography and pulmonary arterial images that are free of motion artifact related to cardiac pulsation. In an appropriately selected emergency department patient population, TRO CT can safely eliminate the need for further diagnostic testing in over 75% of patients.

O-49

Audit to assess inefficient resource use for patients who receive chest radiograph and chest CT in a single hospital visit

Nida Gul, Ummara Siddique Umer, Syed Ghulam Ghaus, Shahjehan Alam, Aruba Nawaz, Faria Maqsood
Department of Radiology, Rehman Medical Institute, Peshawar, Pakistan.
Email: ummara_81@hotmail.com

PURPOSE: The goal of this audit was to examine imaging ordering practices in patients receiving both chest radiography (CXR) and chest CT (CCT) on the same day.

Standard: No defined standard. Review of literature suggests not more than 5% irrelevant double modality imaging of the same patient on the same day.

METHODS: This audit was carried out at was at Radiology Department of Rehman Medical Institute Peshawar. A total of 119 patients receiving both CXR and CCT in a single visit, from October 2018 to October 2019, were included. For each examination, the time of order entry, time of study completion and time of final interpretation were recorded and analyzed.

RESULTS: A total of 119 patients, 11% had CT chest and chest X ray done on the same day (63% males and 37% females). 81% were referred from OPD and 19 % from ER. The chief complaints were shortness of breath in 27%, known malignancy in 36%, infective disease in 18%, trauma in 9% and 9% patients had no clinical record.

CONCLUSION: These results suggest inefficient resource usage, for which targeted technology solutions may be helpful. We plan to disseminate our results in department as well in organization and then repeat the audit cycle.

O-50

Comparison of mild blunting of costophrenic angle on plain X-ray and ultrasound

Raheel Khan, Tariq Saeed Siddiqui, Anashia Kayani, Rizwan Armed, Zainab Shahzadi
Armed Forces Institute of Radiology and Imaging (AFIRI), Rawalpindi, Pakistan.
Email: tariqssr@gmail.com

BACKGROUND: A huge number of candidates apply for recruitment in defence forces, preventive health check-ups or pre-immigration screening induction each year. Medical examination and variety of tests are acquired which are time consuming and costly as well. Large number of patients have blunt CP angle on X-ray chest, for which further assessment with ultrasound or CT scan is carried out. The purpose of this study was to grade blunting of CP angle and to determine which cases can be declared fit only on the basis of X-ray chest alone to avoid ultrasound or CT scan chest.

OBJECTIVE: Aim of this study is to evaluate the role of chest x-ray in precise diagnosis of pleural effusion/pleural thickening to avoid unnecessary US/ CT scan; which are costly, time consuming and put extra burden in radiology departments.

STUDY DESIGN: A prospective study by convenience sampling conducted at Armed Forces Institute of Radiology And Imaging Rawalpindi Pakistan.

METHODOLOGY: 200 cases having mild blunting of costophrenic angle (30 to 90 degree) seen on plain radiograph posteroanterior projection, with suspicion of mild pleural effusion or pleural thickening were included in the study and were compared with sonographic and computed tomography findings for the confirmation of diagnosis. This study was carried out in Armed Forces institute of Radiology and Imaging (AFIRI), from 1st June 2019 to 30th November 2019. Findings were entered in preformed performa in Microsoft word. Results were entered in IBM SPSS statistic 25. Percentages and frequency were used to describe the results.

RESULT: Using computed tomography as the gold standard technique, false

positive and true positive predictive value of plain film chest X-ray and ultrasound were assessed showing 98.88% false positive result in case of 30 to 60-degree blunting and 100 % true positive result in case of 70 to 90 degree blunting of costophrenic angle as compared with ultrasound.

CONCLUSION: CXR PA is cheap, widely available investigation with least X-ray exposure (0.1mSv) for the assessment of lung fields. Mild blunting of CP angle (30-70 degree) can be considered negative for pleural effusion as it is only positive in 1.12% cases.

O-51

To determine the frequency of carotid artery disease in patients under going coronary artery bypass graft (CABG)

Ummarah Kamran
Department of Radiology, Rehman Institute of Cardiology (RIC), Peshawar, Pakistan.
Email: ummarahkamran4@gmail.com

OBJECTIVE: To determine the frequency of carotid artery disease in patients under going coronary artery bypass graft (CABG) and to assess the association between carotid artery disease and coronary artery disease (CAD).

METHODOLOGY: This cross sectional study was conducted at Rawalpindi Institute of Cardiology, Rawalpindi, Pakistan from October 2013 to April 2014. All participants underwent pre-operative carotid Doppler assessment for level of stenosis and site of carotid plaque. Using the criteria defined by the Society of Radiologists in the Ultrasound Consensus, the degree of stenosis was stratified into the categories of normal (no stenosis), 50% non-obstructive carotid disease, 50-69% significant stenosis, 70% critical stenosis to near occlusion, near occlusion, and total occlusion.

RESULTS: The total number of patients were 140 with the mean age of 59.6±7.1 years. Male to female ratio was 4:1. Normal carotid arteries were seen in 31 (22.2%) patients, while 79 (56.4%) had non-obstructive carotid disease, 15 (10.7%) had significant stenosis, 12 (8.5%) had critical stenosis, and 3 (2.1%) had near occlusion stenosis. Carotid bulb was the most common site of plaque while the left internal carotid artery was the commonest site of both significant and critical stenosis. Near occlusion was noted in left ICA in two patients and right external carotid artery in one patient. Out of 128 patients who underwent CABG, 128 had TVD, DVD in 8 and 4 had SVD on coronary angiography.

CONCLUSION: We concluded that high number of patients (77.85%) have carotid artery disease on routine ultrasonic carotid assessment. Carotid bulb was the most common site of plaque while the left internal carotid artery was the commonest site of both significant and critical stenosis.

O-52

Coronal thin section reformats in diagnostic approach to infiltrative lung disease on Multidetector Computed Tomography

Ali Asghar Sahib, Ummara Siddique, Shahjehan Alam, Ali Asghar Sahib, Seema Gul, Syed Ghulam Ghaus, Hadia Abid
Department of Radiology, Rehman Medical Institute, Peshawar, Pakistan.
Email: ummara_81@hotmail.com

PURPOSE: To find the added value of reformatted coronal thin sections of high-resolution computed tomography (HRCT) scans in diagnostic approach to infiltrative lung disease.

METHODOLOGY: 100 patients referred for suspicion of lung disease underwent high resolution MDCT scan (collimation: 4 mm × 1 mm; pitch: 1.75; scan time: 0.5 seconds; 80 mA per slice) of the chest on 128 slice Toshiba scanner. Two sets of lung images were systematically reconstructed: 0.5-mm thick transverse computed tomography (CT) scans (i.e., HRCT scans) (group

1) and 1-mm thick coronal images (group 2). Both series of images were obtained at 10-mm intervals and reconstructed using multiplanar reconstruction (MPR) on vitrea workstations. Two observers, radiologists with at least 5 years experience, independently analyzed the overall image quality, presence and distribution of CT features of disease pattern and the diagnostic value of group 1 and group 2 images.

RESULTS: Presence of abnormal lung infiltration was found in 38 patients in group 2 with concordant interpretation of group 1. No significant difference was found in the identification of CT features of lung disease between group 2 and group 1 (nodules: 32% vs. 30%; atelectatic lines: 14% vs. 16%; ground glass increased attenuation: 24% vs. 26%; fibrosis: 48% vs. 50%; interstitial distortion likely honeycombing: 50% in both; and cystic or cavitating lesions: 10% in both groups). Distribution of lung abnormalities in central, peripheral, anterior, and/or posterior lung segments was better recognized in group 2. In patients with extensive lung infiltration, the vertical predominance of lung changes was more precisely assessed in group 2 (n = 12) than in group 1 (n = 4) (P < 0.01).

CONCLUSION: Coronal reformats of CT scan allow diagnostic approach to lung disease more precisely as that provided with axial sections.

SCIENTIFIC SESSION : MSK and Education

O-53

Imaging of the shoulder on MRI; what to know: variants, pathologies and beware of pitfalls!

Fahd Haroon
Karachi X-Ray, Ultrasound and CT Scan Centre, Karachi, Pakistan.
Email: fahd.radiologist@gmail.com

The purpose of this talk is to shed light on the pitfalls, which musculoskeletal radiologists come across on a daily basis pertinent to variant anatomy and artifacts. Familiarity with these pitfalls is crucial to avoiding major diagnostic errors. In addition, ways to distinguish these pitfalls from true shoulder abnormalities are shown. Core understanding of wide breath of major shoulder pathologies is a must. This will enable them to become safe and competent radiologists making great impact on patient care.

O-54

Ankle ligaments on MRI

Ummara Siddique Umer
Department of Radiology, Rehman Medical Institute, Peshawar, Pakistan.
Email: ummara_81@hotmail.com

PRIMARY OBJECTIVES:

- 1) Briefly discuss the importance of planning and protocol for Ankle MRI.
- 2) To identify ligaments of ankle joint and syndesmosis on MRI in various conditions from intact to disrupted.
- 3) Role of MRI in chronic scarring of ligaments leading to impingement.
- 4) To present and review MR images of ankle ligaments from a sample of patients with ankle pain or injury.

BRIEF SUMMARY: Magnetic resonance (MR) imaging has a vital role in the diagnosis and treatment of many musculoskeletal diseases of the ankle and foot. It demonstrates abnormalities in the ligaments, bones and other soft tissues before they become evident at other imaging modalities. Key to obtain a good MRI of ankle is proper positioning of foot, planning the different planes appropriately and selection of ideal sequences. Identification of normal ligaments of ankle and syndesmosis is made easy if the ideal sequence is present in a properly planned MRI. Ligament tears can be partial or complete, acute or chronic and they may or may not be associated with other regional tissue findings. MR imaging is the modality of choice for assessment of chronic pain in ankle to identify the presence of chronic scarred ligaments and impingement. In this review, different MR images of ankle ligaments from a sample of patients with ankle pain or injury would be presented and reviewed.

O-55**Imaging of groin and hip pain**

M. Kashif
TBC

O-56**Automation in radiology**

Ahsan Ali
Department of Radiology, Sindh Institute of Urology and Transplantation
(SIUT), Karachi, Pakistan.
Email: ahsan.rad@hotmail.com

PURPOSE: The aim of this paper is aims to provide a review of the basis for application of Automation in radiology, to discuss the immediate ethical and professional impact in radiology, and to consider possible future evolution.

MATERIAL AND METHODS: Traditionally, in radiology practice, trained Radiologists visually assess medical images for the detection, characterization and monitoring of diseases. Artificial intelligence (AI) methods excel at automatically recognizing complex patterns in imaging data and providing quantitative, rather than qualitative, assessments of radiographic characteristics. In this article, we establish a general understanding of AI methods, particularly those pertaining to image-based tasks and will explore how these methods could impact multiple facets of radiology.

We will also demonstrate ways in which these methods are advancing the field.

Finally, we discuss the challenges facing clinical implementation and provide our perspective on how the domain could be advanced.

CONCLUSION: The future of artificial intelligence and information systems in medicine lies in integration.

Because the selection, analysis, and diagnostic interpretation of radiologic studies share many distinct elements of knowledge, it is essential to integrate these previously separated parts of the consultative process and to educate the next generation of radiologists and to provide the knowledge on which the field of radiology will finally grow, it is crucial to bring together the functions of clinical care, research, and education.

O-57**Disability and low back pain with reference to MRI results**

Farah Tariq
Alnoor Diagnostic Centre, Lahore, Pakistan.
Email: dr.farahtariq1990@gmail.com

BACKGROUND: Disability related to low back pain (CLBP) is a complex and multidimensional phenomenon. Osteoarthritis, degenerative disc disease, spinal stenosis, vertebral fractures, postural abnormalities and other musculoskeletal disorders may all contribute to LBP. It is a common cause of absence from work and visiting the local physician. Oswestry Low Back Pain Disability Questionnaire was developed by Fairbanks to look into the disability caused by LBP.

OBJECTIVES: To look into the disability calculated by Oswestry Low Back Pain Disability Questionnaire with reference to the socio-demographic and clinical variables.

MATERIAL AND METHODS: Material and methods: Three hundred and five consecutive patients with LBP were included from OPD of MRI clinic

at Shadman colony Lahore. Study design was cross-sectional and observational. Questionnaires regarding socio-demographics and clinical variables were filled before the MRI examination. Oswestry Low Back Pain Disability Questionnaire was administered by trained internees. SPSS version 20 was used for data entry and analysis.

RESULTS: Total sample consist of 305 patients. Results showed that Age distribution was below 25 were 7.2%, between 26-41 were 35.5%, between 42-72 52.4% and above 73 were 4.2%. Of them 54.1% of the patients were male, whereas 45.3 % female. Patients belonging to KPK were 9, 3 were from Baluchistan, 2 were from Afghanistan and 290 patients belonging to Punjab. 27.4% were uneducated, 19.5% matriculation, 14.7% intermediate, 30.0% graduate, 7.8% masters. 10.1% were unmarried whereas 89.3% were married. 99.0%) were Muslims 31.0% were non-muslims. 41.7% had monthly income <15000, 7.2% 15000, 6.2% with 25000, 7.8% 35000, 8.8.% 45000, 13.7% >45000. 49.8% were with morning back stiffness, 32.9% with onset before 40, 31.6% with lack of pain on flexion or relief, .5(1.6%) with scoliosis or kyphosis.

16.6% followed trauma, 63.2% bending, 12.7% lifting. 0.7% follows dermatomal, 57.7% spine, 10.7% disc disorder, 9.1% vertebral disorder. 17.3% felt dull type of pain, 17.9% gnawing, 54.4% tearing, 6.8% burning, 2.3% electric pain.

CONCLUSION: Further research is essential to look into the disability matters as the compensation is only possible when medical disability is proven.

O-58**Radiomics - Introduction to the quantitative image analysis pipeline and its clinical applications**

Muhammad Awais
Department of Radiology, The Aga Khan University Hospital (AKUH), Karachi, Pakistan.
Email: muhammad.awais@aku.edu

PURPOSE: The purpose of this review talk is to introduce the field of Radiomics to the radiologist community of Pakistan with emphasis on theoretical background, the entire pipeline and its clinical applications. Brief overview of the technical factors will also be mentioned.

MATERIALS AND METHODS: Radiomics especially textural analysis of the medical images involves the use of various computer software and tools to extract quantitative data from the medical images. The DICOM files of the imaging examination are imported to a software for performing Radiomics analysis. The steps of Radiomics analysis include applying image enhancement filters, segmentation of the region of interest (ROI) and finally to extract quantitative features from the ROI. Some of the commonly used software for Radiomic analysis include TexRad, Mazda, ImageJ, Lifex and various Matlab based in-house softwares.

RESULTS: Radiomics analysis yield a number of quantitative textural features which are used to decipher the heterogeneity of the underlying pathological process. This was not possible with the traditional visual inspection of the medical images and therefore, promises to open new vistas for image analysis and interpretation. The first order textural parameters include shape and histogram based features such as skewness, kurtosis and entropy etc. The second and higher order textural parameters include Grey level co-occurrence, run length and zone length matrices in addition to wavelet and Fourier transform based parameters.

CONCLUSION: Radiomic analysis of medical images provides an unprecedented opportunity to study disease features non-invasively. Especially in the field of oncology, it has been employed to differentiate various subtypes of neoplasms, determine their histological grades, decipher the underlying immunohistochemical and genetic signatures, assess response to treatment and to predict the overall survival. Radiomics, therefore, promises to play a vital role especially in the era of precision medicine by developing novel diagnostic and prognostic imaging biomarkers.

O-59**To determine the accuracy of CT in detecting bone metastases in breast cancer patients compared to bone scan**

Mariam Mukhtar

Department of Radiology, Faisalabad, Pakistan.

O-60**To estimate the proportion of radiology reports that were changed during double reading of Computed Tomography (CT) examinations of chest and abdomen and to assess the potential clinical impact of these changes.**

Ummara Siddique Umer, Hania Moiz, Shahjehan Alam, Aliya Sharif, Aman Nawaz Khan

Department of Radiology, Rehman Medical Institute, Peshawar, Pakistan.

Email: ummara_81@hotmail.com

OBJECTIVES: The objectives of this study were to estimate the proportion of radiology reports that were changed during double reading of Computed Tomography (CT) examinations and to assess the potential clinical impact of these changes.

MATERIAL AND METHODS: Rates of double reading in radiology department were explored in survey issued to consultant radiologists, covering practice of double reading, department guidelines and quality improvement work. The responses of consultant radiologists grouped according to workplace were used to validate management responses about working hours consumed by double reading. The clinical importance of changes to radiology reports was estimated retrospectively. We collected pairs of preliminary and final reports from more than 100 random double read examinations. Exploratory analysis of associations between clinically important changes and characteristics of patients, examinations, and readers was performed with multivariate logistic regression. We also constructed two random effects models to test for clustering of clinically important report changes in separate examinations read by the same radiologist. We found a mean double reading rate of 33% of all exams read by consultants, consuming an estimated 20-25% of consultant working hours. By modality double reading rates were highest for Magnetic Resonance Imaging (MRI) (47%) and CT (33%), intermediate for X-ray (24%) and fluoroscopy (23%), and lowest for ultrasonography (16%). Chest radiologists made more clinically important changes than other second readers. The severity of the radiological findings was increased in 73 (80%) of the clinically important changes. Important changes were made less frequently when abdominal radiologists were first readers, and more frequently when they were second readers and to urgent examinations. The severity of the radiological findings was increased in 118 (81%) of the clinically important changes.

CONCLUSION: Double reading has a major impact on workflow and output directly by consuming working hours. The rates of clinically important changes to radiology reports following double reading indicate that some quality assurance of radiological interpretation is warranted.

O-61**A nation wide audit of MRI reports-courtesy of cyberknife**

Shumaila Arooj, Shazia Kadri

Department of Radiology, Jinnah Post Graduate Medical Centre (JPMC), Karachi, Pakistan.

Email: shumaila_aroj@hotmail.com

PURPOSE:

To assess the frequency of hedge terminology in report conclusions

To be able to exactly answer the clinical question

To be able to exactly mention the comparison dates in follow up scans

MATERIALS AND METHODS: This is a retrospect audit undertaken at the cyberknife facility at JPMC Karachi in which patients from all over Pakistan present with scans done at almost all cities. The technical aspect, clinical question and conclusion of reports were focused. An audit proforma was designed and it was used by one investigator to assess each report.

RESULTS: Data was transcribed into Excel 2010 (Microsoft) for analysis. Statistical analysis including p-value calculation was performed using GraphPad QuickCalcs.

CONCLUSION: Requests frequently failed to ask a clinical question, instead providing a limited clinical history, reflected by the need to identify an explicit and/or implicit question in our analysis. Most of the conclusions had multiple hedge words. There were multiple reports with no formal conclusion. We need to work on sound reporting as a radiological society and need to formulate certain guidelines.

O-62**Agreement Between the European Organization for Research and Treatment of Cancer and Positron Emission Tomography Response Criteria in Solid Tumors in Evaluating Treatment Response in Solid Malignant Tumors**

Zafar Nasir, Samar Hamid, Tariq Mahmood, Hatem Adel, Sadaf Nausheen, Amjad Sattar, Murlu Manohar

Department of Radiology, Jinnah Post Graduate Medical Centre (JPMC), Karachi, Pakistan.

Email: samarjawad@hotmail.com

INTRODUCTION: Fluorine-18 fluorodeoxyglucose (FDG) positron emission tomography-computed tomography (PET-CT) is used for non-invasive staging and restaging of solid malignant tumors. PET-CT based criteria have been developed to evaluate the response to targeted therapy. These include the European Organization for Research and Treatment of Cancer (EORTC) and the PET Response Criteria in Solid Tumors (PERCIST). The aim of this study was to determine the agreement between EORTC and PERCIST criteria for treatment response evaluation in patients with solid malignant tumors.

MATERIALS AND METHODS: This was a retrospective study conducted from February 2017 till July 2017. Electronic medical records of patients diagnosed with solid malignant tumors were searched. Experienced radiologists evaluated the PET-CT images based on EORTC and PERCIST criteria. The Kappa (κ) test was used for evaluation of agreement between treatment response according to EORTC and PERCIST criteria.

RESULTS: Out of 54 patients, 41 (75.9%) were male and 13 (24.1%) were female with a mean age of 57.09 ± 10.65 years. According to EORTC criteria, complete metabolic response (CMR) was seen in five (9.3%) of patients, partial metabolic response (PMR) was seen in 36 (66.7%) of patients, progressive metabolic disease (PMD) was seen in nine (16.7%) of patients and stable metabolic disease (SMD) was seen in four (7.4%) of patients. According to PERCIST criteria, CMR was seen in five (9.3%) of patients, PMR was seen in 33 (61.1%) of patients, PMD was seen in nine (16.7%) of patients and SMD was seen in seven (13.0%) of patients. EORTC and PERCIST agreed on 43 (79.6%) of the patients with k-coefficient of 0.62 indicating good agreement (p-value of <0.001).

CONCLUSION: EORTC and PERCIST criteria have a good agreement in evaluating treatment response in solid malignant tumors. Therefore, adoption of EORTC or PERCIST in PET-CT reporting can standardize the evaluation of oncological treatment results.

O-63**Artificial intelligence in radiology**

Muhammad Atif Naveed
 Department of Radiology, Shaukat Khanum Memorial Cancer Hospital, Lahore, Pakistan.
 Email: dratifnaveed@gmail.com

Artificial intelligence (AI) is one of the most promising areas of health innovation in radiology. This presentation will provide introduction to basic terminology such as “machine/deep learning” and analyses the integration of AI into radiology.

Publications on AI have exponentially increased from about 100–150 per year in 2007–2008 to close to thousand per year in 2017. Magnetic resonance imaging and computed tomography collectively account for more than 50% of current publications. Neuroradiology appears in about one-third of the papers, followed by musculoskeletal and cardiovascular radiology.

Radiologists are at the forefront of the digital era in medicine. They can guide the introduction of AI into healthcare. Radiologists cannot be replaced because radiology includes consideration of patient’s values and preferences, medical judgment, quality assurance, education, policy-making, and interventional procedures.

AI was the hot topic in 2018 RSNA meeting and a lot of research and work is currently going on in the United States and Europe.

I believe that RSP is a good platform to discuss this topic in the radiology community of Pakistan. I hope we will be collaborating with the radiology world in the near future on this particular field of informatics.

E-POSTERS (P)**P-1****Inter Audit: Dose of ionizing radiation during the procedure of transarterial embolization in patients of hepatocellular carcinoma at our institute**

Aman Nawaz Khan, Zahid Hussain, Khalid Shakeel Babar
 Department of Radiology, Rehman Medical Institute, Peshawar, Pakistan.

P-2**Structured reporting format for CT liver dynamics for HCC: Is it worth it?**

Aman Nawaz Khan, Khalid Shakeel Babar, Ummara Siddique Umer
 Department of Radiology, Rehman Medical Institute, Peshawar, Pakistan.

P-3**Clinical applications of susceptibility weighted MR imaging (SWI) in non-traumatic CVDs**

Nighat Sultan
 Department of Radiology, Sindh Institute of Urology and Transplantation (SIUT), Karachi, Pakistan.

P-4**Outcome of treatment of hydatid cyst by modified PAIR procedure**

Aman Nawaz Khan, Ali Asghar Sahib, Ummara Siddique Umer
 Department of Radiology, Rehman Medical Institute, Peshawar, Pakistan.

P-5**Low grade fibromyxoid sarcoma of anterior mediastinum: A rare case report**

Sheeza Imtiaz, Kamran Hameed, Jaideep Darira
 Department of Radiology, Dr. Ziauddin University Hospital, Karachi, Pakistan.

P-6**To assess the effect of tablet Sorafenib in patients of advanced HCC through triphasic CT scan; A cross sectional study**

Sana Kundi, Amjad Iqbal, Omar Altaf, Mina Mariam, Noman Akram, Salman Rafique, Ihsan ul Haq, Gurdeep Singh
 Department of Radiology, PKLI, Lahore, Pakistan.

P-7**Adequacy of MRI in detecting Invasive Lobular Carcinoma of Breast**

Shahzaib Shahzad, Muhammad Ahsan Saleem
NHS, UK.

P-8**PET/CT for the characterization of adrenal masses in patients with cancer: Qualitative versus Quantitative accuracy in 150 consecutive patients**

Samar Jawad
Department of Radiology, Jinnah Post Graduate Medical Centre (JPMC),
Karachi, Pakistan.

P-9**An audit of lumbar spine radiography for lower back pain**

Ummara Siddique Umer, Faria Maqsood, Syed GhulamGhaus, Aruba Nawaz
Department of Radiology, Rehman Medical Institute, Peshawar, Pakistan.

P-10**Audit to assess the quality of radiology MDT input**

Ummara Siddique Umer, Aruba Nawaz, Seema Gul, Syed Ghulam Ghaus
Department of Radiology, Rehman Medical Institute, Peshawar, Pakistan.

P-11**CT KUB - Use of low dose CT KUB; is it becoming the easy way out?**

Ahsan Saleem
NHS, UK.

P-12**CTPA - Finding the right balance**

Ahsan Saleem
NHS, UK.

P-13**Different imaging features of pilocytic astrocytoma: Correlation with tumor location and histopathology. Case Series**

Adnan Naeem, Fatima Mubarak
Department of Radiology, The Aga Khan University Hospital (AKUH), Karachi,
Pakistan.

P-14**Role of 18F-FDG PET/CT in treated cancer patients with rising tumor markers**

Sadaf Nausheen, Samar Hamid, Riffat Hussain, Naveed Ahmed, Tariq Mehmood
Department of Radiology, Jinnah Post Graduate Medical Centre (JPMC),
Karachi, Pakistan.

P-15**Non-contrast MR Venography using the FIESTA pulse sequence in preoperative evaluation of liver donors: Can it replace CT venography?**

Muhammad Salman Rafique, Sana Kundi, Usman Zafar, Tahir Malik
PKLI, Lahore, Pakistan.

P-16**Do respiratory maneuvers affect the hepatic vein waveforms and maximum velocity?**

Muhammad Salman Rafique, Mina Mariam, Shoaib Iftikhar, Haseeb Bhatti
PKLI, Lahore, Pakistan.

P-17**Intracranial Cystic Masses: A Pictorial review from tertiary care oncology setup**

Muhammad Omer Altaf

P-18**Liver abscesses with venous extension - rare and lethal complication**

Kiran Kishore, Fahd Haroon, Sara Zafar, Haji Haroon, Syed Mehmood
Karachi X-ray, Ultrasound and CT Scan Centre, Karachi, Pakistan.

P-19**Magnetic Resonance Imaging as Diagnostic Tool for Acute Invasive Fungal Sinusitis**

Tuba Tariq
Department of Radiology, Chaudhry Muhammad Akram Hospital, Lahore,
Pakistan.

P-20**Role of MRI in acute spinal cord trauma**

Riffat Hassan

P-21**Audit into the justification of plain abdominal radiography from the OPD and emergency department**

Ummara Siddique Umer, Saadan Roghafi, Shahjehan Alam
Department of Radiology, Rehman Medical Institute, Peshawar, Pakistan.

P-22**A rare case of isolated hydatid cyst of breast**

Nida Gul, Amjad Ali, Ummara Siddique Umer, Syed Ghulam Ghaus
Department of Radiology, Rehman Medical Institute, Peshawar, Pakistan.

P-23**Radiation awareness amongst radiation workers in diagnostic radiology department of a public sector hospital in Khyber Pakhtunkhwa, Pakistan**

Tahira Nishtar, Muhammad Yaseen, Amir Ali
Lady Reading Hospital, Peshawar, Pakistan.

P-24**Abernethy Malformation Type Ib: Insight to a Rare Case of Congenital Vascular Variant**

Samreen Aslam, Maria Rauf, Adnan Arif, Aimen Akhter
Shifa International Hospital (SIH), Islamabad, Pakistan.

P-25**Imaging features of basal ganglia abnormalities - A case series**

Mariam Malik, Sanam Yasir, Belqees Yawar, Muhammad Yousaf Chaudery
Shifa International Hospital (SIH), Islamabad, Pakistan.

P-26**Succenturiate lobe; Not every intrauterine vascular mass is AVM, consider rare placental variations in differentials**

B.Y. Faiz, R. Aqueel, S. Saeed, A. Ziad, F. Ullah
Shifa International Hospital (SIH), Islamabad, Pakistan.

P-27**Tennis leg, A diagnostic conundrum of calf strain injuries on MRI between gastrocnemius / soleus tear and isolated plantaris tendon rupture**

Maryam Asghar, Ahsan Amir, Rashed Nazir
Shifa International Hospital (SIH), Islamabad, Pakistan.

P-28**MRI in detection of syntelencephaly**

Waseem Sajjad, Iqra Sarwar, Ali Mansoor, Tahir Qadeer Khan, Mahjabeen Masood
Department of Radiology, Mayo Hospital, Lahore, Pakistan.
Email:

PURPOSE: To know the intracranial manifestations of midline interhemispheric variant of holoprosencephaly.

MATERIAL AND METHOD: We want to present a rare case of syntelencephaly. A 22 years old boy presented with the frequent history of falls. The patient was unable to hear and speak since birth. Birth history was unremarkable.

RESULTS: 1.5T MRI Brain of the patient with slice thickness of 5mm showed absent septum pellucidum with almost complete fusion of lateral ventricles with only the anterior most portion of frontal horns visualized separately. Only anterior part of corpus callosum (rostrum, genu and anterior part of the body) was visualized with deficient posterior part suggestive of partial agenesis. Part of inter hemispheric fissure was also deficient posteriorly with continuity of white matter across midline. Azygous anterior cerebral artery was also noted.

CONCLUSION: Neuroimaging has made possible the differentiation between different sub types of classic holoprosencephaly hence allowing accurate diagnosis and predicting the overall prognosis with greater certainty.

P-29**Role of conventional spinal angiography in spinal vascular anomalies**

Usman Sani, Awais Ahmed, Sadaf Arooj, Mahjabeen Masood
Department of Interventional Radiology Mayo Hospital, Lahore, Pakistan.

PURPOSE: To know the role of conventional spinal angiography in characterization of spinal vascular anomalies.

MATERIAL AND METHODS: We want to report a case of suspected spinal vascular anomaly which was not characterized by Magnetic resonance imaging (MRI) and adequately delineated by conventional angiography.

PRESENTATION: 27 years old male patient started having intense spasms in his right leg three years ago. Later on he developed sudden paraparesis followed by a backache at home. His MRI was done which showed suspicious flow voids in spinal cord. Over the period of time the patient started walking slowly with support at first and later on independently gaining his sphincteric control as well but spasms in the right leg persisted. He underwent conventional spinal angiography which showed spinal arteriovenous malformation (AVM) at level T4-T5 with single feeding pedicle and perinidal aneurysm.

CONCLUSION: Conventional spinal angiography is an effective tool in detection of spinal vascular anomalies and very helpful in its treatment.

P-30**Bilateral pulmonary arteriovenous malformation in a patient of hereditary hemorrhagic telangiectasia complicated by hemorrhage**

Abubakar Rauf, Sadaf Arooj, Mahjabeen Masood, Muhammad Rizwan Asghar
Department of Interventional Radiology Mayo Hospital, Lahore, Pakistan.

INTRODUCTION: Pulmonary arteriovenous malformation (PAVM) is rare vascular anomaly having incidence of 2-3 in 100,000 with recognized female predilection. It can be single or multiple, isolated or associated with number of conditions including hereditary hemorrhagic telangiectasia. Almost half of the patients with multiple PAVM have hereditary hemorrhagic telangiectasia, which is diagnosed clinically by Curacao criteria. High output cardiac failure, paradoxical embolism epistaxis, GI bleeding and pulmonary hemorrhage are among known complications.

CASE PRESENTATION: A 36 year old female presented with shortness of breath and multiple episodes of epistaxis. On examination she had multiple mucocutaneous telangiectasia on her lips and fingers. On chest x-ray she had bilateral lower lobe opacities with prominence of supplying arteries and draining veins. Bilateral pulmonary arteriovenous malformation was suspected and CT angiography was performed. Contrast opacified serpiginous lesions were noted in lateral segments of bilateral lower lobes connecting to single segmental feeding arteries and draining veins. AVM on the right side had associated aneurysm and hemothorax due to possible leakage of vessels.

CONCLUSION: Hereditary hemorrhagic telangiectasia is a rare disease associated with pulmonary arteriovenous malformation in 30% cases. Hemorrhage from PAVM is a relatively uncommon complicating 8% of the cases.

P-31**SWI in ischemic stroke: Key to unconventional information from routine scan**

Huma Sarwar, Aliya Naureen, Nimra Zaheer, Ali Mansoor, Sadaf Arooj, Mahjabeen Masood
Department of Radiology Mayo Hospital, Lahore, Pakistan.
Email: humane.wise08@gmail.com

OBJECTIVES: To determine the purpose and usefulness of SWI sequence in stroke imaging.

MATERIALS AND METHODS: Approval from institutional review board and ethics committee was sought. A retrospective study was done in Radiology Department of Mayo hospital, Lahore over a period of three months, i.e from 15th June 2019 to 15th September 2019. MRI brain of 50 patients having diagnosis of ischaemic stroke were retrospectively analysed. MRI brain was performed on 1.5 T GE machine and sequences acquired were T1WI, T2WI, FLAIR, DWI, SWI and unwrapped phase images. SWI sequence and unwrapped phase images were studied for the assessment of thromboembolus, pre existing microbleeds, haemorrhagic transformation and Ischaemic penumbra in the form of hypointense cortical veins.

RESULTS: Among the 50 patients, 26 patients were found to have positive findings on SWI sequence (52%) while in 24 patients no additional information was provided by SWI (48%). Pre existing microbleeds were seen in 12 cases (46.1%), haemorrhagic transformation in 9 cases (34.6%), thrombo embolus in 2 cases (7.6%) and hypointense cortical veins in 1 case (3.8%). In 3 cases combined findings were seen. Out of which thromboembolus with hypointense cortical veins were found in 1 case (3.8%) and thromboembolus with microbleed in 2 cases (7.6%)

CONCLUSION: SWI is an important MRI sequence in stroke imaging which adds very useful information regarding preexisting microbleeds, haemorrhagic transformation, thromboembolus and ischemic penumbra, that can minimize the need for further investigations like CTA, CT Perfusion and MRA and can significantly affect treatment strategies in these patients. Therefore it is highly recommended to routinely study this sequence for proper reporting of ischemic stroke.

P-32**Role of angioembolization of superior gluteal artery in trauma**

Muhammad Sehran Khalid, Awais Ahmed, Sadaf Arooj, Mahjabeen Masood
Department of Interventional Radiology Mayo Hospital, Lahore, Pakistan.
Email: sehrankhalid@gmail.com

PURPOSE: To know the clinical significance of superior gluteal artery embolization in trauma patient which could not be managed surgically.

MATERIALS AND METHODS: We want to present a rare case of fire arm injury and subsequent hemorrhage from superior gluteal artery which could not be managed surgically and managed adequately by angioembolization.

RESULTS: A young man presented with the history of fire arm injury for which exploratory laparotomy was done. Patient was discharged afterwards with stable vitals. After a month, patient started to have bleeding from entry wound site, which was progressively worsening. CT angiography revealed right superior gluteal artery pseudo aneurysm and right gluteal hematoma. Surgical intervention was performed to secure hemostasis but unsuccessful. Bleeding was so profuse that 32 pints of blood had to be transfused to the patient. Endovascular embolization of superior gluteal artery was performed successfully using coil and PVA. No post procedure episode of bleeding or any other complication noted. Patient was fully stable and discharged within three days following the procedure.

CONCLUSION: Superior gluteal artery angioembolization is an effective procedure in management of trauma.

P-33**Variations in the origin of the superior thyroid artery on CT angiography**

Warda Jamshed Butt, Ali Mansoor, Nawaz Rasheed
Department of Radiology, Mayo Hospital, Lahore, Pakistan.

OBJECTIVE: To investigate the anatomical variations in the origin of the superior thyroid artery on CT angiography images in local population.

MATERIALS AND METHODS: After permission from institutional review board and ethical committee, CT angiography studies of 45 patients performed on Aquilion Prime 160 slice CT from 1st January 2018 to 30th August 2019 at radiology department of Mayo hospital were retrospectively evaluated for the site of origin of superior thyroid artery on both right and left sides.

RESULTS: A total of 45 CT angiograms were evaluated, including 45 right and 45 left. On the right side, STA (superior thyroid artery) was noted to arise from ECA in 26 (57.8%), bifurcation of CCA in 11 (24.4%), and CCA in 8 (17.7%) patients. Left STA was seen to arise from ECA in 29 (64.4%), bifurcation of CCA in 9 (20%), and CCA in 7 (15.5%) patients.

CONCLUSIONS: Origin of STA is predictable, arising from ECA in more than 60% cases. The visualization of superior thyroid arteries on CT angiography images enables the anatomy of the arterial supply system of the thyroid gland to be explored in a noninvasive manner prior to surgery.

P-34**Comparisons of high energy beam output of LINAC used for radiotherapy dosimetry audit**

Saman Shahid,¹ Khalid Masood,² Andleeb Masood,³ Masooma Riaz,³ Abdul Waheed Khan,² AbuBaker Shahid,² Khalid Mehmood,⁴ Shahid Ali⁵

¹*Department of Sciences & Humanities, National University of Computer & Emerging Sciences (NUCES)-FAST, Lahore, Pakistan*

²*Institute of Nuclear Medicine and Oncology, INMOL, Lahore, Pakistan.*

³*Department of Physics, Government College University, Lahore, Pakistan.*

⁴*Pakistan Institute of Nuclear Sciences and Technology (PINSTECH), Nilore, Islamabad, Pakistan.*

⁵*Department Civil Engineering, National University of Computer & Emerging Sciences (NUCES)-FAST, Lahore Pakistan.*

This study describes the results of a comparative study of high energy X-ray beam output performed by International Dosimetry Survey Mission (IDS), SSDL and INMOL beam output measurement comparison. This study involved measurement of high energy photon beam output from linear accelerator (LINAC) performed by IAEA Level I Quality Assurance/Quality Control (QA)/ (QC) survey mission and Secondary Standard Dosimetry Laboratory (SSDL) Level III dosimetry of high energy Siemens 6 & 15MV energies photons at Institute of Nuclear Medicine and Oncology Lahore (INMOL). These measurements were made with cylindrical ionization chambers in water according to the IAEA TRS-398 absorbed dose-to-water protocol. Mean ratio of measured to calculate accelerator output was in the range from 0.999 to 1.003 (1 standard deviation) and overall range of percent deviation was from 0.50% to 1.00%. Measurements and comparison satisfied all the requirements for study. The SSDL and INMOL output data were found to be in good agreement with IAEA Level I QA/QC dosimetry survey mission results. This intercomparison has given confidence on the basis of clinical delivery of higher radiation doses in radiotherapy treatment with the consistency (precision) of dosimetry at different levels at INMOL. In addition, it has established a methodology for subsequent ongoing routine radiotherapy dosimetry audit and baseline set of results to act as an initial reference point.

POSTERS (P)**P-1****Soft Tissue Sarcoma of Extremities A Pictorial Review**

Kashif Siddique, Tallah, Mehreen, Palvisha Gul
Department of Radiology, Shaukat Khanum Memorial Cancer Hospital, Lahore, Pakistan.

P-2**Role of 68 Ga-DOTATOC PET/CT Compared to Standalone Contrast Enhanced CT in Neuroendocrine Tumors**

Urooj Fatima, Hina Iqbal, Syed Rashid-ul-Amin
Department of Radiology, Sindh Institute of Urology and Transplantation (SIUT), Karachi, Pakistan.

P-3**Liver Transplant PPT**

Salman Rafique
PKLI, Lahore, Pakistan.

P-4**Portal vein thrombosis bland versus tumorigenic**

Muhammad Basit, Dawar, Naqib, Shahmeer Khan
Department of Radiology, The Aga Khan University Hospital (AKUH), Karachi, Pakistan.

P-5**PIAL AVM appearance on various imaging modalities: A pictorial review**

Shahmeer Khan, Azeem-ud-din, Ayshea Shaukat
Department of Radiology, The Aga Khan University Hospital (AKUH), Karachi, Pakistan.

P-6**VHL in a young female**

Brig Atique, Sultan
Armed Forces Institute of Radiology and Imaging (AFIRI), Rawalpindi, Pakistan.

P-7**Wolman Disease: First case diagnosed in Pakistan with complete comprehensive work up**

Akhtar Hussain Phul
Khairpur Medical College, Khairpur, Pakistan.