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Abstracts

ORAL PRESENTATIONS (O)

O-1

Multiparametric Prostate MRI

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The main objective of this session is to outline the role of MRI in the clinical management of patients with prostate cancer. In this regard, multiparametric MRI involving conventional as well as functional techniques for the imaging of prostate cancer will be described. Importantly, the clinical indications for the use of prostate MRI will be discussed. Also, typical MRI findings of prostate cancer will be reviewed and the current advances in prostate MRI providing anatomical and functional data about prostate cancer will be summarized. Accordingly, a structured reporting system (PI-RADS) for the MRI findings of prostate cancer will be presented. Finally, future prospects for the impact of prostate MRI on the diagnosis and treatment of prostate cancer will be discussed.

The main role of imaging in prostatic diseases is for prostate cancer. Transrectal ultrasound (TRUS) and magnetic resonance imaging (MRI) are the most commonly used imaging tools. The main indication for the referral of the patients for TRUS is guidance for prostate biopsy. TRUS-guided prostate biopsy has been accepted as the "gold standard" tool for the detection of prostate cancer. The main limitation of the technique is its low accuracy for the detection of prostate cancer. It may also cause the detection of "insignificant cancers" in addition to the significant ones. Multiparametric MRI has been widely used to overcome these challenges. The technique involves the use one or more of functional techniques (diffusion weighted imaging, dynamic contrast enhanced MRI and spectroscopy) in combination with conventional T2-weighted images. Recently, MR-TRUS fusion biopsies have been shown to be promising for a better diagnosis.

The determination of the localization and the extent of the tumor accurately is important as this enables the treatment of the disease at an early stage when it is curable and increases survival rate. The current most common clinical use of prostate MRI is for local staging after a positive biopsy and before treatment. It may also be used as a screening tool before biopsy. Furthermore, it may be used as a monitoring tool for active surveillance. Finally, prostate MRI can be helpful for patients with previous negative biopsies but rising serum PSA.

In summary, Mp-MRI provides a better picture of the primary or recurrent tumor. This might improve the technique/outcome of prostate biopsies and promote minimal invasive focal therapies with lesser morbidity.

O-2

Local ablation of renal tumor

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O-3

Accuracy of CT Angiography in evaluating renal vasculature while taking surgical findings during surgery as standard

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OBJECTIVE: To prove the accuracy of CT angiography in evaluating renal vasculature while taking surgical findings during surgery as standard.

MATERIAL AND METHODS: This was a prospective study evaluating 50 kidney donors who underwent a preoperative CT angiography with a and the results were compared with intraoperative findings during nephrectomy to determine the accuracy of CT angiography. Donors constituted 26 males and 24 females with age range of 19 to 55 years. Donor nephrectomies were performed on all candidates after MDCT evaluation with the findings during surgery constituting the standard of reference. Resulting MDCT images were compared

with actual anatomy found during surgery

RESULTS: It was found that the MDCT anatomy exactly matched the surgical findings for 47 donors. The accuracy for the prediction of the renal vein number in the initial CT interpretation was (94% 47 out of 50 donors). In two candidates false positive results were found regarding double renal veins. In one candidate false negative result was found on CT regarding single renal vein that was detected double renal veins during surgery.

CONCLUSION: MDCT helps accurately evaluate the renal venous anatomy of potential donors thus facilitating the planning of surgery.

O-4

Role of diffusion-weighted MRI in differentiating clear & non-clear cell types of renal cell carcinoma

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OBJECTIVE: To determine the diagnostic accuracy of Diffusion Weighted MRI in differentiating clear and non-clear cell types of Renal Cell Carcinoma (RCC) by using histopathology as gold standard.

MATERIALS AND METHODS: 15 patients who had suspected renal malignant lesions on abdominal ultrasound underwent MRI for further evaluation and characterization of the lesions after taking informed consent. A region of interest was drawn around the tumor area on apparent diffusion coefficient (ADC) maps. An average of two to three measurements per lesion was performed, depending on the lesion size. Final diagnosis was confirmed by histological examination of surgical specimens from all patients.

RESULTS: Out of 15 lesions, 11 were classified as Clear cell RCC and 4 as Non-clear cell RCC. DWI showed that the mean ADC value of clear cell RCC was significantly higher than that of non-clear cell RCC, with an optimal cut-off ADC value of $1.281 \times 10^{-3} \text{ mm}^2/\text{s}$ permitted distinction with high sensitivity (86%) and specificity (94%).

CONCLUSIONS: DW imaging with b values of 0 and 800 sec/mm² allows sensitive and specific differentiation of clear cell and non-clear cell RCCs, suggesting that DW imaging may be useful in the preoperative characterization of RCC.

O-5

Renal intervention in IR; Current and future concepts

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O-6

Determination of the best gray-scale ultrasonography parameter for assessing renal function in patients having chronic kidney disease

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Chronic kidney disease (CKD) is a worldwide health issue associated with decreased quality of life, premature mortality and increased health care expense. It has a rising incidence and prevalence worldwide, with an estimated combined prevalence of grade 3 and 4 CKD of 14% in Pakistan. As the disease burden continues to rise, efforts are needed to reduce the costs of monitoring and managing the disease. Traditionally, renal length and renal volume have been used as a tool for assessing renal function radiologically. However, some recent studies have shown that the relationship between renal volume and renal function is weak. The aim of present study is to compare various parameters i.e. kidney length, kidney volume, renal cortical thickness and renal parenchymal thickness

for assessing renal function and determine which of these correlates best with renal function in CKD patients. The retrospective study will be conducted in Jinnah Hospital from September 2014 to January 2015. Patients diagnosed with CKD but not undergoing dialysis will be included in the study and their serum creatinine measured within 90 days of ultrasound will be used to estimate GFR using Cockcroft-Gault (CG) and Modification of Diet in Renal Disease study (MDRD) equations. Renal cortical thickness will be measured in sagittal plane over a renal pyramid, perpendicular to the capsule. Renal length will be measured from pole-to-pole. Renal volume will be estimated using the formula for ellipsoid. Linear regression will be used for statistical analysis.

O-7

Evaluation of sensitivity of CT KUB scout radiographs in identifying ureteric calculi

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OBJECTIVE: This study aims to determine the sensitivity of scout radiographs in detecting ureteric calculi using CT KUB as a standard reference.

METHODS: A prospective study conducted from 15th December 2013 to 31st October 2014 at the department of radiology, PIMS, Islamabad. Consecutive patients studied who presented with acute flank pain and were investigated using CT KUB. Patients were examined using a TOSHIBA 16-detector row, with 5mm section thickness at 5mm distance and 0.5mm reconstruction. CT was performed from lower chest to symphysis pubis with no oral or intravenous contrast. 125 patients with positive ureteric calculi were included. Scout radiographs were studied with access to CT KUB images. Record of the presence or absence of calculi, location, size and mean HU of each calculus was made.

RESULTS: A total of 149 stones were analysed from 125 patients. The overall sensitivity of scout radiograph was 57%. The study found that calculi in the upper ureter and larger than 4mm are more likely to be seen on the scout radiograph. Mean HU of visible calculi was 574 (range 447-1495) while mean HU of non visible calculi on scout was 340 (140-988).

CONCLUSIONS: Usage of CT scout radiography should be encouraged and reported routinely in conjunction with CT KUB as a baseline for treatment follow-up.

O-8

Multimodality Approach to Scrotal Masses

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In this presentation, it is aimed to review the role of imaging tools for the management of scrotal masses, normal scrotal radiologic anatomy, imaging features of various scrotal pathologies and tips and pitfalls for the imaging of scrotal masses. The vast majority of patients referred for scrotal imaging presents with a scrotal lump. Scrotal masses can represent a wide range of medical issues, from benign congenital conditions to life-threatening malignancies and acute surgical emergencies. They can occur from infancy to old age, with the various causes distributed widely across the age spectrum. Causes range from incidental findings of little clinical significance to conditions that can cause permanent disability or death. Because of the possibility of emergent and life-threatening causes and because a swollen scrotum is usually of great concern to patients, immediate evaluation is always required.

Imaging has an important role in the investigation of testicular masses. Sonography, although the primary imaging technique for the evaluation of scrotal contents, does not always allow confident characterization of the nature of a testicular mass. Correct diagnosis and characterization of scrotal and testicular masses are important for optimal treatment, including resection planning to avoid orchiectomy for some subtypes of benign tumors for which enucleation is an alternative. In this regard, differentiation of malignant from benign masses and from tumorlike lesions such as congenital, traumatic, and inflammatory disorders is clinically relevant. Importantly, because of the limited diagnostic capability of US, neoplasms may be diagnosed in inconclusive cases, and orchiectomy performed. However, the testicles of some of these patients

probably could be saved if a better noninvasive method were available for characterizing these lesions.

Currently MRI is regarded as a problem solving tool during the management of scrotal diseases. Apparently, the ultimate goal during this evaluation is to avoid unnecessary surgery or try to do it with a testis preserving technique if the findings can not fully preclude the need for surgery. In spite of the fact that most solid intratesticular masses should be considered malignant and radical orchiectomy is the treatment of choice, in certain circumstances organ sparing surgery is indicated which necessitates preoperative imaging evaluation of the local stage of the disease and familiarity with imaging features enabling diagnosis of various benign intratesticular abnormalities. Therefore, it is very crucial to determine clinical situations where surgery can be avoided and if it is necessary to limit the extent of the surgery to organ sparing surgery and avoid orchiectomy.

The primary goal in the evaluation of a palpable scrotal mass is determining its location. Most solid intratesticular masses should be considered malignant, and radical orchiectomy is the treatment of choice. To avoid unnecessary orchiectomy, however, it is extremely important to recognize the imaging features of various benign intratesticular mass lesions, including orchitis, hemorrhage, ischemia and infarction, fibrosis, and dilatation of the rete testis. Radiologic evaluation of scrotal masses begins with conventional and color Doppler US, but US may not allow definitive characterization. CT aids in characterization of the morphology and staging. However, magnetic resonance (MR) imaging can be useful as a problem-solving tool when sonographic findings are equivocal.

Conventional MRI combined with functional techniques may play a crucial role in the diagnostic evaluation of scrotal abnormalities owing to the enhanced capability in making a proper distinction between malignant and benign scrotal abnormalities. MRI has proved accurate in the differentiation of extratesticular from intratesticular disease, being superior to sonography in cases in which the scrotum is markedly enlarged. MRI findings with respect to tumor location, morphologic features, and tissue characterization can aid in narrowing the differential diagnosis in cases of extratesticular masses. MR imaging allows characterization of scrotal masses as intratesticular or extratesticular and can demonstrate various types of lesions and tissue, including cysts or fluid, solid masses, fat, and fibrosis. A possible diagnosis of benign lesion based on MRI features may improve patient care and decrease the number of unnecessary radical surgical procedures. Among the indications for MR examination of the scrotum are equivocal or inconclusive US findings, differentiation of intratesticular from extratesticular mass lesions, morphologic evaluation and tissue characterization of scrotal disease, preoperative histologic characterization and staging of testicular tumors, evaluation of the vascularization of testicular lesions, evaluation of the integrity of tunica albuginea in trauma patients and evaluation for intraabdominal undescended testis.

At MR imaging, the normal testis has a homogeneous appearance, with intermediate signal intensity on T1-weighted images and high signal intensity on T2-weighted images relative to skeletal muscle. The relatively high signal intensity of the testis on T2-weighted images allows excellent contrast from solid lesions, which invariably have lower signal intensity on T2-weighted images. T1-weighted images are useful for depicting increased signal intensity in certain tissues, such as fat and methemoglobin. The tunica albuginea appears as low signal intensity on T1- and T2-weighted images. The epididymis has signal intensity characteristics similar to testicular parenchyma on T1-weighted images but lower signal intensity on T2-weighted images.

The criteria for malignancy on scrotal MRI are low/heterogenous-signal intensity on T2W images, co-existence of hemorrhage, co-existence of necrosis, extension to tunica and extratesticular tissues, restricted diffusion and contrast enhancement (Type 4, heterogenous).

O-9

Radionuclide Brain Imaging in Dementia

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O-10**Dynamic Renal Scintigraphy**

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OBJECTIVE: To see the spectrum of various metabolic brain abnormalities in cancer patients undergoing whole body F-18 fludeoxyglucose (FDG) positron emission tomography/computed tomography (PET/CT) scan.

METHODS: Over 10,000 PET/CT scans have been done at our center in a period of 5 years. A snapshot of various metabolic patterns of brain abnormalities is compiled.

RESULTS: Primary CNS tumors account for about 1-2% of all malignancies. In our series tumors like pituitary macroadenoma were hypermetabolic. Lymphomatous involvement of brain parenchyma however had a variable pattern of uptake with hyperintense lesions in some patients and hypo-intense in others.

Accurate identification of cerebral metastases is important for staging, prognosis and determination of appropriate therapy. Brain metastasis show varying degrees of metabolic activity on PET scan ranging from photopenia to hyperintense uptake in lesions appearing iso- or hyperdense on CT scan. In our compilation, patients with primary ovarian, malignant histiocytosis and neuroendocrine tumors had hypermetabolic brain metastasis while a patient with primary lung carcinoma had ametabolic (cold) metastasis.

PET utility in assessing response to therapy after radiation and recurrence. A patient in our series showed FDG avid recurrence in a background of radiation necrosis.

In brain infarcts photopenia was seen overlying encephalomalacia on CT.

A case of incidental dilatation of the occipital horn of lateral ventricle with corresponding photopenia on PET images.

Infectious causes like tuberculosis meningitis showing meningeal enhancement was seen as a hypermetabolic lesion.

CONCLUSION: Knowledge of the FDG appearance of various brain abnormalities enables correct interpretation of PET scans in oncological patients where differentiation of malignant from benign intracranial pathologies is important and improves specificity.

O-12**Restaging Breast Carcinoma with PET-CT scan**

Sadaf Jabeen

*SKMCH&RC, Lahore, Pakistan.***O-13****Non-Invasive Cardiac Imaging – A patient centric Approach**

Muhammad Ayub

*PIC, Lahore, Pakistan.***O-14****Ultrasound for Thyroidologists**

Durr-e-Sabih

*Multan Institute of Nuclear Medicine & Radiotherapy, Multan, Pakistan.***O-15****Higher event rate in patients with known CAD despite a normal myocardial perfusion scan**Maseeh uz Zaman,^{1,2} Nosheen Fatima,^{2,3} Unaiza Zaman,⁴ Areeba Zaman,⁴ Dad J Balcoh,² S. Zahed Rasheed²¹ *Department of Radiology, The Aga Khan University Hospital (AKUH), Karachi, Pakistan*² *Department of Nuclear Cardiology, Karachi Institute of Heart Diseases (KIHD), Karachi, Pakistan*³ *Department of Nuclear Medicine, Dr Ziauddin Medical University, Karachi, Pakistan*⁴ *MBBS Students, Dow University of Health Sciences (DUHS), Karachi, Pakistan*

OBJECTIVE: The negative predictive value of a normal single-photon emission computed tomography (SPECT) myocardial perfusion imaging (MPI) is very high. However, prognostic implication of a normal SPECT MPI in patients with known coronary artery disease (CAD) is not clear. Objective of this study was to evaluate the cardiac event rate in patients with known CAD who had a normal stress SPECT MPI.

METHODS: This prospective study accrued 428 consecutive patients with a history of CAD (revascularization or previous myocardial infarction) who had a normal stress (dynamic exercise or dipyridamole intervention) and rest Tc-99m-MIBI SPECT MPI. These patients were followed for 2-5 years (median: 3.1 years) for all-cause and cardiac mortality and non-fatal myocardial infarction. Univariate and multivariate analyses were performed to identify predictors of outcome.

RESULTS: During a follow-up period, all-cause mortality was found in 60 patients (14%) and 41 (10%) died of cardiac reasons. Non-fatal myocardial infarction (MI) was found in 77 (18%) patients. Annualized cardiac mortality and non-fatal MI rates were 2% and 3.6% respectively. Smoking, CCF and failure to achieve 85% age predicted heart rate were found to be predictors for all-cause and cardiac mortality. Diabetes, dyslipidemia, smoking and limited functional capacity (< 7 METS) were found to be predictors for non-fatal MI.

CONCLUSIONS: Patients with known CAD had higher cardiac event rates despite a normal stress SPECT MPI. Diabetes, dyslipidemia, smoking and limited functional capacity were the predictors for fatal and non-fatal cardiac events. A cost effective but comprehensive surveillance strategy is warranted.

O-16**SPECT. CT – A ‘Giant Leap’ for Radionuclide Imaging**

Humayun Bashir

*Shaukat Khanum Hospital, Lahore, Pakistan.***O-17****Radionuclide Brain Imaging – beyond Dementia**

Kaiser H. Siraj

*Farwana Hospital, Kuwait***O-18****Ventilation Perfusion Scintigraphy**

Muhammad Sohaib

*PIEAS, Islamabad, Pakistan.***O-19****Diagnosis of Osteoporosis: DXA vs Heel ultrasound vs QCT**

Saima Haider

*CENUM, Lahore, Pakistan.***O-20****Radiopharmaceutical Therapy in Bone Pain Palliation**

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Bone is the commonest site of metastases in prostate and breast cancers and about 4 million people experience pain daily secondary to neoplastic disease. Painful bone metastasis impairs the quality of life and also a predictor of

mortality. Radionuclide treatment has been used for more than 02 decades for palliation of bone metastases with an aim of adding life to year and not year to life. In early years high energy beta particles like P-32 and Sr-89 were used with sizeable chance of myelotoxicity. However, recently trend with availability of alpha emitter and conversion electron has been shifted to adding year to life as well due to significantly low myelotoxicity and improvement in survival as well.

O-21

Radioactive Iodine Therapy in Thyroid Cancer – A changing paradigm

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O-22

Baseline stimulated thyroglobulin level as a good predictor for successful ablation after adjuvant radioiodine treatment in differentiated thyroid cancers

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AIMS: To determine the predictive value of the baseline stimulated thyroglobulin (STg) level for ablation outcome in patients who had adjuvant remnant radioiodine ablation (RRA) for differentiated thyroid carcinoma (DTC).

MATERIAL AND METHODS: This was a retrospective study which accrued 64 patients (23 male and 41 female; mean age of 40 ± 14 years) who had total thyroidectomy followed by RRA for DTC from January 2012 till April 2014. Patients with positive ant-Tg antibodies and distant metastasis on post-ablative whole body iodine scan (TWBIS) were excluded. Baseline STg was used to predict successful ablation (follow-up STg <2 ng/ml, negative diagnostic WBIS and negative ultrasound neck) at 7-12 months follow-up.

RESULTS: Over-all successful ablation was noted in 37 (58%) patients while ablation was failed in 27 (42%) patients. Using ROC curve, cut-off level of baseline STg level of ≤ 14.5 ng/ml was found to be most sensitive and specific for predicting successful ablation. Successful ablation was noted in 25/28 (89%) of patients with baseline STg ≤ 14.5 ng/ml and 12/36 (33%) patients with baseline STg >14.5 ng/ml (p value <0.05). Age >40 years, female gender, PTS >2 cm, papillary histopathology, positive cervical nodes and positive TWBIS were significant predictors of ablation failure.

CONCLUSION: We conclude that in patients with total thyroidectomy followed by I-131 ablation for DTC, baseline STg level is a good predictor of successful ablation based on a stringent triple negative criteria (i.e. follow-up STg < 2 ng/ml, a negative DWBIS and negative US neck).

O-23

Interim 18F-FDG PET/CT in Diffuse Large B Cell Lymphoma- as a prognostic tool

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OBJECTIVE: To assess the role of interim 18F-Fluoro-2-deoxy-d-glucose positron emission tomography (PET) scan/ Computed tomography (CT) scan in management of Diffuse large B-cell lymphoma (DLBCL) in terms of progression free survival (PFS) and overall survival (OS) prediction.

METHODS: A retrospective study of newly diagnosed DLBCL patients treated from 2010 to 2013. Baseline characteristics of patients were documented and compared. Response on Interim (I) PET/CT and end of treatment (EOT) PET/CT was acknowledged. PFS and OS for I-PET/CT positive/negative scan were calculated. Data were also reviewed for sensitivity (Se), specificity (Sp), positive predictive value (PPV) and negative predictive value (NPV) of I-PET/CT for relapse.

RESULTS: Total number of patients was 119, predominantly male patients 87(73%). Mean age of patients was 34 years (range 18-50 years). Sixty three (53%) patients had positive and 53(47%) patients had negative I-PET/CT. Interim PET/CT showed PPV, NPV, Se and Sp for relapse of 35%, 89%, 79% and 55% respectively. Two years PFS and OS for I-PET/CT positive patients was 66% and 72 % compared to 88 % (p=0.002) and 92 % (p=0.005) for I-PET/CT negative patients, respectively. Similarly PFS and OS at 2 years for patients having positive EOT-PET/CT were 35% and 44% against 94% (p<0.001) and 96% (p<0.001) for patients with negative EOT-PET/CT respectively.

CONCLUSION: Interim PET/CT has high sensitivity and negative predictive value for relapse in DLBCL. Both I-PET/CT and EOT-PET/CT are predictors of PFS and OS. Large scale prospective studies are required for further clarification.

O-24

Fetal Anomaly Scan (FAS)

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Most women are offered a detailed ultrasound scan at about 20 weeks to see if the fetus is developing normally. This is known as the Fetal Anomaly Scan (FAS).

Reasons to have this scan include:

To reassure you that the baby is likely to be normal

To confirm the gestational age of pregnancy

To confirm the number of fetuses and, if twins, whether they are identical or not

To detect birth defects, such as Neurological, GIT, MSK or Genito-urinary problems

This scan can search for subtle markers that may suggest a higher risk that fetus has Chromosomal problems

Fetal gender this can usually be seen at this scan

What can this scan detect?

This ultrasound scan is very accurate but unfortunately it cannot diagnose 100% of congenital abnormalities. If the scan is complete, we would expect to pick up at least 95% of cases of spina bifida, 80% of cases of cleft lip or palate, and 60% to 70% of cases of congenital heart disease.

This scan can also identify 50% to 70% of cases of Down syndrome, but the First Trimester Screening (FTS) test is better. 30% to 50% of cases of Down syndrome appear normal on ultrasound, only an amniocentesis can give this information for certain. It is also important to realize that ultrasound scans in pregnancy do not detect problems like cerebral palsy or autism.

Sometimes babies with chromosomal abnormalities have signs called ultrasound markers. These will be discussed.

O-25

Diagnosing IUGR radiologically

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A small for gestational age fetus can be physiologically or pathologically small. A physiologically small fetus would not have post natal morbidity or mortality as a pathologically small fetus. A radiologist needs to differentiate between cases of pathological small for gestational age which would be referred to as intra uterine growth restricted fetus or IUGR and physiological small for gestational age fetuses. A small for gestational age fetus and a growth restricted fetus both have weight below the 10th percentile which means that 90% of fetuses are above this weight. A growth restricted fetus would differ, however, in that it would have abnormal Doppler indices and perinatal morbidity and mortality as well as a high rate of still birth and post natal complications which warrant early diagnosis and continuous monitoring and possible intra uterine treatment.

Maternal factors as maternal hypertension, diabetes and smoking, fetal factors as chromosomal abnormalities, fetal TORCH infections all are risk factors for growth restriction. History of growth restriction in previous pregnancies is also a risk factor for subsequent growth restriction. Ultrasound helps not only in diagnosis but also in continuous surveillance of a growth restricted fetus.

Serial ultrasound measurements of fetal weight and abdominal circumference should be done in high risk pregnancies. This should begin as early as 16 weeks in patients with high risk of developing IUGR. The adverse effects on fetal growth may not be observed until 20-24 weeks of gestation.

Uterine artery Doppler study between 19-24 weeks of pregnancy helps to define fetuses at risk for the development of IUGR. Uterine artery RI, PI, and persisting diastolic notch are indicators that the fetus is a high risk case. Treatment at this early stage helps avert the grave consequences of the disease.

After 24 weeks of gestation, umbilical artery Doppler studies help evaluate the fetuses. A low diastolic flow, flow reversal during diastole are indicators of a poor prognosis. Pulsatile flow in umbilical vein is a bad prognostic indicator.

In association with umbilical artery Doppler, middle cerebral artery (MCA) Doppler showing low values of RI and PI indicate brain sparing effect in IUGR fetuses. A new Doppler parameter of a high velocity in the MCA indicates fetal circulation compromise. This is associated with high perinatal mortality.

Ductus venosus normally shows a continuous forward flow pattern. Flow reversal in ductus venosus is an indicator of acute onset of IUGR and this parameter is a high predictor of fetal mortality.

Flow in the aortic isthmus is normally high resistance forward flow. Reversal of this flow is observed in IUGR. This parameter becomes abnormal even before flow in the umbilical artery or MCA becomes abnormal.

In suspected cases of IUGR, I usually go for serial ultrasound examinations before giving a diagnosis of growth restriction.

It is very important to recognize this clinical entity as this has a very high association with perinatal morbidity and mortality. There may be later development of neurological complications due to fetal hypoxia at any stage of pregnancy. By identifying fetuses at high risk, many post natal complications can be avoided by instituting appropriate therapy and deciding appropriate time of delivery.

O-26

Role of 2D/3D Transvaginal Ultrasonography in follicular tracking

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Infertility is a common problem and affects 10% of couples. With the advent of follicular stimulating drugs and TVS especially 3 D (Automated Volume Count by Sono AVC software) we can monitor the follicular and endometrial changes.

Conventionally 2 D TVS is used to monitor follicular growth and to determine the approximate timing of administration of human chorionic gonadotrophin. However, 2D ultrasonography only helps in approximate measurement of real volume of follicles, but TVS Sono AVC software help to identify and quantify almost all follicles. So Modern 3 D ultrasonography provides most reliable, fast, valid standard of these measurements.

On 7th day of ovulation induction a baseline 2D ultrasound performed. Usually follicles are 7 to 10 mm and the endometrium is thin < 3 mm. On 10th day onward serial measurements are done accordingly using 3 D TVS. Normal rate of growth of follicle is 1-1.5 mm per day. On color flow imaging vascularity is increased. Follicles around 20 mm are considered best for HCG injection. The signs of follicular rupture are monitored by TVS as crenated margins of follicle, free fluid around and endometrium becoming diffuse three line. This is the best time to conceive and even have high probability of a boy being small

size, short life, fast speed and of Y component of chromosome.

During proliferative phase endometrial thickness is always greater in cases of stimulated cycles compared to spontaneous cycles. A positive correlation exist between endometrial thickness and pregnancy rates with no conception occurring when endometrial thickness is below 7 mm at the time of hCG administration. The three line endometrium > 10 mm with low resistance high diastolic blood flow (peak systolic flow around 8-10 cm/sec and PI (Pulsatility Index < 3) is strongly suggestive of very receptive endometrium for fertilized ovum.

O-27

Accuracy of magnetic resonance imaging in differentiating placenta accreta, increta and percreta using specific MRI features

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OBJECTIVE: To determine accuracy of MRI in evaluation of placental invasion keeping histopathology as gold standard.

METHODOLOGY: Institutional review board approval was obtained. 41 patients who underwent without contrast MR examination on 1.5 T (Toshiba) MR machine were included. Axial, coronal T1, sagittal T2W, axial and sagittal T2 FAT SAT images were acquired. Age range is 20-38 years. The MRI images were interpreted by two senior radiologists.

Diagnosis of abnormal placentation (placenta accreta, increta and percreta) was made on basis of MR imaging findings. Intra-operative findings and histopathological diagnosis were recorded. Finally the data was collected on performa regarding spectrum of MRI findings in these patients. Sensitivity, specificity, PPV and NPV were calculated.

RESULTS: There were total of Forty one patients with suspected abnormal placentation. 24 patient (58 %) were diagnosed as placenta increta. 8 patient's (19.5 %) had morbidly adherent placenta and diagnosed as placenta percreta on basis of MRI findings. 6 patients (14%) had diagnosis of placenta accreta without increta or percreta. 3 patient's had normal anterior placenta without any abnormality.

Sensitivity of MRI for placenta increta, percreta and accreta is found to be 95.8%, 88% and 85.7% respectively. Overall sensitivity of MRI in diagnosis of abnormal placentation is 92.5%.

Specificity of MRI for placenta increta, percreta and accreta was found to be 66%, 98 % and 99 % respectively. PPV for MRI is 95.8%, 98% and 99% for placenta increta, accreta and percreta. NPV of MRI is 66-75 % for placenta increta, accreta or percreta.

CONCLUSION: MRI shows high accuracy in differentiating placenta accreta, increta and percreta, which is important in surgical management of patients with placental invasion. This ultimately can potentially reduce fetomaternal mortality and morbidity.

O-28

Diagnostic accuracy of the endovaginal scan in the detection of retained products of conception after incomplete abortion

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OBJECTIVE: The purpose of the study was to determine the diagnostic accuracy of endovaginal ultrasound in the detection of retained product of conception in patients with incomplete abortion by using histopathology as a gold standard.

STUDY: Cross sectional validation study.

MATERIALS AND METHOD: This is an ongoing study. To date, 20 patients with retained products of conception diagnosed on clinical basis, fulfilling the inclusion criteria, were scanned with endovaginal ultrasound using high frequency probe of 5-7 Mhz in the setting of diagnostic radiology P.I.M.S. Endometrial thickness of 12 mm was taken as cut off for the detection of retained product of conception. Dilatation and curettage were done at maternity and child health centre P.I.M.S and samples were sent to Histopathology department P.I.M.S for confirmation.

RESULTS: Out of 20 patients with retained product of conception 19 patients with endometrial thickness of 12 mm were confirmed as retained products of conception on histopathology reports.

CONCLUSION: Endovaginal scan is a safe and effective method for the evaluation of residual tissues of conception in post abortal bleeding with sensitivity of 95% while keeping endometrial thickness of 12 mm as a best parameter for the detection of RPOCS.

O-29

Role of diffusion weighted imaging in gynecological malignancies.

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BACKGROUND / AIM: Diffusion-weighted imaging (DWI) has greatly enhanced the clinical value of magnetic resonance imaging (MRI) of the body. DWI can provide excellent tissue contrast in combination with conventional MR sequences. Molecular diffusion and quantitative measurement of the apparent diffusion coefficient (ADC) is valuable in distinguishing malignant from benign pathologies and post therapeutic changes from recurrence in gynecological malignancies.

MATERIAL AND METHOD: We reviewed DWI and conventional MRI of the female pelvis in 20 patients to study the utility of DWI in patients with gynecological diseases. Although the ADC can help to differentiate more effectively between normal and cancerous tissue in the uterine cervix and endometrium, its utility may be limited by the large overlap of the uterine myometrium and ovaries. In patients with ovarian cancer, DWI demonstrates high intensity not only at the primary cancer site but also in disseminated peritoneal implants. On the other hand, the ADC may be useful for monitoring the therapeutic outcome after chemotherapy and/or radiation therapy.

CONCLUSION: When added to conventional MRI findings, DWI and ADC values provide additional information. DWI may play an important role in the diagnosis of patients with gynecological diseases.

O-30

Accuracy of axillary ultrasound in patients with suspected breast malignancy and its influence on patient management keeping histopathology as gold standard.

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AIMS AND OBJECTIVES: The aim of the study is to determine the diagnostic accuracy of axillary ultrasound in detecting axillary metastasis in patients having breast malignancy with histopathological outcome.

MATERIAL AND METHODS: It's a retrospective analysis of consecutive 60 patients with suspicious breast lump from the study period of Dec 2012 – April 2013. Percutaneous core biopsy was performed in all patients. Patients with confirmed breast malignancy were included in the study.

All patients underwent bilateral breast ultrasound including both axillae. The sonographic criteria include morphological appearance of the lymph node,

short axis, cortical thickness and presence of fatty hilum. Core biopsy was performed of lymph nodes suspicious on ultrasound. Patients with sonologically normal lymph nodes underwent Sentinel lymph node biopsy.

RESULTS: Total 60 patients with suspected breast lump included in the study. After core biopsy 6 Patients with periductal mastitis and abscesses were excluded. 4 patients were lost to follow with incomplete record. In 50 patients the sensitivity and specificity of axillary ultrasonography were 84% and 78% respectively. Rounded lymph node with loss of normal oval shape and effacement or loss of fatty hilum were sonographic findings with highest positive predictive value of 94%. The sensitivity and specificity of axillary core biopsy were 80% and 98% respectively.

CONCLUSION: Preoperative assessment of axillary metastasis is essential in patients with breast malignancies. Ultrasonography plays vital role in staging of the disease and its management.

O-31

Role of Imaging : Breast Cancer Diagnosis, treatment & management planning

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Breast cancer is the most common cancer in Pakistani females and is a leading cause of cancer death. Screening asymptomatic females, providing early diagnosis and treatment for symptomatic females leads to a significant reduction in morbidity and mortality associated with breast cancer. In western countries screening for breast cancer has led to 30% reduction in mortality. Radiology forms the forefront in detection of breast cancer in asymptomatic female with the use of screening mammography. Imaging plays a crucial part not only in an overall diagnosis but also detection specifically of tumor growth. This is possible due to the modality offering, image guided percutaneous biopsies, in preoperative staging which assists in further planning for definitive treatment. Radiologist help the breast imaging team by localizing the tumour prior to neoadjuvant chemotherapy by metallic clip and then bracketing the lesion for the breast surgeon for removal.

Imaging is also helpful in evaluating the axilla either by percutaneous needle biopsy or sentinel lymph node biopsy so that patient is saved from axillary dissection and its complications like lymph edema, limitation of shoulder movements etc.

Imaging is used for follow up of patients after treatment to detect local recurrence, and in patients with reconstructive breast surgery with implants MR imaging is used to evaluate the implants.

Nowadays breast cancer detection, diagnosis, treatment planning and post treatment follow up requires a multidisciplinary team approach in which radiology has proved a pivotal role.

O-32

3D/4D Ultrasound experience in gynae and obstetrics

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3D/4D studies greatly improve accuracy of diagnosis and in-fact reveal information never available before. The impact has been specially so in the evaluation of gynae obstetrics and breast.

In congenital uterine malformations like septate or subseptate, bicornuate uterus etc 3D/4D ultrasound is highly dependable and accurate tool. Similarly relations of fibroids with endometrial cavity are clearly appreciated in coronal plane.

The latest markers in malignant ovarian pathologies like dilated saccular and tortuous vessels with dichotomous branching is clearly appreciated in 3D/4D.

In screening down syndrome 3D/4D ultrasound has advantage in volume scanning and assessment of nuchal translucency which is almost 100% accurate.

Regarding facial abnormalities, behaviour, gesture of the fetus, it is 100% accurate. In cleft lip and palate, hypotelorism or hypertelorism, nasal bone length for any depression.

One of the software is an X-Ray mode or glass body rendering in which one can count the number of vertebrae, ribs and if any defect like spinabifida; 3D is very helpful in appreciating the lesion.

Last but not the least Cord Around the Neck (CAN) and the number of turns of CAN can be appreciated with very high accuracy.

I conclude that 3D/4D ultrasound is a future as a routine ultrasound and it is very essential due to multiplanar information, surface rendering, volume assessment, fetal behaviour, inter-colleague consultation, electronic transmission of data etc.

O-33

Liver Transplant: Overview, Radiological Perspective and Shifa experience of over 100 liver transplant patients

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BACKGROUND: Liver cirrhosis related to Hepatitis B or C has emerged as one of the leading causes of deaths in Pakistan. Disease burden in Pakistan is particularly high, Pakistan being ranked second in the list of Hepatitis C affected countries (WHO) with 7 % of our population having the disease (PMRC). The only definitive treatment of liver cirrhosis is liver transplant which has been in practice in the world for over a decade. In Pakistan, as yet, only a few centers, including Shifa International Hospital, have started performing the procedure. The programme was initiated in our hospital last year and to date more than 100 liver transplants have been performed.

SYNOPSIS OF PRESENTATION: In this presentation an overview of liver transplant history, surgical techniques and selection criteria will be presented briefly followed by a detailed discussion of pre, intra and post-operative role of radiologist in liver transplant. Radiological perspective including 3 D CT liver volumetry, hepatic arteriograms, venograms and biliary reconstructions, pre and post hepatic Doppler ultrasounds with expected post operative wave forms and velocities in hepatic and portal vasculature, and the role of interventional radiology in post operative care will be discussed. In the end a brief review of outcomes of our patients inclusive of our successes, failures and complications will be presented to assess where we stand according to the current world bench marks of hepatic transplant.

O-34

Living donor right liver lobes: Preoperative CT volumetric measurement as compared to intraoperative weight and volume

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PURPOSE: To compare pre-operative CT volumetric measurement of right hepatic lobe with intra-operative weight in living related liver donor transplant.

MATERIAL AND METHODS: A retrospective study was done in the Department of Radiology, Shifa International hospital in which CT scan of 75 liver donor candidates were reviewed from April 2012 to July 2014. The donors age ranged from 13-45 years of age. Out of 75 right lobe liver donors 56 were male and 19 were female donors. Data of 20 donors was excluded because their middle hepatic vein (MHV) was not included in the transplant procedure. The volume of right lobe of liver including the middle hepatic vein was measured on CT using summation of area method and compared to intra-operative weight

of right lobe of liver measured in the operation theatre by selected people with minimal personal variation. Linear regressions, means were calculated and the results were depicted as scatterplots.

RESULTS: The data was entered in SPSS 21 and results compiled. Pre-operative measurement of grafts resulted in a mean weight of 937 grams \pm 201 (standard deviation); intra-operative mean weight of the grafts was 745 g \pm 154 g (standard deviation)

All corresponding pre and intra-operative data correlated significantly (P value $<$ 0.01) with each other. The results showed positive linear regression and significant Pearson correlation of 0.858 (1 as taken highest).

CONCLUSION: The collected data and resulting data analysis indicates that CT volumetry is a reliable source of measuring preoperative weight of right lobe of liver in living donor liver transplant procedures.

O-35

Assessment of doppler indices of hepatic artery, portal vein and hepatic veins in adult living donor liver transplant patients in immediate postoperative period

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PURPOSE: To assess the peak systolic velocity, resistive index and acceleration time of the hepatic artery, the pre anastomotic, anastomotic and post anastomotic velocity of the portal vein and the waveform of the hepatic veins in adult living donor liver transplant patients in immediate post operative period.

MATERIALS AND METHODS: The peak systolic velocity, resistive index and acceleration time of the hepatic artery, the pre anastomotic, anastomotic and post anastomotic velocity of the portal vein and the waveforms of the hepatic veins were obtained in 22 patients who underwent living donor liver transplant, for 5 consecutive post operative days.

RESULTS: More patients are being included in the study and the results are being compiled.

O-36

Characterization of focal hepatic lesions by MR liver contrast agents

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Making an accurate diagnosis of focal Liver lesion is always been a challenge to radiology. Traditionally in Pakistan, focal lesions are picked up on ultrasound, followed up with contrast enhanced triphasic CT scan and finally diagnosed by ultrasound guided biopsy. Since MR has proven its superiority in soft tissue characterization of lesions in liver. It is considered to be more sensitive than CT due to multisequential tools with standard contrast enhancement for characterization of liver lesions. Now with introduction of liver specific contrast agents which is now having dual advantage of studying perfusion of a lesion as well as delayed hepatobiliary excretion of these agents in characterization. The impressive performances of the MR contrast are reaching quite close to biopsy less diagnosis of liver lesions. This talk will overview these new contrast agents, their major features used for making a diagnosis. The issues of availability of liver specific contrast agents in Pakistan will also be discussed.

O-37

Evaluation of patients undergoing TACE with respect to tumor size, site and number of lesions in comparison to CT triphasic study

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OBJECTIVE: To evaluate the tumor size, site and number of lesions come across during TACE in comparison to CT Triphasic study.

MATERIAL AND METHOD: A retrospective and prospective study that comprises 30 patients. Informed consent was taken from all patients. Department of Angiography Toshiba 100 KX compared with CT images.

RESULTS: The overall sensitivity of hepatic angiogram is 75% - 80%. Further on angiogram we found that the Right lobe of the Liver is more sensitive in having HCC lesion than the Left Lobe and the size of the HCC which we found in most of the patients during our study is >4cm.

CONCLUSION: We concluded that the conventional angiogram showed a high sensitivity 75 – 80% for the detection of small hyper vascular liver lesions compared with that of state-of-the art MDCT. Secondly we found that rate of HCC is higher in right lobe as compared to the left lobe. Further, we concluded that the commonest size of the HCC which we found in our patients during TACE is > 4cm.

O-38

Selective internal radiation therapy: The Plumber's View Experience from a tertiary care Centre

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INTRODUCTION: Selective internal radiation therapy is a new treatment proposed for unresectable liver lesions including primary and metastatic tumours. It enables us to safely deliver radiotherapy using millions of microscopic radioactive spheres selectively to the liver lesions without irradiating other structures. It improves progression free survival in metastatic setting and is well tolerated by the patients.

METHODS: A retrospective audit of 33 patients was carried out from March 2012 to January 2015. These patients were selected for the treatment after multidisciplinary team review in accordance with the NICE guidance. The clinical SIRT nurse specialist who performed a search on online system identified the patients. Imaging and clinical notes of all patients treated were reviewed. The data collection included patient demographics, stage of the disease, comorbidities, previous surgical hepatic interventions, side effects and outcome of the treatment. Microsoft Excel 2010 was used to collect and analyse the data.

RESULTS: In total, 33 patients were identified and treated. Those were a combination of trial, privately funded and NHS funded patients. 27% showed disease progression whereas 46% showed stable disease and 27% showed partial response on three monthly follow up. Common toxicities encountered were vomiting (12%), fatigue (15-21%), pain (30%) and gastritis (12%). Serious toxicities include radiation induced liver disease (3%), portal hypertension (3%), sepsis and bleeding at the site (3%) whereas, 27% of our patients have no adverse events to treatment.

CONCLUSION: Selective internal radiation therapy procedure is safe, effective and minimally invasive treatment option for unresectable liver tumours.

O-39

Diagnostic Accuracy of CT perfusion in detection of high grade pancreatic adenocarcinoma using PEI (peak enhancement intensity)

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OBJECTIVE: The objective of my study is to describe Accuracy of ct perfusion in detection of high grade pancreatic adenocarcinoma using PEI (peak enhancement intensity)

MATERIALS AND METHODS: Twenty four patients with locally advanced pancreatic adenocarcinoma were included in this study. Lesions were evaluated by P-CT and biopsy after patient's informed consent. P-CT parameters have been assessed on a large single and on 6 small intratumoral ROIs. Sensibility, specificity, positive predictive value (PPV), negative predictive value (NPV)

And accuracy in predicting tumor grading been have calculated for cut-off values chosen by using ROC curves.

RESULTS: Out of 24 lesions, 10 were classified as low grade and 14 as high grade. A statistically significant difference between high and low grade neoplasms were demonstrated for PEI and BV parameters. PEI cut-off values were 17.8 HU. PEI identified high neoplasms with a 60% sensitivity, 89% specificity, 90% PPV, 59% NPV and 72% accuracy.

CONCLUSIONS: PEI perfusion CT parameters proved their efficiency in identifying high grade pancreatic adenocarcinoma.

O-40

Magnetic Resonance Imaging in evaluation of perianal fistulae

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OBJECTIVE: To evaluate role of MRI in evaluating perianal fistulae; its role in preoperative classification and correlating it with post-operative surgical findings.

STUDY TYPE: Cross-sectional validation study

METHOD AND MATERIALS: Ongoing analysis of MRI scans done between February 2014 and January 2015 in patients with clinical diagnosis of perianal fistula. A total of 22 patients have been studied that include 19 (86.3%) males and 3 (13.6%) females. Body-coil MR Imaging was done using Philips 1.5 Tesla magnet. The sequences include: T1WI and T2WI axial oblique, T2WI and STIR coronal oblique, and post-gadolinium enhanced T1WI sagittal, axial oblique and coronal oblique planes. Scans were interpreted for presence of primary fistulous tract, its ramifications, internal opening, relation to anal sphincters and secondary abscess formation; and then graded according to St. James's University Hospital MR Imaging Classification of Perianal Fistulae". Correlation made with surgical findings, later recorded independently by surgeon and accepted as gold standard.

RESULTS: The sensitivity of MRI in correctly detecting and grading primary fistulous tract is 85%. The highest incidence of type of fistula came out to be transphincteric, followed by intersphincteric fistula. Associated abscess was also picked up in all cases.

CONCLUSION: MRI is the method of choice for evaluating perianal fistulae. It should therefore be used in preoperative evaluation for selection of most appropriate surgical treatment and thus minimize chances of fecal incontinence and recurrence.

O-41

Importance of small bowel feces sign on CT to assess grade and level of small bowel obstruction

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OBJECTIVE: To determine the frequency and importance of small bowel feces sign in assessing the grade and level of Small bowel obstruction.

MATERIAL AND METHODS: This retrospective study was performed at the Radiology and Imaging dept. Shifa International hospital, Islamabad from July 2012 to July 2014. 110 cases of small bowel obstruction, studied with 320 SLICE CT (TOSHIBA equilon) in the last 2 years, were retrospectively evaluated to identify the small bowel feces sign above the level of obstruction.

RESULTS: The small bowel feces sign was identified in 29 cases of small bowel obstruction within ileal loops. The sign was present in moderate to high grade small-bowel obstruction. The length of fecal like material ranged from 4 to 27 cm and was longer in moderate and high-grade SBO.

CONCLUSION: In our experience this sign is generally present in sub-acute obstruction. The sign seems to be rather specific and may represent a useful accessory diagnostic element. When present on CT, the small bowel bowel feces sign can be used to help locate the transition zone in patients with SBO. The sign is present more frequently in patients with moderate and high degrees of SBO.

O-42

Diagnostic Accuracy of Magnetic Resonance Imaging in Assessing Response to Neoadjuvant Therapy in Locally Advanced Rectal Cancer.

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PURPOSE: Magnetic Resonance Imaging (MRI) of pelvis is the imaging modality of choice for the preoperative staging in rectal cancer. Assessing response following Neoadjuvant therapy in locally advanced rectal cancers can be difficult due to the treatment related changes. MRI has been shown to predict the circumferential resection margin (CRM) as well as pathological tumor stage with reasonable accuracy. We aim to evaluate this relationship in our population.

MATERIALS AND METHOD: Medical records of patients undergoing surgery for rectal cancer following neoadjuvant therapy at our institution in the preceding 12 months were reviewed. Data was collected regarding CRM, T and N stage on MRI at presentation, MRI after neoadjuvant therapy and histopathology of resected specimen. Concordance of post-treatment MRI and histopathology was evaluated.

RESULTS: A total of 38 patients underwent surgery for rectal cancer after neo-adjuvant therapy between August 2013 and July 2014. Median age was 42.5 years. Most patients had T3 or above tumor (97%) or nodal involvement (95%) on MRI at presentation. Following Neoadjuvant Therapy, Post-treatment MRI scan showed downstaging in 35% of Tumors and 52% of Nodal status. MRI showed 100% sensitivity and 53% specificity in differentiating T3-T4 disease Vs T0-T2. The sensitivity and specificity of picking up node positive disease was 87% and 48%. Sensitivity and specificity to detect CRM involvement was 50% and 64% respectively.

CONCLUSION: Our results suggest a high sensitivity of MRI in prediction of pathological advanced T-stage and node positivity. The role of MRI in assessing response to neoadjuvant therapy needs to be assessed further using standardized MRI and histopathological evaluation in a larger study population.

O-43

Interventional sialography

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The Salivary stones and strictures are the most common cause of unilateral parotid or submandibular gland swelling. Traditionally, these patients treated by open surgery submandibular stones are still the most common cause of submandibular gland resection parotid gland resection is less frequent as it is major surgical procedure with postoperative complication like facial nerve paresis. The common cause of stone formation is obstruction, stricture formation leading to stasis of saliva, dehydration, change in salivary pH associated with oropharyngeal sepsis.

Over the last two decades, increasing awareness for minimally invasive treatment and with development of interventional radiological procedures for the management of obstructive sialadenitis has led to avoid surgical removal of gland and complications associated with surgery.

The interventional sialographic procedures can be used to remove salivary duct stones and is treatment of first choice in salivary duct strictures (Balloon ductoplasty). For stone removal and stricture dilatation local anesthesia, I/V cannulas of different sizes, balloon dilators and wire baskets are used under fluoroscopy. The wire guided sialographic technique is used for sialography and the I/V cannula used for sialography is used as access for interventional sialography.

For salivary glands mass or parasaiolomas needs tissue diagnosis. Biopsy FNAC/ True cut under Ultrasound or CT Guidance is performed.

O-44

Vascular Interventions in Liver Diseases

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O-45

Radiological Management of HCC

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O-46

Modified balloon assisted puncture technique for placement of dialysis venous catheters in partially or completely occluded central veins

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We describe a modified technique of balloon assisted puncture for placement of dialysis venous catheters in partially or completely occluded central veins following anetgrade recanalization with balloon angioplasty.

MATERIAL AND METHOD: Retrospective review of patients for whom we placed tunnelled dialysis catheters for partially or fully occluded central veins, by initial recanalisation with balloon angioplasty and subsequent balloon aided puncture. Data was collected regarding complications, duration of usage and reason for catheter removal. The procedures were performed in Interventional Radiology Centre at Singapore General Hospital from January 2014 to November 2014. The technique was utilized in a total of 11 patients during this period.

RESULTS: Total of eleven patients underwent catheter placement using this technique and followed up for their proper working or removal due to malfunctioning due to any reason. Six patients have been using the same catheter for four to seven months without any problem. One patient's catheter was removed in four months due to maturation of fistula. One patient had his catheter exchanged twice during three months due to aspiration difficulty during dialysis however the catheters could be exchanged over wire through the same tract with fibrin sheath disruption.

DISCUSSION: Balloon angioplasty is a well-documented and attractive option of recanalization of vessels however data is sparse regarding the techniques utilized for venous catheter placements in these patients.

Authors have described methods for vascular access in partially or completely occluded central veins. Dilator venotomy technique, utilizing Snare to pull wire have been utilized. Horton reported a technique in which a patent arm or neck vein is punctured and a sheath is advanced across occluded central vein which is then used as a target for puncture and as a portal to advance a guide wire into the superior vena cava.

The balloon assisted puncture method can also be used here as well to pull down the wire into the central vein post angioplasty. The advantage of the balloon assisted puncture here is that there is no need to use a snare, which costs more than a balloon.

CONCLUSION: Anetgrade recanalization of partially or completely occluded central veins via a proximal puncture site and subsequent balloon aided puncture

of a distal vein is a safe technique to insert a dialysis catheter is a safe and effective technique with the additional benefit of preserving other central veins for future use.

O-47

Radiological percutaneous gastrostomy-Experience at a tertiary care oncology hospital

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BACKGROUND: Radiological percutaneous gastrostomy (PG) is an alternative to percutaneous endoscopic gastrostomy (PEG) with comparable results and is especially important in patients with head and neck primaries with limited mouth opening. Also if PEG fails, radiological PG avoids the perioperative anesthesia risks and has less morbidity. The aim of this review was to analyze our institutional experience.

SUBJECTS AND METHODS: Five year data was retrieved from patient records which showed a total of 88 radiological gastrostomies. Amongst those, 25 patients were randomly selected and the indication, procedure details and complications reviewed by review of clinical notes. Data was analyzed in SPSS 20. The indications as well as complications were calculated as frequency and percentage.

RESULTS: Amongst 25 patients Majority 7 (28%) of the patients were 31-40 years of age and 21 (84%) were females. Only 2 (8%) patients had primary site of disease outside head and neck. One of these had a primary SCC of cervix with neck nodal mets which were causing dysphagia, one patient had endometrial serous papillary CA with metastatic mediastinal nodes and resulting dysphagia. Most common primary site of disease (8 patients) was hypopharynx (post cricoid region and pyriform sinuses). Endoscopy had failed in 7 patients (one patient couldn't tolerate procedure while scope could not be passed in the rest) Endoscopy was not considered mainly due to limited mouth opening in 18 (72%) patients.

Amongst early complications, procedure failed in 1 case but patient remained uneventful. One patient had peritonitis post PG requiring surgery. She died of multi organ failure and sepsis one month after laparotomy.

Only one patient had PG site infection and another had accidental tube dislodgement after 9.5 months and needed surgical gastrostomy. Rest of the patients used PG uneventfully.

CONCLUSION: PG is a safe minimally invasive procedure which is a useful alternative to PEG in patients with limitations of endoscopy avoiding surgery and anesthesia related risks.

O-48

Efficacy of fine needle aspiration cytology of axillary lymph nodes in patients with primary breast cancer using sentinel lymph node biopsy as standard reference

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OBJECTIVE: To determine efficacy of fine needle aspiration cytology of axillary lymph nodes in patients with primary breast cancer using sentinel lymph node biopsy / ALND as standard reference.

BACKGROUND: The use of fine needle aspiration cytology (FNAC) in the investigation of lymphadenopathy has become an acceptable and widely practiced minimally invasive technique, which is safe, simple, rapid and relatively pain-free. Reported sensitivities and specificities in the literature were 40% to 87%, and 56% to 100%, respectively.

Sentinel lymph node biopsy (SLNB) was developed to decrease morbidity and avoid unnecessary axillary lymph node dissection (ALND). Nevertheless, SLNB is still an invasive, technique-dependent, and time-consuming procedure.

FNAC may be applied routinely before operation due to its high specificity and PPV.

METHODS: A comparative prospective study was conducted at women imaging department of ShaukatKhanum memorial cancer hospital with new patients from January 2014 till October 2014.

A total of 556 patient's axillae were examined. All patients were female with mean age of 50yrs (32yr-68yr).

Preoperative ultrasonography with subsequent fine-needle aspiration cytology in case of suspicious lymph nodes was performed in all patients. using 25 G hypodermic needles under local anesthesia.

The sentinel node procedure was omitted in patients with tumor-positive axillary lymph nodes in lieu of axillary lymph node Dissection.

Patients in whom no sonographic abnormality was noted or those who had negative results on ultrasound-guided fine-needle aspiration biopsy of sonographically abnormal nodes underwent sentinel node mapping followed by a complete axillary dissection if positive sentinel nodes were detected. The efficacy of the diagnostic tool i.e. Ultrasound Guided fine-needle aspiration biopsy was calculated.

RESULTS: A suspicious lymph node was seen on ultrasound image of 480 of this 556 axilla, thus prompting fine needle aspiration. Malignant cells were identified on cytology slides in 160 axilla and were confirmed after ALND. 320 of these FNAC negative patients and 76 U/S not- suspicious axillae underwent SLNB; out of which 83 were positive. Of the axilla with an ultrasonographically suspicious lymph node and negative cytological results, 21% contain a tumor positive sentinel nodes, of which 66 percent at macro metastasis disease (>2mm).

In the end, 243 axilla were tumor positive, which is 43.7 % of the total of 556 axilla. The sensitivity and specificity of the fine needle aspiration cytology, are listed in the table. No complications occurred as a result of free fine needle aspiration cytology.

CONCLUSION: Ultrasound guided FNAC of axillary lymph node is an effective procedure with rapid access. Due to its high specificity and PPV it may play a role in sparing SNLB and proceeding to ALND or neoadjuvant chemotherapy.

O-49

Comparison of diagnostic yield and complication rates of core biopsy with FNAC in CT guided sampling of lung lesions

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PURPOSE: We are conducting this study to compare the diagnostic yields and complication rates associated with transthoracic needle biopsy using small bore FNAC and larger bore core biopsy gun needles.

METHODS: A retrospective data analysis was conducted after IRB approval. Data for a total of 246 patients who had undergone CT guided FNAC/ biopsy of lung lesions during the preceding 6 years (July2008-14) in the department of Interventional radiology was collected and analysed. The hospital data base system and patients medical record was used for collection of data.

RESULTS: Data of 246 patients who underwent CT guided biopsies of lung lesions was analysed. Ages of patients ranged from 8 to 97 years. 181 patients were male (73%) and 95 were female (37%). Patients were divided into three groups based on type of needle used (FNAC vs. core biopsy and both). Core biopsy gun was used in a total of 128 patients. Of the rest, 92 patients underwent sampling with 22 G needle and 35 with both. 37 (5.8%) suffered from pneumothorax of varying severity. Of these 21 cases (22.8%) occurred in patients who had undergone sampling with 22 G needle, 12 cases (9.3%) in patients who underwent sampling with biopsy gun and 4 cases (11%) in patients

who had sampling with both needles synchronously. Two patients developed self limiting hemoptysis (one in each group). In 25 patients (10%), cytology/histopathology was inconclusive either due to scanty sample, hemorrhagic aspirate or necrotic tissues in which re-sampling was suggested.

CONCLUSION: Our preliminary results show that pneumothorax rates are higher in patients undergoing transthoracic needle biopsy of lung lesions with FNA needles than with core biopsy needles and both have similar diagnostic yields.

O-50

Endovascular management of varicose veins

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UAE

O-51

Arterial interventions for limb salvage

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O-52

Microbiological profile and antibiotic resistance patterns in bile culture growths in patients undergoing PTBD at a single Interventional radiology center

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PURPOSE: We are conducting this study to determine the microbiological profile of organisms on bile culture growths obtained at the time of biliary tract interventions (PTBD) in our department and analyse the resistance patterns to see if they are sensitive to locally used empirical antibiotic therapy.

METHODS: A retrospective data analysis was conducted in a single centre after IRB approval. Data for a total of 169 patients who had undergone PTBD or biliary stenting during the preceding 3 years (2010-13) in the department of interventional radiology was collected and analysed. The hospital data base system and patients medical record was used for collection of data.

RESULTS: Medical record of 169 patients was reviewed and analysed who had undergone PTBD or stenting in the department of interventional radiology at our centre. Ages of patients ranged from 27 to 90 years. 95 patients were male (56.5%) and 73 were female (43.5%). Bile cultures were obtained at the time of drainage catheter or stent placement in 39 patients. Of these, 24 yielded positive growths (61.5%) and 15 samples did not yield any growth (38.5%). 9 positive growths yielded polymicrobial growth (37.5%) and 15 were monomicrobial (62.5%). The most frequent organisms were E. Coli, Klebsiella pneumonia and Pseudomonas. Preliminary results show significant resistance to antibiotics in the strains cultured. 80 % of Pseudomonas strains were resistant to imipenem, gentamicin and ciprofloxacin and 40% were resistant to ceftazidime. Of the E. Coli growths cultured, 85.7% were resistant to cefexime, ceftazidime, ceftiprome and ceftriaxone.

CONCLUSION: Our results show that bile cultures obtained at the time of interventional procedures of the biliary tract yield predominantly gram negative organisms with high resistance to commonly used empirical antibiotics. The clinicians involved in the care of these patients should keep these findings in mind to effectively administer optimal empirical antibiotic therapy for effective management and prevention of life threatening infections.

O-53

Role of flow diverters in intracerebral aneurysms

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UAE

O-54

MCA Aneurysm coiling without assisted technique, single venture experience

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O-55

Use of apparent diffusion coefficient (ADC) in defining the stages of ischemic Stroke

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BACKGROUND: To study the rules that apparent diffusion coefficient (ADC) changes with time and space in cerebral infarction, and to provide the evidence in defining the infarction stages as DWI which detects changes in diffusion of water molecules associated with cytotoxic edema, has shown promise in early lesion localization

METHODS: 117 work-ups in 98 patients with cerebral infarction (12 hyperacute, 43 acute, 29 subacute, 10 steady, and 23 chronic infarctions) were imaged with both conventional MRI and diffusion weighted imaging. The averageADC values, the relative ADC (rADC) values, and the ADC values or rADC values from the center to the peripheryof the lesion were calculated.

RESULTS: The average ADC values and the rADC values of hyperacute and acute infarction lesion depressed obviously. rADC values in hyperacute and acute stage was minimized, and increased progressively as time passed and appeared as “pseudonormal” values in approximately 8 to 14 days. Thereafter, rADC values became greater than normal in chronic stage. There was positive correlation between rADC values and time ($P < 0.01$). The ADC values and the rADC values in hyperacute and acute lesions had gradient signs that these lesions increased from the center to the periphery. The ADC values and the rADC values in subacute lesions had adverse gradient signs that these lesions decreased from the center to the periphery

CONCLUSION: The ADC values of infarction lesions have evolution rules with time and space. The evolution rules with time and those in space can be helpful to decide the clinical stage, and to provide the evidence in guiding the treatment or judging the prognosis in infarctionspecially when time of symptom onset is unclear on when multiple ischemic lesions of different ages are present at the same time.

O-56

Sensitivity of detection of intracranial haemorrhages: Comparison between SWI, GRE and CT

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PURPOSE: To compare the sensitivity of MR SWI with GRE and CT in detection of intracranial haemorrhages. SWI is a new technique that provides innovative source of contrast accentuation visualizing the changes in magnetic susupetibility caused by different substances.

MATERIALS AND METHODS: Retrospective study was performed on 100 patients from June to September 2013 who were referred to Shifa International hospital, Islamabad for various intracranial pathologies with suspected element of haemorrhage. Patients with underlying brain tumors, vascular anomalies, trauma, acute, subacute or chronic haemorrhages were included in the study. Both intra and extra axial bleeds were observed.

RESULTS: 31 patients fulfilled these criteria and constituted our study group. Our initial results show that SWI is sensitive enough to demonstrate haemorrhage

in 30 out of 31 patients (96%), GRE in 21 out of 27 patients (77%) and CT in 11 out of 31 patients (35%). Results are being compiled.

CONCLUSION: SWI is the most sensitive sequence in current time for detection of haemorrhage in intracranial pathologies.

O-57

Collateral Circulation in Stroke

Saadat Kamran

Qatar

O-58

Endovascular management of stroke

Prof. Osama Yasin

Egypt

O-59

Mechanical thrombectomy in stroke patients in Pakistan

Umair Rasheed

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O-60

The role of Diffusion Tensor Imaging in the surgical management of Cerebral Tumours

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BACKGROUND AND PURPOSE: Diffusion tensor imaging (DTI) is an advanced MR technique that describes the movement of water molecules by using two metrics, mean diffusivity (MD), and fractional anisotropy (FA), which represent the magnitude and directionality of water diffusion, respectively. We hypothesize that alterations in these values within the tissue surrounding brain tumors reflect combinations of increased water content and tumor infiltration and that these changes can be used to differentiate high-grade gliomas from metastatic lesions.

METHODS: DTI was performed in 12 patients with high-grade gliomas and in 12 with metastatic lesions. DTI measurements were obtained from regions of interest (ROIs) placed on normal-appearing white matter and on the vasogenic edema, the T2 signal intensity abnormality surrounding each tumor.

RESULTS: The peritumoral region of both gliomas and metastatic tumors displayed significant increases in MD ($P < .005$) and significant decreases in FA ($P < .005$) when compared with those of normal-appearing white matter. Furthermore, the peritumoral MD of metastatic lesions measured significantly greater than that of gliomas ($P < .005$). Peritumoral FA measurements, on the other hand, showed no such discrepancy.

CONCLUSION: When compared with an internal control, diffusion metrics are clearly altered within the vasogenic edema surrounding both high-grade gliomas and metastatic tumors, reflecting increased extracellular water. Although peritumoral MD can be used to distinguish high-grade gliomas from metastatic tumors, peritumoral FA demonstrated no statistically significant difference. The FA changes surrounding gliomas, therefore, can be attributed not only to increased water content, but also to tumor infiltration.

O-61

Role of Perifocal Diffusion Imaging in Differentiating High and Low Grade Gliomas

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INTRODUCTION: Gliomas are associated with poor prognosis with median survival of patients with high grade gliomas of 1-2 years. It is of prime importance to assess brain tumor grade at the time of diagnosis for adequate

management. Diffusion imaging, besides conventional imaging plays an important role in the pre-operative diagnosis and grading of brain tumors. Our aim was to assess water diffusivity within the brain parenchyma surrounding gliomas. We hypothesized that perifocal apparent diffusion coefficient (ADC) values will differ between high- and low-grade gliomas.

METHODS: Twenty-one treatment-naïve patients with pathology proven gliomas (WHO grade II = 5; grade III-IV = 16) were retrospectively evaluated. MRI data obtained before treatment initiation were collected. A tumor volume-of-interest (tumor VOI), including the lesion and any surrounding T2 prolongation, was outlined on FLAIR. Eight incrementally dilated VOIs around the tumor VOI were obtained in 3D ranges away from the tumor VOI for a distance of 4 cm, with 5 mm incremental steps (0-5, 5-10, 10-15, 15-20, 20-25, 25-30, 30-35 and 35-40 mm). A VOI was drawn within the contralateral normal-appearing white matter (NAWM) in the centrum semiovale. After exclusion of the contralateral hemisphere and cerebrospinal fluid, the mean and lowest 25th percentile (Q1) ADC values within the dilated perifocal VOIs were obtained using in-house Matlab software and normalized to the contralateral NAWM ADC. Mann-Whitney test and receiver operating characteristics (ROC) curves were used for statistical analyses. Results were considered significant when $p < 0.05$.

RESULTS: Normalized mean and Q1 ADC values of the dilated perifocal VOIs were different between the high- and low-grade groups, with lower ADC values in the high-grade gliomas group. Specifically, mean ADC values were significantly different in the 3D range of 10 to 25 mm away from the tumor VOI (from the center to the periphery: mean ADC at 10-15 mm $p = 0.026$; at 15-20 mm $p = 0.026$; at 20-25 mm $p = 0.013$). Q1 ADC values were significantly different in the 3D range of 10 to 30 mm away from the tumor VOI (from the center to the periphery: Q1 ADC at 10-15 mm $p = 0.013$; at 15-20 mm $p = 0.008$; at 20-25 mm $p = 0.010$; at 25-30 mm $p = 0.017$). ROC analyses revealed greatest area under the curve (AUC) for the perifocal normalized Q1 ADC 20-25 mm away from the tumor VOI (AUC = 0.9 [confidence interval = 0.724-1]). Normalized average Q1 ADC values (SD) 20-25 mm away from the tumor VOI were respectively 1.05 (0.03) for low-grade and 0.98 (0.05) for high-grade tumors.

CONCLUSION: Perifocal ADC measurement in gliomas may reflect the magnitude of tumor infiltration beyond the abnormality on conventional MRI. Perifocal ADC measurements could be helpful in determining tumor aggressiveness and thereby potentially guiding patient management.

O-62

The role of Color Duplex Sonography in the diagnosis of Temporal Arteritis

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AIM: To determine the diagnostic accuracy of color duplex sonography in the diagnosis of temporal arteritis as an alternative to temporal artery biopsy.

MATERIAL AND METHODS: This cross sectional study was conducted at Services Hospital between October 2014 and January 2015. We included 25 cases with a clinical suggestion of active temporal arteritis. 9 patients were male and 16 were female with a mean age 75 yrs. Color duplex sonography was performed with a linear array transducer (5-10 MHz) to assess temporal artery morphologic characteristics before a biopsy was performed. The main sonographic criterion for a positive diagnosis was visualization of a hypochoic halo around the temporal artery. Other criterion include stenoses, expressed by segmental increases of blood flow velocity, and occlusions, expressed by the absence of flow in the temporal artery.

RESULTS: The color duplex sonographic findings were positive in 20 of 25 patients with a clinical suggestion of giant cell arteritis. The diagnosis was confirmed by biopsy in 16 patients; there were 4 false-positive results and 1

false-negative result by duplex sonography. The presence of unilateral halo alone yielded 81% sensitivity and 90% specificity for GCA in our study, while the specificity reached 100% when halos were found bilaterally.

CONCLUSION: The use of non invasive high-resolution color duplex sonography may replace biopsy in the diagnosis of giant cell arteritis.

O-63

MRI based approach to the diagnosis of white matter disorders

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White matter disorders or leukoencephalopathies are commonly progressive in nature and ultimately fatal. Genetically inherited white matter disorders are known as leukodystrophies. Diagnosis is often difficult and delayed which causes great emotional and financial stress. Pattern of white matter involvement in leukodystrophies is fairly constant in patients with same disorder. These changes are better visualized on MRI and have proven to be of greater diagnostic value. Serial MRI helps to differentiate between hypomyelination and other white matter disorders. MRI categorizes the lesions into a disease or a group of diseases depending on whether lesions are confluent or patchy, the predominant localization of the lesions and associated abnormalities. Good clinical history and neurological examination is along with MRI findings narrow down the differential diagnosis rapidly and decreases parent's anxiety and allows the rapid institution of appropriate therapy, if available.

Major advances in the field are at higher field strengths. Even in previously well characterized disorders, MRI patterns have shed light on disease mechanisms. MRI with newer advances has proved to be an excellent modality in diagnosis and prognosis of white matter diseases.

O-64

MRI brain in Moya Moya disease in pediatric population

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OBJECTIVE: To determine the role magnetic resonance imaging (MRI) brain in diagnosis of rare disorder of Moya Moya disease in pediatric age group.

MATERIALS AND METHODS: This observational descriptive study was conducted at Department of Radiology Khyber Teaching Hospital Peshawar from July 2011 to July 2013. Clinical data of a total of four cases of Moya Moya disease were reviewed. Recurrent stroke was the presenting complaint in all these patients. MRI brain was done in all patients.

RESULTS: A total of four patients (03 male and 01 female) MRI brain presenting with recurrent strokes with mean age of 7.4 years (age range 4- 11 years) were analyzed in the Department of Radiology Khyber Teaching Hospital Peshawar. T2W, FLAIR and DWI as well as Gadolinium enhanced T1W sequences of MRI brain were evaluated and different findings suggesting Moya Moya disease were studied and followed by confirmation on MR cerebral angiograms.

CONCLUSION: Acute stroke is an unusual disease of pediatric age group therefore always search for a cause on imaging in these patients. Moya moya is a rare disease and can present as recurrent strokes in children so it is necessary to do MRI brain including MRA in these patients.

O-65

Prevalence of occult spinal dysraphism in paediatric population with urinary incontinence and its relation to Micturating cystourethrogram findings

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OBJECTIVE: To determine the prevalence and significance of spina bifida occulta in children with urinary incontinence.

STUDY: Cross sectional validation study

MATERIAL AND METHODS: This is an ongoing study being conducted at Department of Diagnostic Radiology, Children Hospital, Pakistan Institute of Medical Sciences, Islamabad from October 2014 to date. MCUG was done in 20 patients presenting with urinary incontinence and radiological evidence of spina bifida occulta.

RESULTS: MCUG was performed in 20 cases including 8 (40 %) males and 12 (60 %) females, ranging in age from two to twelve years. 16 patients with spina bifida occulta showed urinary tract complications on MCUG with overall sensitivity of 80%. Patients with radiological evidence of spina bifida occulta at S1 and S2 vertebral levels had a significantly increased prevalence of urinary tract complications as found on MCUG.

CONCLUSION: Significant correlation is seen between urinary tract complications and the evidence of occult spinal dysraphism.

O-66

Plain radiology in paediatric metabolic disorders

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O-67

Paediatric musculoskeletal ultrasound

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O-68

MR urography in pediatric uropathies with dilated urinary tracts

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OBJECTIVE: To determine the diagnostic value magnetic resonance (Mr) urography. In children with urinary tract dilatation.

MATERIAL AND METHODS : Twenty five children between the ages of 3 months and 14 years (20 males and 5 females) Were evaluated with T2 weighted and contrast enhanced T1 weighted MR sequences. Results were compared with findings obtained with ultrasonography (25), IVU (18), DTPA sinctigraphy (16) and micturating cyst our strong rap by (10).

RESULTS: MR urography provided a superior imaging of urinary system dilation, site and etiology of Obstruction than did conventional imaging methods. MR urography that used T2 weighted sequences demonstrated 29 of 30 (90%) abnormal renal collecting system, 14 out of 20 (65%) showed normal renal systems by heavily T2 weighted sequences. Forty five out of 50 (90%) renal systems could be shown by T1 weighted sequence. With this sequence five collecting system Keywords jpoor renal function could not be shown.

CONCLUSION: MR urography may replace conventional , invasive urological methods in children.

O-69**Evaluation of congenital heart diseases in children using cardiac CT angiography- What a radiologist should know**

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PURPOSE: To focus on the fundamentals and essentials of cardiac computed tomography (CT) angiography in children.

MATERIALS AND METHODS: Over a one year period we prospectively enrolled children with congenital heart diseases referred for diagnostic CT angiography after initial assessment by echocardiography. A total of 42 patients were scanned using Toshiba 128 slice CT scanner. Short sedation time was required ranging between 2 and 10 minutes. Cardiac CT was performed and 3-dimensional reconstructions were created for all patients and reviewed on Vitrea workstation. ECG gating, to minimize heart motion, was performed in all patients. Imaging protocols were customized to reduce radiation dose. After consultation with the referring cardiologist or surgeon, the bolus-tracking device was placed on the specific anatomic part of greatest clinical interest. The accuracy of MDCT in detecting separate cardiovascular anomalies was calculated.

RESULTS: A total of 42 patients were included in the study. The accuracy of MDCT in diagnosing cardiovascular anomalies was 98% considering surgical findings or conventional angiography as the gold standard. Coarctation of aorta was seen in 23%(n=10), tetralogy of fallot in 21%(n=9), transposition of great arteries in 11%(n=5), patent ductus arteriosus in 9 %n=4), double SVCs in 9%(n=4), pulmonary agenesis in 2%(n=1), interrupted aortic arch in 2%(n=1), total anomalous pulmonary venous return 2%(n=1) and heterotaxy syndrome in 2(n=1). Six (14%) patients came for evaluation of blalock taussig shunt and Glenn shunts.

CONCLUSION: Multidetector cardiac CT angiography provides important complementary information for the referring cardiologist and cardiac surgeons regarding congenital cardiovascular anomalies in children producing accurate diagnostic images in less time with markedly decreased sedation and radiation dose.

O-70**Magnetic resonance cholangiopancreatography in diagnosis of biliary disorders in children - sharing our experience-**

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OBJECTIVE: The purpose of this study was to evaluate role of Magnetic Resonance Cholangiopancreatography in the diagnosis of biliary disorders in children.

STUDY DESIGN: Cross Sectional & Retrospective.

PLACE & DURATION OF STUDY: Department of Radiology, Aga Khan University Hospital, Karachi. From August 2005 to December 2013.

METHODS: All children from age of 1 day to 17 years who had undergone MRCP examination for suspected pancreatobiliary disorders were included in the study. We found 50 such cases from our electronic data base. Clinical presentation, MRCP findings, other imaging investigations, operative findings and histo-pathological results were all recorded from our electronic patient files. Sensitivity & specificity of MRCP for different disease entities was calculated.

RESULTS: Out of 50 patients, 14 patients showed MRCP findings of choledochal cyst. 11 of these patients undergone surgery and operative findings were consistent with choledochal cyst. Three patients had cholelithiasis or pseudolithiasis which were all confirmed either by ultrasound or surgery. One patient had pancreatic duct stone which was also confirmed on subsequent ERCP. One showed abnormal signals in right lobe suggestive of neoplasm; this patient undergone trucut biopsy and found to have myofibroblastic tumor. We found MRCP 91% sensitive and 100% specific for diagnosis of choledochal

cyst with diagnostic accuracy of 98%. Our experience also finds MRCP to be 100% sensitive and specific in diagnosis of gall stones and pancreatic duct stones.

CONCLUSION: MRCP is a very accurate non invasive investigation for diagnosis of biliary disorders specially in children where invasive means of diagnosis are not only difficult but also dangerous. It can not only replace need of ERCP but also can answer questions where CT and ultrasound fails.

O-71**Utility of Obstetric Ultrasound in Research**

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BACKGROUND AND INTRODUCTION: Preterm birth complications are leading cause of neonatal deaths globally. Gestational Age (GA) assessment remains challenge in low and middle income countries (LMICs) because women present late in pregnancy. Resulting in poor recall of first day of last menstrual period (LMP), difficult access to ultrasound and unreliable biometrics related to intrauterine growth retardation, and Ballard Scoring been limited to access to medical professional.

Study Title 1. RELIABILITY AND VALIDITY OF A PROGRAMMATICALLY FEASIBLE METHOD FOR ACCURATE ASSESSMENT OF GESTATIONAL AGE

OBJECTIVES: Objective is to identify programmatically feasible method for accurate assessment of gestational age in LMICs to allow mid-level program workers to identify newborn to life-saving specialized care.

METHODOLOGY: Prospective cohort study is in progress at two peri-urban sites of Karachi, Ibrahim-Hyderi and Rehri-Goth, following 2000 pregnant women and their newborns. Ultrasound pregnancy dating (through fetal biometrics: crown rump length for <14 weeks, and Bi Parietal Diameter and Femur Length for 14 weeks) is done for women self-reporting LMP <20 weeks, delivering in study settings and consenting, by trained and experienced study sonologists blinded for LMP. For pregnancies between 8 week and <20 weeks, all live births are assessed within 72 hours of birth by trained and standardized mid-level program worker. The field workers are blinded of LMP and GA at ultrasound before newborn examination which includes neuromuscular maturity (Ballard and Dubowitz scoring), physical assessment, infant anthropometry and feeding maturity. Pregnancies >20 weeks, intrauterine dead (IUD) fetous, and refusals are excluded.

RESULTS: Since January 1, 2014 this study is in progress, and up till 31 December 2014, 2005 with LMP <20 weeks were ultrasound was done, enrolling 1725 women and excluding 280 due to gestation 20 weeks, IUD and non-pregnant. From enrollments, 969 pregnancies ended with 1.5% of twin outcomes and 98.5% singleton birth. In the current cohort, 88.6% of live births assessed within 72 hours. Preterm birth rates were ---/1000 live birth with --% early preterm and ---% preterm; 54.5/1000 live births abortion and 27.8/1000 live births stillbirths.

CONCLUSION AND RECOMMENDATIONS: Validation analysis will be conducted after target of 2000 babies is achieved. At end of this study we will have validated clinical tool which is programmatically feasible for ascertainment of GA.

O-72**Radiographic evaluation of joint changes in Juvenile Idiopathic Arthritis**

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AIM: To evaluate the spectrum of joint changes using radiography as a tool in patients with Juvenile Idiopathic Arthritis at presentation.

STUDY DESIGN: Observational study on prospective data.

PLACE AND DURATION OF STUDY: Department of Diagnostic Radiology of The Children Hospital and The Institute of Child Health, Lahore, from October 2006 to October 2009.

PATIENTS AND METHODS: 72 patients fulfilling the American college of rheumatology (ACR) criteria of JIA referred from the Rheumatology Clinic were enrolled in the study. Radiographs of both hands PA and knees AP were obtained and interpreted by a single paediatric radiologist. Other views were obtained in individual cases when required clinically. Statistical analysis of data was done on SPSS version 16.0.

RESULTS: Amongst a total of 72 patients, 59 (82%) had polyarthritis, followed by oligoarthritis and systemic onset disease in 12 (17%) and 1 (1%) respectively. RA factor was negative in 64 (88.9%). Late joint changes were observed in 20 (27.7%) patients with erosions in 8 (11.1%), boutonniere deformity in 10 (13.9%), swan neck deformity in 07 (7%) and ankylosis in 2 (2.7%) patients. Regarding late changes maximum number of patients, that is 8, were in the age group 12 to 14 years, 14 (70%) were females, 18 (90%) had polyarticular type of JIA and their duration of illness at presentation was mostly between 5 to 8 years. Further evaluating patients with erosions, age range was from 8 to 15 years, 5 (62.5%) were females, 6 (75%) had polyarticular type of JIA and their duration of illness at presentation was mostly between 3 to 5 years.

CONCLUSION: Plain radiography, a readily available diagnostic modality remains the initial investigation in the evaluation of joint changes in children with JIA and its differential diagnosis. Children presenting late are at an increased risk of developing erosions which in particular can be assessed reliably in addition to monitoring of disease progression and detecting complications.

O-73

Chest interventions & radiological management of haemoptysis

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IR has a vital role in the management of chest diseases. Severe haemoptysis is a life threatening condition which requires emergency intervention. First goal is to assess the patient to identify the cause of bleeding and 2nd goal is to stop the bleeding by radiological intervention as a life saving measure. Diagnostic and Interventional radiology has a vital role to play in these patients, both in the diagnosis and treatment.

This talk is focused on the etiology of haemoptysis and how interventions including BAE (bronchial artery embolization) and Pulmonary artery embolization could be life saving in these cases.

O-74

Multidetector CT coronary angiographic findings in diabetics with suspected coronary artery disease

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BACKGROUND: Ischemic heart disease is a biological, dynamic process with the active participation of different risk factors. Type 2 diabetes mellitus (T2DM) is a major risk factor for cardiovascular disease and is associated with significant cardiovascular morbidity and mortality that is two to four times higher than that occurring in individuals without diabetes. Recently, multidetector computed tomographic (CT) coronary angiography has emerged as a noninvasive tool for the diagnosis of CAD that enables assessment of the vascular lumen together with the arterial wall as well as for ruling out CAD, especially in patients with an intermediate likelihood of CAD or when testing for ischaemia is equivocal. It also has the potential to characterise atherosclerotic plaques and identify non-stenotic plaques that may be undetected by conventional coronary angiography.

OBJECTIVE: The aim of this review is to present an overview of the role of coronary CT angiography on cardiac imaging, with focus on coronaries having suspicion of coronary artery disease in terms of the diagnostic value of coronary CT angiography in diabetics.

METHOD: Eighty patients with type 2 diabetes mellitus (DM) underwent CT coronary angiography with intravenous contrast. Axial images, multiplanar reformats, coronary cross-section views, curved multiplanar reconstructions, maximum intensity projections, and volume renderings of the coronary arterial circulation were used for the assessment. All interpretable segments were evaluated for the presence of any atherosclerotic plaque. Atherosclerotic lesions were classified visually as normal (<30% luminal narrowing), obstructive (≥ 50% luminal narrowing) or nonobstructive (<50% luminal narrowing).

RESULT: The prevalence of normal coronary arteries comes out to be 19% and the prevalence of obstructive disease 51%. Furthermore, diabetic patients showed a higher average number of diseased coronary segments 5.6, with either obstructive 1.7 or nonobstructive 3.9 CAD.

CONCLUSION: This study has enabled quantification of CAD among DM individuals with high precision through MDCT-CA which may give valuable prognostic information for the evaluation of patients with suspected CAD, particularly those at low or intermediate risk of having significant CAD for risk stratification and improvement of medical therapy and/or behavioral changes for the individualized prevention programs that may enhance event-free survival.

O-75

Pattern of arterial disease of the extremities in troops and troop families of Armed Forces:

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OBJECTIVE: To evaluate the pattern of arterial disease of the extremities among troops in armed forces and their families.

SAMPLING TECHNIQUE: convenience sampling

STUDY DESIGN: Cross sectional descriptive study

MATERIALS AND METHODS: The study was carried out over a period of 2 years from Sept. 2012 to Sept 2014 in Radiology department CMH Rwp and AFIC Rwp. 114 patients were included in the study with ages ranging from 24-95 years with mean age of 59.55±15.29 years. Arteriogram was performed through right femoral approach with 6 F arterial sheath. All arteriograms were done on Siemens cath lab machine without facility of DSA. Arteriograms were evaluated by a single Radiologist trained in the job. Lesions were divided into 02 basic groups for lower limb study. Infra inguinal group included common Femoral, superficial Femoral and popliteal arteries till the trifurcation. Infra popliteal group included lesions involving the trifurcation, leg vessels and foot vessels. Lesion characterization was done as short segment stenosis spanning a length from an hour glass stenosis to ≤ 3 cm, long segment stenosis ≥ 3cm, short segment occlusion ≤ 3 cm, long segment occlusion ≥ 3cm, and diffusely diseased vessels. Upper limb vessels were characterized according to site with stenosis and occlusions as in lower limb vessels.

RESULTS: 68(46.6%) right leg arteriograms were done, 72(49.3%) left leg arteriograms were done. 06 (4.1%) upper limb arteriograms were done. Out of these 2 were right arm arteriogram and 4 were left arm arteriogram. A total of 146 limbs were studied.

Lower limb arteriograms showed isolated Femoro popliteal disease in 38(26%) limbs studied, isolated infra popliteal disease in 31(21.2%) limbs, combined femoro popliteal and infra popliteal disease was seen in 48(32.9%) limbs studied. Normal arteriogram was seen in 23(15.8%) limbs.

Out of 86 Femoro popliteal disease showed short segment stenosis in 11(12.8%), long segment stenosis in 5(5.8%) patients. Long segment occlusion in 56(65.1%) patients while diffuse disease was seen in 10(11.6%) patients. Popliteal artery/superficial femoral artery thrombus was seen in 4(4.6%) patients.

Out of 79 Infra popliteal disease showed short segment stenosis in 2(2.5%) patients, short segment occlusion in 2(2.5%) patients, long segment occlusion in 19(24%) patients, diffusely diseased infrapopliteal vessels in 30 patients(38%). Single vessel run off was seen in 22(27.8%) patients, while foot disease was seen in 4(5.2%) patients.

Out of 6 Arm arteriogram showed 02 (33.3%) long segment blockages, 02 (33.3%) short segment blockages, 01 (16.7%) arm vessel aneurysm and 01 (16.7%) normal study.

CONCLUSION: From this data we infer that the basic disease pattern in the population studied is long segments of vessel occlusions in the femoro popliteal segment. The basic pattern of disease in the infra popliteal segment is diffuse disease of infra popliteal vessels.

O-76

Spectrum of MDCT angiographic findings of aortoiliac disease

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OBJECTIVES: To describe the MDCT angiographic patterns of aortoiliac disease in a hospital based sample and to classify the findings according to TASC II (The Trans- Atlantic Inter-Society Consensus Document) criteria for selection of surgical management.

MATERIALS AND METHODS: A retrospective study was conducted in the Radiology Department of CMH Rawalpindi in which records of 47 patients referred for CTA abdomen and lower limbs from Feb 2012 to Oct 2014 were reviewed on work station. Image review was performed of MIP and volume-rendering technique reconstructions and axial images together. Window settings were selected interactively. A frequency table of the findings was prepared using SPSS version 20.0. TASC II criteria were applied for classification of aortoiliac occlusive lesions into relevant subsets. Gender and age trends were observed.

RESULTS: Four distinct groups based on common disease entities emerged. Twenty three patients (48.9%) had findings of aortoiliac occlusive disease (AIOD), 3 patients (6.4 %) had findings of abdominal aortic aneurysms (AAA), 13 patients (27.7 %) had no abnormal findings and 8 patients (17%) had miscellaneous findings. The mean age for AIOD patients was 59.2 years ranging from 44 to 80 years. Lesion morphology of the AIOD group was classified according to the TASC II classification which yielded the following: TASC A lesions: 4 (17.4%), TASC B lesions: 4 (17.4%), TASC C lesions: 1 (4.3%), TASC D lesions: 14(60.9%)

CONCLUSIONS: The predominant vascular pathology of the aortoiliac vessels consisted of aortoiliac occlusive disease which was present in almost half the patients (48.9%). At presentation, approximately two thirds of AIOD patients (65.2%) were candidates for conventional surgical repair whereas only one third (34.8%) were candidates for endovascular surgery.

O-77

3D CT scan of chest

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O-78

HRCT chest

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HRCT has revolutionized the diagnosis of pulmonary pathology and Pulmonologists all over the world are now increasingly relying on this modality for both primary diagnosis and management.

It is therefore imperative that modern day radiologists are not only proficient in reporting HRCTs, but also have a thorough understanding of the anatomical and pathological basis of the findings.

A short review of HRCT technique, disease pattern and interpretation of the findings is presented.

O-79

Atypical pneumonia HRCT

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Atypical pneumonia is commonly found in immunocompromised patients, typical pathogens include chlamydia, mycoplasma, legionella, pneumocystis, viruses, fungi, and rickettsia. As serological diagnosis takes several days for confirmation radiology is expected to provide prompt evidence of atypical pneumonia.

This study was conducted during the period of 8 years from May 2004 to April 2011. HRCT was done in all the patients coming with suspicion of atypical pulmonary infection having complaints of fever, dry cough and weight loss. Most of the patients were known case of end stage renal disease, post renal transplant or having some neoplastic disorder. Diffuse ground glass haze with linear and reticular shadowing was found to be the predominant finding in patient with pneumocystis carinii infection. Bronchial wall thickening and centrilobular nodules were frequently seen in mycoplasma pneumoniae pneumonia. Areas of segmental consolidation, reticular or linear opacity, patchy ground glass haze and bronchial wall thickening were associated with chlamydia pneumoniae pneumonia. Millitary nodules were the characteristic appearance in varicella zoster infection. Segmental consolidation and bilateral pleural effusion were seen in legionella infected patients.

O-80

Recognizing the signs of Bronchiolitis and small airway disease on HRCT

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PURPOSE: To assess Bronchial airways and small airway diseases on High resolution Computed Tomography (HRCT) by recognizing specific HRCT signs of disease process.

MATERIALS AND METHODS: Over a one year period we enrolled all patients (total patients= 150), referred for HRCT chest using 128-slice Multidetector Computed tomography (MDCT) scanner in the Radiology department of Rehman Medical Institute Peshawar.0.5mm reconstructed images in lung window and 3mm images in mediastinal window were viewed on 5.1 vitrea workstation in axial, coronal and sagittal planes. Complimentary expiratory scans were performed when there was strong suspicion of small airway disease on CT images. The data was processed using Microsoft excel 2007

RESULTS: HRCT is the imaging modality of choice to assess the bronchial wall. In our study we assessed the direct and indirect signs of bronchiolitis on HRCT. Direct signs included: bronchial wall thickening, bronchiolectasis and centrilobular nodules. Indirect signs included: mosaic perfusion and hyperlucency on routine full inspiratory scans with mosaic or diffuse airtrapping on images obtained on full expiration; vascular attenuation; and increased lung volumes. The presence of bronchial wall thickening, often referred to as bronchitis or bronchiolitis, usually implies inflammation of the airways. Considerable interobserver variability in the diagnosis of bronchial wall thickening on CT was seen. Bronchial airways were considered thick walled if the wall was at least twice as thick as that of the normal airway or the internal diameter of the lumen was <80% of its external diameter. Terminal bronchioles not directly visible on CT, when had thickened walls, appeared as centrilobular nodules or as V- or Y-shaped branching linear opacities representing the tree-in-bud pattern. Diverse inflammatory and infectious processes, such as bronchiolitis obliterans (BO), bronchiolitis obliterans with organizing pneumonia (BOOP), smoking-related diseases, allergies and asthma affecting the small airways of the lungs were categorized based on their classical imaging features.

CONCLUSION: HRCT images can accurately identify thickened airway walls, plugged large and small airways, subsegmental atelectasis and air trapping. Thus, can often accurately depict disease processes in the small airways.

Understanding the various HRCT signs of small airways dysfunction and making a proper pattern approach even helps make sense of the sometimes confusing pathologic classifications.

RECOMMENDATION: Paired inspiratory and expiratory HRCT scans should be done when suspecting small airway diseases.

O-81

Adapted anatomical image criteria for PA chest radiography

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BACKGROUND: Chest x ray is a common investigation widely requested by hospitals and community doctors alike. Anatomical coverage of this test informs not only of intrapulmonary pathology but can also reveal abnormality of the bone, heart and mediastinum. Thus it is important to specify the anatomical structures that should be visible on a chest X-ray in order to aid accurate diagnosis. In our practice we have identified this area as one that should be subject to audit. We present the results of a two-cycle audit of specific set of anatomical image criteria on chest radiography adapted from both ACR and EC guidelines.

AIM: To improve the quality of patient care, to promote the effective use of resources, to enhance the provision and organization of clinical services and to further professional education and training.

MATERIAL AND METHODS: 100 consecutive PA CXR performed at SHL on 4 consecutive week days were evaluated in June 2014 by radiology SR against following audit criteria.

- Performed at full inspiration
- Central positioning of spinous processes between medial ends of clavicle
- Medial borders of scapulae to be outside the lung fields
- Visualization of both apices, whole rib cage, CP angles, retrocardiac lung and mediastinum, spine through heart shadow
- Image annotations should not obscure the lungs
- Appropriate collimation of listed structures whilst limiting exposure to remainder of patient.

Results were presented to radiologists and radiographers at departmental meeting where importance of achieving the criteria was stressed and means of achieving criteria was discussed. 2nd round was performed 4 months after departmental presentation and implementation of action plan in October 2014 by same radiology SR and revised standards were applied.

RESULTS: Out of the 50 CXRs audited 26 were females and 24 were males with median age 57 years. Compliance exceeded 95% in 6 out of 10 criteria in 1st round. Compliance exceeded 95% in 6 out of 10 criteria with improved 100% compliance in 4 criteria in 2nd round.

CONCLUSION: To educate radiology staff on the importance of achieving anatomical criteria on chest radiograph, rehearse positioning maneuvers with patients prior to radiograph, pay particular attention to older patients, need to have a share sense of responsibility for maintaining and improving the quality of patient care.....Team Work.

O-82

Presurgical embolization of nasopharyngeal angiofibroma

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PURPOSE: Juvenile nasopharyngeal angiofibroma is a benign fibrovascular tumor affecting young adolescent boys, originating from the posterolateral wall of the nasal cavity. The clinical manifestations of JNA is frequent chronic epistaxis, Nasal obstruction, rhinorrhea, Conductive hearing and diplopia. Study is done to evaluate the

presurgical embolization of Nasopharyngeal angiofibroma in order to reduce blood loss and intra operative time during surgery.

MATERIAL AND METHODS: All patients went through internal and external carotid angiography with superselective angiography of vessel supplying tumor. Presurgical embolization of 50 patients done with spongostone in angiography suit of Neuroradiology department, Lahore General Hospital, Lahore, Pakistan with age ranging from 12-18 years males from January 2011 to Nov 2014. All patients underwent surgery within 24 hours.

RESULTS: Out of 50 patients Internal maxillary artery was supplying 34 patients, 10 were supplied by accessory meningeal artery and 6 were supplied by ascending pharyngeal artery. Presurgical embolization with Spongostone proved significant reduction in intra operative blood loss and reduced surgical resection time.

CONCLUSION: Presurgical embolization appears to be the treatment of choice as it significantly reduces intra operative blood loss minimizing the need of blood transfusion, shortens intraoperative time and makes resection easier.

O-83

Endovascular therapy of traumatic vascular lesions of head and Neck

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Acute traumatic vascular injuries to the head and neck may be difficult to treat by direct surgical access. Pseudoaneurysm and fistula formation are well-documented complications of these injuries and may be associated with significant morbidity and mortality. Percutaneous transcatheter arterial procedures are playing an increasingly important role in the management of these injuries. These can promote thrombosis, reduce bleeding, decrease the need for transfusion intraoperatively, and facilitate surgical approach. With the increase in the violence in our society due to gunshots, bomb blast and road traffic accidents it is important for the clinician to be aware of these interventional techniques, as collaboration of the clinician, the surgeon, and the interventional radiologist can result in improved patient care.

We have recently encountered increase in cases of vertebral artery transactions, internal or external carotid and subclavian artery pseudoaneurysm where either embolization or in certain cases stenting was performed. The intra-axial lesion treatment is not discussed here. The purpose of this is to review the presentation, imaging features and management of these patients with traumatic vascular injuries. The evolution provides opportunities for endovascular therapy of traumatic vascular lesions of the head and neck that are minimally invasive, attractive options in selected cases.

O-84

Diagnostic accuracy of strain ultrasound elastography in diagnosing benign and malignant thyroid nodules, keeping cytology/histopathology as gold standard

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OBJECTIVE: FNAC/ histopathology is used as gold standard for evaluation of thyroid nodules. Elastography is new and non-invasive tool for assessment of mass lesions in different tissues that helps in differentiating benign from malignant disease exploiting tissue hardness. Ultrasound strain elastography can be used as a non-invasive method of differentiating benign from malignant thyroid nodule and may be as cytology/histopathology.

MATERIALS AND METHODS: This is an ongoing prospective study to be conducted for six months till 30th May 2015. All the patients with thyroid nodule/nodules presenting for ultrasound of thyroid during the study period, irrespective of age and gender, were included in the study. GE Healthcare LOGIQ S7 Pro was used for this study. All the patients were scanned using 11L linear array high-frequency probe. Elastograms were assessed using 5 point scoring scale by Rago et al.

RESULTS: 14 patients were included in the study with mean age of 40.7 years. Diagnostic accuracy of B-mode ultrasound for benign and malignant thyroid nodules was 85.7 %. Diagnostic accuracy, Sensitivity, specificity, PPV and NPV of ultrasound strain elastography for benign and malignant thyroid nodules was 100%.

CONCLUSION: Ultrasound Strain elastography is as accurate in diagnosing and differentiating benign from malignant thyroid nodules as cytology/histopathology. It can replace the excessively used, invasive, painful investigations in patients with definitely benign disease.

O-85

Differentiating benign and malignant thyroid nodules; agreement between ultrasound and ultrasound guided fine needle aspiration cytology

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PURPOSE: Incidence of thyroid nodules is estimated to be up to 50% in asymptomatic population; though the risk of malignancy is less than 7%, presenting a diagnostic dilemma. The risk is the same for solitary or multiple nodules. Ultrasound (US) forms part of work up of all thyroid nodules. Suspicious features on US correspond to higher prevalence of malignancy. We feel it can be used as a sole initial screening tool to limit the number of nodules to be biopsied. The aim of this study is to elaborate role of US in differentiating benign and malignant thyroid nodules in terms of agreement between US assessment and US guided Fine needle aspiration cytology (US-FNAC).

SUBJECTS AND METHODS: Data from 200 consecutive nodules (in as many patients as) fulfilling the inclusion criteria was collected. After obtaining written informed consent for FNAC, pre-procedure US was performed. Presence of any suspicious features (Irregular margins, marked hypoechogenicity, coarse calcifications, microcalcifications, solid/solid component, taller than wide shape) was documented followed by US-FNAC. Two or more suspicious features on US were considered as malignant. Data was analyzed in SPSS 20. Agreement between US and US-FNAC in differentiating between benign and malignant thyroid nodules was calculated as frequency and percentage. Kappa statistics was used to determine the strength of agreement between US and US-FNAC in differentiating between benign and malignant thyroid nodules.

RESULTS: A total of 200 nodules were examined among 92 patients. Majority 33 (35.9%) of the patients were more than 50 years old and 73 (79.3%) were females. 161 (80.5%) nodules were found among female patients. 89 (44.5%) nodules were 21-40mm in size. According to final impression on US, 178 (89%) nodules were benign while 22 (11%) nodules were malignant. According to final report on US-FNAC, 173 (86.5%) nodules were benign while 27 (13.5%) nodules were malignant. Kappa value of 0.791 indicates a substantial agreement in differentiating benign and malignant nodules. (Kappa >0.8 indicating near perfect agreement).

CONCLUSION: US assessment of thyroid nodules has substantial agreement with US-FNAC in differentiating benign and malignant thyroid nodules.

O-86

Laryngeal carcinoma staging using 128 slicer CT scan

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Objectives: The objective of my study is early detection and accurate staging of supraglottic, glottic and subglottic tumors

MATERIAL AND METHODS: Contrast-enhanced 128 slicer spiral CT scanning from the C1 vertebral body to the thoracic inlet, with the section plane parallel to the true vocal cords or the hyoid bone taken. The section thickness not exceed 3 mm. Patients instructed to breathe quietly, and the larynx imaged in a few seconds, providing near-isometric Z-axis resolution with minimal motion artifacts.

All laryngeal studies reconstructed using soft tissue algorithms. The area extending from the thyroid bone to the base of the cricoid cartilage is additionally reconstructed with a high-resolution bone algorithm to evaluate for cartilage invasion by tumor. 23 patients studied in 3 month period.

RESULTS: Out of 23 patients, 11 patients having glottic tumor, 8 have supraglottic tumor and 4 have infraglottic tumor. Using TNM staging system, out of 11 supraglottic tumor patients, 6 patients are of stage III, 3 patients of stage II, 2 of stage I. Out of 8 supraglottic tumor patients, 5 have stage II, 1 have stage I, 2 patients shows stage III. Out of 4 infraglottic tumor patients, 2 have stage I, 2 have stage II.

CONCLUSIONS: 128 slice spiral CT has a high sensitivity for detection of cartilage invasion using the following criteria: sclerosis, erosion, lysis, and extralaryngeal spread and help in quick and accurate staging of laryngeal tumors.

O-87

Characterization of neck LYMPH nodes with diffusion-weighted MRI

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OBJECTIVE: To evaluate the role of diffusion-weighted imaging (DWI) in differentiating the various causes of enlarged neck lymph nodes.

MATERIALS AND METHODS: Thirty patients with enlarged neck lymph nodes clinically suggestive of malignancy underwent MRI including DWI with b values (0 and 1000). Apparent diffusion coefficient (ADC) maps were generated from DWI and ADC values were calculated for the enlarged lymph nodes and compared with histopathological results.

RESULTS: The patients were divided into nine patients with benign neck lymphadenopathy, 10 patients with metastasis from head and neck cancer and 11 patients with nodal lymphoma. The mean ADC of the benign neck lymph nodes ($1.49 \pm 0.36 \times 10^{-3} \text{ mm}^2/\text{s}$) was significantly higher than those of the metastatic ($0.92 \pm 0.13 \times 10^{-3} \text{ mm}^2/\text{s}$) and lymphomatous ($0.74 \pm 0.14 \times 10^{-3} \text{ mm}^2/\text{s}$) lymph nodes and the mean ADC of the metastatic nodes was significantly higher than that of nodal lymphoma. The best threshold for differentiating malignant from benign lymph nodes was $1.15 \times 10^{-3} \text{ mm}^2/\text{s}$.

CONCLUSION: DWI is a non-invasive technique that is useful in the identification of the cause of enlarged neck lymph nodes.

O-88

FESS in ENT imaging

Zia Salman Faruqui

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O-89

3T MRI wrist

Sandeep Singh Bakshi

India

O-90**The role of MRI in the diabetic foot**

Khalid Latief

*Nottingham University Hospitals, England UK.***LEARNING OBJECTIVES:** To understand role of MRI and the protocols used.

To be able to recognise diabetic foot complications on MRI.

To be able to differentiate between Charcot neuroarthropathy and osteomyelitis.

Diabetes related foot ulcers and infections have a high morbidity and healthcare costs. The lifetime risk of ulcer development in diabetic patients is about 25%. Of these about half will develop foot infection.

The management of diabetes related osteomyelitis is challenging and requires a multidisciplinary team approach. The Radiologist plays a central role in verifying the presence and extent of osteomyelitis.

The aims of the presentation will be to review the imaging of diabetic foot complications with a special emphasis on the role of MRI. The talk will look at the current MRI protocols and show example of various complications in foot disease. There will be some emphasis on Charcot neuroarthropathy and its important differentiation from osteomyelitis.

O-91**To determine frequency of negative pelvic radiography during initial evaluation of stable blunt trauma patient**

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*Pakistan Institute of Medical Sciences, Islamabad, Paistan.***OBJECTIVE:** The purpose of the study was to eliminate pelvic radiography from the primary survey protocol of the patients with blunt trauma who are haemodynamically stable and have negative pelvic physical examination.**MATERIALS AND METHOD:** This was a prospective cross sectional study including all patients with Blunt trauma injury and who were fulfilling the inclusion criteria were imaged on x ray (Kodak direct view Max CR system) in the setting of diagnostic radiology P.I.M.S during a three month period. The trauma team completed their clinical judgment and data collection before viewing the pelvic radiography. All the pelvic radiograph interpreted by an attending radiologist and positive findings further verified by senior radiologist unaware of the clinical findings.**RESULTS:** During the study period, 385 patients of blunt trauma who were haemodynamically stable and have negative pelvic examination were included. Pelvic radiography was found to be negative or normal in 99% except two patients who had pelvic fracture.**CONCLUSION:** It was concluded that pelvic radiography could be eliminated from the primary survey protocol of the patients with blunt trauma who are haemodynamically stable and have negative pelvic physical examination, as it will save our resources and prevent patient unnecessary radiation.**O-92****Bone age determination using MRI & score based method**Mansoor Fatehi,¹ Parisa Eslami,² Reza Soleimani,² Hamed Yousefi²¹ *General Secretary, Iranian Society of Radiology, Director, Medical Imaging Informatics Research Center*² *Medical Imaging Informatics Research Center*

The traditional method of radiological bone age determination is based on Greulich and Pyle atlas. This method is questioned for many reasons including old data (over 5 decades), ignoring changes in life style and nutrition, ignoring race and geographical regions and just visual comparisons. Newer and more precise methods have been developed for radiological bone age determination among them Tanner Whitehouse is one of the most reliable ones. This method is based on score given to multiple bony structures in wrist and hand x-ray. But since the method is very time consuming and relies on mathematical calculations, it has not been widely used internationally.

Development of computerized methods has resulted in wider acceptance of the

method. MIIRC has developed an online method of semi-automated bone age determination using TW3.

In addition to radiographic methods, there has been new approaches to in order to avoid radiation in young population specially sportsmen, MRI-based age determination has been developed mainly by FIFA research center where a grading system is being used to determine closure of epiphyseal plate in U17 players. As Iran was the host for recent U17 AFC matches in Tehran, we have modified the protocols of FIFA and developed an automated MRI bone age determination tool which draws a 3D object from epiphyseal plate and calculates new features indicating progress of closure and bone age.

O-93**Bone mineral density evaluation in female population of Lahore. A case study**

Tanveer Zubairi

*Lahore General Hospital, Lahore, Pakistan.***O-94****Stress fracture in military cadets**

Adil Qayyum

*Combined Military Hospital, Abbottabad, Pakistan.**Email: qayyum.adil@gmail.com***OBJECTIVE:** To determine the role of imaging modalities in diagnosing stress fractures in military cadets and to describe their presentation and incidence.**STUDY DESIGN:** Observational study**PLACE & DURATION OF STUDY:** Radiology department, Combined Military Hospital, Abbottabad from Mar 2013 to Mar 2014.**METHODOLOGY:** Fifty patients, aged 16-20 years were included in the study. These were cadets of PMA Kakul. These were referred for plain radiography by Orthopedic surgeon. Their incidence, presentation and sites of stress fractures were recorded. If symptoms persists on negative xray findings, MRI was performed for further evaluation of stress fractures.**RESULTS:** Out of 50 patients, 24 (48%) patients had stress fracture in Tibia; 11 (22%) patients in Femur; 6 (12%) patients in Metatarsals; 4 (8%) patients in Fibula; 3 (6%) patients in Pelvis and 2 (4%) patients had stress fracture in Tarsal bones. Fractures of the femoral neck, anterior mid-tibia, navicular, talar body and any fracture with an intra-articular component are prone to delayed union, non-union or displacement and require early diagnosis and more aggressive management. However, fractures at low risk of complication are those in the fibula, the other tarsal bones and the distal metatarsal shaft.**CONCLUSION:** Stress fractures are relatively common in military cadets & recruits. Strong clinical suspicion in concert with radiological imaging play important role in the detection of stress injuries. Early recognition and treatment of stress fractures reduce morbidity and allow timely return to high-level activity. It is therefore important for radiologists to be aware of mechanisms leading to, and locations of, stress injuries, to facilitate timely diagnosis.**O-95****To establish sensitivity and specificity of dual phase imaging in differentiation between osteoprotic vs neoplastic vertebral fractures**Shumaila Arooj, Sanjay Kumar, Naveed Ahmad, Tariq Mehmood
*Department of Radiology, Jinnah Post Graduate Medical Centre, Karachi, Pakistan.**Email: shumaila_aroj@hotmail.com***PURPOSE:** To establish the sensitivity and specificity of chemical shift or dual imaging to differentiate between benign and malignant vertebral compression fractures. The most common age group affected is the old age in which malignancy as well as osteoporosis both are common so it becomes extremely difficult to distinguish and thus management planning. MRI is a sensitive

method for evaluation of bone marrow detail however specificity is deficient.

MATERIAL AND METHODS: Twenty patients with wedging of vertebrae presented to AEMC for bone scan referred for MRI spine. The MRI scan of spine of these selected patients will be performed on ARCHIEVA NOVA DUAL PHILIPS 1.5 TESLA MRI machine by a trained MRI technician having experience of more than 3 years. Dedicated spinal coil will be used in all the patients. Sagittal T1 & T2 weighted images, T2 STIR and sagittal in phase and out of phase imaging performed in all the patients. A DXA will be performed on all.

RESULTS: We will observe the reduction in signal intensity and proportional changes in in-phase and out of phase imaging. The sensitivity, specificity, positive and negative predictive value will be calculated.

CONCLUSION: Chemical shift imaging is useful for differentiating underlying etiology of vertebral collapses.

O-96

Diagnosis of soft tissue shoulder injuries by MRI and MR arthrography: A review

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Shoulder pain is a common complaint by patient and it can be due to a variety of causes. The major cause of shoulder pain in patients older than 40 years is rotator cuff impingement and tears. With the development of new arthroscopic techniques for treating rotator cuff disorders, magnetic resonance imaging (MRI) and MR arthrography has played an increasingly important role as a noninvasive test for determining which patients may benefit from surgery.

CONVENTIONAL MRI: Conventional MRI with T2-weighted images in the oblique coronal and oblique sagittal planes is the preferred technique for imaging the rotator cuff. Most authors have found that fat-suppressed, fast spin-echo (FSE), T2-weighted images are the most accurate for detecting rotator cuff tears (RCTs); a sensitivity of 84-100% and a specificity of at least 77-97% for full-thickness tears can be expected with this pulse sequence.

MAGNETIC RESONANCE ARTHROGRAPHY: Some people prefer to perform either direct or indirect MR arthrography for imaging the rotator cuff. The advantage of direct MR arthrography relative to MRI is that it distends the joint, thus forcing the contrast agent into a small defect. T1-weighted images, which are faster to acquire and have a superior signal-to-noise ratio, can also be used instead of T2-weighted images. The disadvantages of direct MR arthrography are that it is mildly invasive.

O-97

Pain in the butt: The symptomatic hip

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TEACHING POINTS:

1. Review of normal anatomy.
2. Intra and extra-articular hip impingement syndromes.
3. Role of ultrasound and dynamic scanning.
4. Illustrated examples and useful measurements.
5. Other non-arthritis causes of buttock pain.

OUTLINE: Although arthritis is the commonest cause of hip pain, several other pathologies may give rise to pain in the hip and buttock. These can present a diagnostic dilemma particularly in the younger patient where arthritis is less likely. Imaging continues to play an increasingly important role not only in demonstrating the abnormality but also offering minimally invasive treatment options. A multimodality review of causes of non-arthritis hip pain will be

discussed including some relatively uncommon pathologies. We will also review some dynamic imaging techniques and image guided treatment options. Knowledge of these conditions and choosing the most appropriate imaging modality is crucial to reach the correct diagnosis.

O-98

Imaging the incidentally discovered adrenal lesion

M. Nadeem Ahmad

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O-99

Imaging of testicular CYST

Asim Shaukat

Allied Hospital, Faisalabad, Pakistan.

O-100

Ovarian cysts – What to do with them

Amyla Ramzan

Jinnah Hospital, Lahore, Pakistan.

O-101

Liver nodule assessment

Zishan Haider

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

O-102

Imaging and evaluation of Renal Cystic lesions

Mobeen Shafique

CMH, Gujranwala, Pakistan.

Renal cystic lesions are important as these are the commonest finding detected incidentally in patients evaluated by a radiologist. Incidence of renal cystic lesions on autopsy patients is around as high as 50%.

It is very important to exactly characterise the type of renal cyst radiologically for prognostication and also as further patient management whether invasive or non-invasive entirely depends on this. Ultrasound is the primary modality and diagnostic for Simple Renal Cyst with no further management or follow up requirement. Various Radiological modalities for evaluation of renal cystic lesions will be discussed in presentation with special emphasis on "Bosniak Classification of Renal Cystic lesions". Latest International Recommendations regarding Imaging modalities and management of Renal cystic lesions in light of Bosniak Type will be dealt with in detail.

O-103

Thyroid nodules role of ultrasound and isotope scanning

Prof. Nawaz Anjum

University of Lahore, Pakistan.

Thyroid nodules are common upto 8% of population has palpable nodules.

On ultrasonography 10 times more nodules are detected.

Malignancy may occur in 5% of nodules.

When a patient presents with a palpable swelling of thyroid. We are faced with a dilemma whether it is benign or malignant/cystic or solid.

Ultrasound and isotope scanning are very helpful in evaluation of these nodules. Ultrasound helps to see whether cystic or solid. Color Doppler determines its vascularity.

If the nodule is solid isotope scan will show if it is hot or cold.

The hot nodules are almost always benign.

The cold nodules may be adenomas or carcinomas.

Various features of thyroid nodules (Benign vs malignant) will be discussed in this presentation in detail.

O-104

Structured reporting

Mansoor Fatehi

General Secretary, Iranian Society of Radiology, Board Member, European Society of Medial Imaging Informatics

Although structured reporting has been appreciated as one of the effective methods of electronic reporting in radiology and sometimes other disciplines, but in practice, there is not that much real applications to facilitate day to day utilization of this technique. Why it is so?

The radiologists want a flexible tool to create clear concise reports in a reasonably short time. Like all template-based and even speech recognition reporting systems, the application should be able to be tailored to different preferences of multiple users in a radiology department that means every user may want a specific structure to be defined. Although a detailed structured reporting has the potential of being comprehensive but at the same time has the negative impact of being time-consuming both in creation and reading by referring physician. So, the report templates should be flexible in terms of length as well. And the final appearance of the report is critical for acceptance by clinicians.

How all these clinical practical features should be complied in development of structured reporting systems by technical groups? The technical challenges of development of SR systems may be grouped as: "data entry user interface", "database structure" and "output file/document" problems.

Not all of the findings and clinical situations can be described in a preplanned manner. The change in anatomical structures after a surgery, unusual presentations, co-existing abnormalities and incomplete structure of the report template are all examples of the reasons a system may be unable to be used for all cases.

In order to use a single application in a department, it is required to be flexible enough to comply with different user preferences. This will lead to not only a challenge in user interface design but also the management of the database structure.

The format of the final report is a critical issue as well. So, one of the major technical challenges is the transformation from a structured data collection to a final text. How the text should appear to be acceptable and applicable for the referring physician? One major issue is exporting reports to DICOM file using DICOM-SR concepts. So the export and import between the reporting system and DICOM files is still an important technical issue to be resolved. Multi-media content of the reports, including annotated pictures and even voice files are becoming more and more popular.

The purpose of this presentation is to follow through the clinical needs of a radiologist to the technical challenges of implementing a clinical, not a research, structured reporting application. The presentation will be based on examples from published and personally developed structured reporting solutions.

O-105

Using DOPS (Directly Observed Procedural Skills) for pre call assessment of ultrasound proficiency of first year radiology residents: Initial experience

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RATIONALE AND OBJECTIVES: We conducted two DOPS session over two years for ultrasound proficiency assessment of first year radiology residents. The purpose of this study was to assess feasibility and potential benefits of DOPS.

MATERIAL AND METHODS: Each first year junior radiology resident was rotated in ultrasound at initiation of training for 2 months especially designed

ultrasound rotation. At the end of the rotation, senior radiologist carried out DOPS assessment session. A single station was made with ultrasound performed on a mock patient (healthy volunteer). A post implementation survey was conducted from all junior (n=8) and senior (n=7) radiology residents with 100% response rate.

RESULTS: Over two years, 5 out of 8, first year residents (62%) passed the exam on first attempt. Those 3 who failed were remediated after attending extra ultrasound sessions and passed the exam a week later. All were put on night call subsequently. Hundred percent (n=15) of residents thought it to be better than conventional end of rotation written feedback. Eighty percent (n=12) of the residents thought that this new tool was effective in improving their ultrasound proficiency. Eighty five percent (n=6) of senior residents felt that there was improvement in junior resident ultrasound skills during call hours as compared to previous years.

CONCLUSIONS: Compared to our conventional end of rotation written feedback, using DOPS for proficiency assessment of ultrasound of first year radiology residents has been judged to be a useful assessment tool prior to starting call.

O-106

Role of magnetic resonance imaging (MRI) in early detection of multiple sclerosis (MS) plaques in determining their impact on cognitive functions

Prof. Nasir R Zaidi,

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Multiple sclerosis (MS) is a chronic autoimmune disorder mainly prevalent in young adults affecting movement, sensation, and bodily functions leading to Non Traumatic Disability. It is caused by destruction of the myelin insulation covering nerve fibers (neurons) in the central nervous system (brain and spinal cord)

Our study aims 1-To improve human health awareness related to Neurological Diseases in our society. 2-Early detection of MS lesions and early diagnosis in Neurological Diseases in our environment from available resources like the role of MRI to understand better services among them and to determine the impact of MS plaques on cognitive functions. The diagnosis of Multiple Sclerosis in Asian population particularly in Pakistan is still debatable. Different techniques including History and Clinical examination are initial investigations but the advancement of MRI techniques revolutionized the early detection and management of MS. This study was conducted in the Radiology Department King Edward Medical University/ Mayo hospital, Lahore. The pattern of the disease was analyses in the region of brain, particularly Temporal lobe, Periventricular, Juxtacortical and parahippocampal gyrus and associated Cognitive Impairment of the brain functions. We also compare the involvement of Multiple sclerosis lesion in Pakistani and Canadian population in respect of age, gender and regional distribution particularly temporal lobe parts hippocampal and parahippocampal gyrus.

On clinical history, patients presented with a tonic gate, slurring of speech, numbness and par aesthesia remained the more common features. One of the clinical presentations is being presented with vision disturbance, is blurring of vision was the maximum. Muscle fatigue was another clinical presentation in young adults.

In conclusion, the MS lesions detection on Magnetic Resonance Imaging (MRI) T2 weighted sequence (T2WI) was superior than T1 weighted sequence(T1WI). 99 % patients with MS lesions were detected on T2WI as compare to T1WI. On the other hand FLAIR sequence was more accurate and 100 % of these cases were detected on this sequence of MRI. 70 % cases detected on MRI presented psychosomatic effects e.g. Sensory or motor system problems of the cases were musculoskeletal problem.

O-107**Imaging of pituitary**

Syed Anjum

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In this review article, includes normal anatomy of the pituitary gland starting with a brief review its development that is pertinent to radiologists. The anatomy will also include surrounding structures and of the vascularity of gland.

By the end of this presentation radiologist will be familiar with the normal magnetic resonance imaging appearance its appropriate imaging protocols and its enhancement pattern, localization of the pituitary masses. Normal pituitary variations and incidental and its other conditions will be discussed.

O-108**Adrenal cross sectional imaging**

Rayyan Pervaiz

*Shifa International Hospital, Islamabad, Pakistan.***O-109****Parathyroid imaging**

Hamid Majeed

*Nawaz Sharif Medical College, Lahore, Pakistan.***O-110****Effect of low tube voltage on image quality, radiation dose at abdominal multidetector CT**

Khujasta Mehtab

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OBJECTIVE: To investigate the effect of low tube voltage (80 kV) on image quality, radiation dose at abdominal computed tomography (CT).

MATERIALS AND METHODS: A phantom containing low-contrast objects was scanned with a MDCT (light speed, GE Medical system) at 80 and 120 kV, with tube current-time product settings at 150–650 mAs. The differences between image noise, contrast-to-noise ratio (CNR) obtained with 80 kV at 150–650 mAs and those obtained with 120 kV at 300 mAs were compared respectively.

RESULTS: The image noise substantially increased with low tube voltage. However, with identical dose, use of 80 kV resulted in higher CNR compared with CNR at 120 kV. There were no statistically significant difference in CNR between 120 kV at 300 mAs and 80 kV at 550–650 mAs. The relative dose delivered at 80 kV ranged from 58% at 550 mAs to 68% at 650 mAs.

CONCLUSION: With a reducing the tube voltage from 120 kV to 80 kV at abdominal CT, the radiation dose can be reduced. It would benefit patients especially those who may need to undergo MDCT examinations for long-term followup or high-risk screening.

O-111**An Audit of the requirements of Continuous Professional Development (CPD) for Imaging Technologists in Pakistan**

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PURPOSE: In Pakistan, awareness of CPD participation has not been created among healthcare practitioners to enable them engage in effective CPD activities in order to improve their knowledge and skills. An understanding of imaging technologists' attitudes and opinions towards CPD will assist in providing a CPD programme that meets the needs of profession. The aim of this study is to determine imaging technologists' opinions towards CPD that will help improving professional knowledge and individual competency for the provision of better services.

METHODS: One hundred and twenty-seven questionnaires about CPD were distributed among medical imaging technologists working in different setups. Results: A total of 98 questionnaires were returned. Among all respondents, 10% were currently engaged in CPD and a high percentage (78.1%) of respondents believed CPD to be very important. Updating professional knowledge (79%) and maintaining professional competence (75%) were the most popular reasons for participating in CPD. Participants reported that time constraints and workload are barriers to CPD participation. Employer initiated CPD was most favoured; with in-house education and workplace seminars as suggested methods to increase CPD participation.

RESULTS & CONCLUSION: This study demonstrated that decreased participation rates in CPD were mainly due to time constraints and workloads. CPD was important to most technologists. Four to six hours monthly devoted to CPD was the preferred amount of study, with 5 hours per month being the mean time technologists were prepared to devote to CPD. A mixture of paper, e-learning and internet based materials in the native language of the radiographer would be the most popular method for CPD delivery. English was the most popular language for CPD materials. Cross sectional imaging (CT and MRI) was the most popular area for CPD training although training in digital imaging and trauma were also much sought after. Special attention is to be given to promote CPD programme to improve professional competencies and update professional knowledge.

O-112**CT Imaging Radiation Risk Reduction Audit- Real Life Experience in a Single Center**

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PURPOSE: To reduce radiation dose from Multidetector computed tomography (CT) using techniques with low tube voltage and modified image parameters in both adult and pediatric body CT examinations without degradation of low-contrast detectability.

MATERIALS AND METHODS: This is audit of CT radiation dose parameters in which effects of different scan parameters on general image quality metrics and different scan parameters were assessed. We assessed the effect of modified general image quality and scan parameters on visual impression of image noise, texture, sharpness and artifacts in CT on 128 slice Toshiba scanner. Not all of the population is of the same size or shape. So, we elected to use body weight (kg) in all age groups to estimate patient size and adjust CT dose parameters like peak kilovoltage (kVp), tube current (mA) and Pitch. Two radiologists independently assessed subjective quality using a task-based evaluation to assess organ-based focal lesions and normal anatomical structures (when no lesions were present). Image noise was measured and noise-spectral density plots were obtained. Much of our initial motivation to lower CT radiation dose developed over concerns of unusually high radiation doses delivered during retrospectively gated coronary CT angiography. Previous publications have shown the benefit of reducing kVp from 120 to 100 in non-obese patients during CT angiography. We started our audit on adult cardiac CT scans followed by CT brain and abdomen in pediatric age group population.

RESULTS: Peak kilovoltage (kVp) is the single most powerful tool for radiation dose reduction because it is related to the dose in a nonlinear fashion. The standard kVp setting for adults and pediatric population in our 128 slicer CT machine was 120. In selected group of patients (cardiac CT, all age group, <90 kg), by reducing kVp from 120 to 100, we observed a 37% decrease in radiation dose. Furthermore, by doing prospective scan instead of retrospective in patients with slow heart rate and good breath holding, we reduced radiation dose by more than 50%. All modern CT devices have the ability to automatically adjust the tube current (mA). In our center we modified both kVp and mA values for CT brain in pediatric age group patients. Standard radiation dose with 120kVp and 225mAs was 2.12mSv, which was reduced by 72% by lowering kVp to 80 and mAs value to 75. There was 20% reduced radiation dose in CT Abdomen patient by decreasing kVp and mAs from 120 and 150 to 100 and 97 respectively in selected population (hyposthenic, <90kg).

CONCLUSION: Radiation dose reduction techniques such as lowering kVp and mAs values show great potential for substantially reducing radiation dose of cardiac CT angiography. In selective population with less than 90kg weight, lowering kVp, mAs and pitch can even reduce the radiation dose by 75%.

CLINICAL RELEVANCE: Cardiac CT and pediatric head CT is achievable at submSv using modified technique parameters i.e. an image-based SafeCT without significant compromise in image quality at 75% dose reduction.

O-113

Significance of CT Haematuria Investigation on the Diagnosis of Urological Malignancy

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CT urography is defined as CT examination of the kidneys, ureters and bladder with at least one series of images acquired during the excretory phase after intravenous contrast administration. The reasoning for using ct urography to investigate hematuria is based on its high diagnostic accuracy for urothelial cell carcinoma (UCC) and favorable comparison with other imaging techniques. The optimum diagnostic imaging strategy for patients with hematuria at high-risk for UCC involves the use of ct urography as a replacement for other imaging tests (ultrasonography, intravenous urography or retrograde ureteropyelography)

OBJECTIVE: The study is designed with following objective. Significance of CT haematuria protocol among all other standard protocol investigation with emphasis on the diagnosis of urological malignancy.

SETTINGS: Data were prospectively collected on haematuria referrals to Radiology department of Shaukat Khanum Memorial Cancer Hospital in the 1 year period. The standard protocol of investigation included flexible cystoscopy, urine cytology and culture, upper tract imaging, consisting of a renal tract ultrasound scan and a radiograph of kidney-ureterbladder (KUB), proceeding to an intravenous urogram (IVU) and CT haematuria protocol in selected patients.

STUDY DESIGN: Observational study design. 209 Patients without specification of gender will be used in the duration of 1 year

RESULTS: 209 patients were examined; 67% (n = 141) had microscopic haematuria and 33% (n = 68) had frank haematuria. No malignancy was found in patients with microscopic haematuria below 50 years of age. 28% of patients presenting with frank haematuria had malignancy compared with 3.9% of patients with microscopic haematuria (p < 0.0001). Of patients under 70 years with frank haematuria, males were more likely than females to have malignancy. Urine cytology had a poor predictive value for detection of malignancy with a sensitivity of only 25%. Almost 70% of urological malignancy is detected on CT haematuria protocol. In this data 58% of urological malignancy is of bladder, 42% of kidneys and ureters. These results showed that Ct haematuria protocol scan is a good modality for detecting the urological malignancy.

CONCLUSION: Full investigation of all patients with frank haematuria and those with microscopic haematuria above 50 years of age, is well justified. Patients under 50 years with microscopic haematuria should have a lower priority for investigation. Out of all standard protocol of investigations CT haematuria is the best for detecting the urological malignancy.

O-114

Low dose CT guided biopsies - experience at a tertiary care hospital

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BACKGROUND: The study was aimed to compare low dose CT Fluoroscopy (CTF) versus standard dose CT guided biopsy procedures in terms of diagnostic accuracy, intervention time and number of needle passes required

for biopsy to be completed successfully.

MATERIALS AND METHODS: This retrospective study was conducted in Radiology Department of CMH Rawalpindi from April 2013 to April 2014. 65 consecutive patients comprising 51 males and 14 females, mean age 41.52±13.40 years, underwent CT guided biopsies of lung, bone and muscle lesions on Philips Brilliance 6slice CT-scanner under low dose CTFm guidance comprising tube current 30mAs and voltage 120kVp. Diagnostic accuracy, intervention time and number of needle passes performed for completion of procedure were recorded. These were compared with biopsies performed at standard dose protocol over 12 months before introduction of low dose technique from March 2012 to March 2013. During this time 60 consecutive patients, mean age 40.62±11.32 years, were included who underwent biopsies performed on Astion-Multislice 4slice CT-scanner. The standard dose comprised tube current 200-250mAs and tube voltage 120kVp.

RESULTS: The two groups showed no significant statistical difference with regards to diagnostic accuracy (p=0.88). Low dose group in comparison to standard dose showed significant reduction in radiation dose (mean 192.18±47.62 mGy*cm versus 2064.62±321.65 mGy*cm), intervention time (mean 7.13±1.52 minutes versus 39.56±4.81 minutes) and number of needle passes (mean 4.09±0.85 versus 7.45±0.67). (p<0.00001).

CONCLUSION: Biopsies performed under low dose CTF have success rate comparable to standard dose protocol with 85% reduction in radiation dose, fewer number of needle passes and overall shorter intervention time in comparison to standard dose technique.

O-115

Interpretation of critical finding in CT brain using iPad as a diagnostic console

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Comparing diagnostic accuracy and image quality with the LCD monitor calibrated with the gray-scale standard display function

PURPOSE: Intracranial hemorrhage is a surgical emergency and accurate timely diagnosis is crucial for improving outcomes. CT brain has become one of the primary diagnostic modalities. Portable gadgets (like tablets, laptops and smart-phones) have the potential to greatly improve communication between radiologists and surgeons. iPad, although being small, has sufficiently large display with a long battery life, enabling it to be used as a portable diagnostic imaging console.

METHOD AND MATERIALS: All the CT brain performed from ER in the month of July 2013 will be included in the study. All these CT scans were blindly re-interpreted by a consultant radiologist and a senior resident, first on iPad and two weeks later, on PACS diagnostic workstation. The order of patients in both sessions will be randomized to avoid bias. Statistical analysis was performed on SPSS version 20. Paired student t-test, Cohen's kappa coefficient and McNemar test will be used to compare the results.

RESULTS AND CONCLUSION: The study is in progress and the initial results are suggesting that tablet device will have promising results.

O-116

Radiation protection awareness in radiographers and its practical application

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OBJECTIVE: To assess the level of awareness of radiographers regarding radiation effects and hazards and methods of radiation protection, and its practical application.

METHODS: Cross sectional study undertaken primarily at Fauji Foundation Hospital Rawalpindi and in two other major hospitals of Rawalpindi and Islamabad. A total of fifty radiographers were questioned.

A detailed questionnaire was used as the data collection tool. Questions were divided into segments according to radiographer qualification and experience, awareness of measures for radiation protection, vulnerable population and methods to be adopted for radiation protection of patients, patient's attendants and radiographers.

RESULTS: The radiographers displayed adequate knowledge regarding measures for reducing radiation exposure ie time, distance and shielding. They also correctly identified the vulnerable population ie young children and pregnant females. However, mixed results were obtained with respect to radiation protection of the attendants and other patients.

Direct observation of the practice before the questionnaire yielded different results. Sometimes Xrays were carried out with the rooms full of other patients. When attendants have to hold the patients, females of child bearing age were not routinely asked about their pregnancy status to reduce maternal exposure.

CONCLUSIONS: While the knowledge exhibited by the radiographers is generally adequate, the actual practice regarding radiation protection leaves much to be desired. It is recommended that spot surprise checks by radiologists together with possible punitive measures may be helpful in increasing the actual use of the recommended guidelines.

O-117

Parameters for Radiation Protection And Patient, Occupational Dose Management

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PURPOSE: Health physics is concerned with providing occupational radiation protection and minimizing radiation dose to the public. This article reviews radiation dose protection associated with common x-rays and Ct scan examinations, parameters contributing radiation dose reduction and describes techniques for reducing radiation dose. Most of the institutes practice ALARA because of Linear non threshold radiation dose response relationship (LNT) for stochastic effects like cancer, leukemia and genetic effects.

MATERIALS AND METHODS: Radiation dose management in diagnostic radiology is considered to be a critical factor for optimizing radiation protection to the health care practitioners, the patient and the public. Keeping in view the importance of radiation protection in diagnostic x-ray centers, it has been observed that radiographers working in radiology are not trained to apply proper radiation protection procedures and use of personal dosimeters. The observation was made during personal visits in diagnostic radiology departments and interactions with radiographers.

RESULTS: Radiographers working in diagnostic X rays facilities are not properly trained to apply radiation protection principles and procedures. Education and training issues are not being addressed during their professional careers. In this regard the role of Pakistan Nuclear Regulatory Authority (PNRA) and work of medical physicist in these facilities is important. It is also mentioned here that most of the workers in diagnostic radiology are willing to participate in the radiation protection courses and to learn basic physics principles related to radiology.

CONCLUSION: This study suggests that awareness of radiation protection among public is generally low and need proper training of radiology personnels in radiation safety. Use of personal dosimeters, role of Pakistan Nuclear Regulatory Authority and work of medical physicist in these facilities is recommended.

O-118

Understanding the level of awareness and knowledge of interventional radiology among medical students at pakistani institution

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PURPOSE: To evaluate the understanding and level of exposure of interventional radiology (IR) among medical students at a Pakistan medical school. To comprehend the measures through which interventional radiology can be better explained and introduced to medical students.

MATERIALS AND METHODS: Survey based on questionnaire was distributed among medical 600 students in their first, second, and third years, fourth and fifth years at a Pakistan 5-year medical school. A total of 300 students (50%) responded. Each survey contained 17 questions assessing knowledge, interest, and perception of IR.

RESULTS: Sixty-six percent (198/300) of respondents reported "poor" knowledge of IR and only 20% (60/300) said they would consider a career in IR. Respondents cited lack of knowledge (49.3%, 148/300) or lack of interest (50.66, 152/300) as the main reasons why they would not consider IR as a career. Although 31.66% (95/300) of respondents could name at least one IR procedure, many (64%, 192/300) were unclear as to the duties of an interventional radiologist within the hospital. Fifty-two percent (157/300) of students stated that a mandatory 2-week rotation in radiology during clerkship would be beneficial, whereas 67% (202/300) stated that they would be interested in a 2-week interventional radiology selective during their compulsory core surgery rotation.

CONCLUSIONS: The exposure and understanding of interventional radiology in medical school is inadequate. Students were fervent to learn more about interventional radiology and expressed a desire for more exposure. Early exposure of medical students to interventional radiology should be introduced to attract future interventional radiologists as well as increase awareness among future referring physicians.

O-119

The role of healthcare & imaging informatics within radiology to optimize quality of patient care

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OBJECTIVE: A comprehensive Healthcare & Imaging Informatics environment makes patient interaction with the health care systems more convenient, reliable, less time consuming and quality centric.

METHOD: Key Elements with the Greatest Quality Improvement: Within a comprehensive Healthcare IT environment, various subcomponents play a significant role to enhance the overall quality of the healthcare being provided to the patient. These key components were deployed at the Aga Khan University Hospital, a tertiary care 599 bed hospital in Pakistan.

Radiology Report Workflow Management System: Workflow Management System (WMS) helps to improve efficiency in radiology reporting. This is a promising quality initiative by Healthcare IT where the radiology reporting workflow has remained stagnant for many years. WMS addresses timely reporting deficiencies in radiology and is part of the quality-centric initiative is currently taking place within the radiology department.

Picture Archiving and Communication System (PACS): PACS provides archival and access to radiology images throughout the enterprise. The system is a great utility for cooperation and consultation as it allows for images to be shared among different physicians. It is an excellent resource within a teaching hospital's educational environment. PACS facilitates immediate consultation

for patients in critical areas. The patients are facilitated by immediate availability of images of their diagnostic exams which can enable treating physicians to decide on the course of treatment.

Teleradiology: A well-established Tele-radiology environment facilitates reporting for the French Medical Institute for Children in Afghanistan.

Patient Order Entry: A comprehensive system that allows physicians to generate radiology exam requests and eliminate incorrect patient identification as well as better and timely management of patient with improved quality of care.

Real Time Tracking for Delayed Patient: Patient's waiting is tracked in near-realtime to ensure delayed patients are addressed quickly.

Radiation Dose Tracking and Management System: CT radiation dose can be tracked and exposure protocols can be modified to optimally reduce the exposure during the exams.

Resources for Evidence Based Radiology reporting: Multiple resources are used for evidence based reporting that help the radiologists to produce the exam reports with efficiency and accuracy.

Radiology Report Search Engine: A repository of past radiology reports that enable radiologists and students improve reporting results.

E-request system: Report delivery counter clerk send request to filing clerk (with sound alerts) to retrieve patient record and send it to delivery counter.

RESULTS: The Healthcare IT environment has significantly impacted the radiology workflows to enable the department to provide improved patient care as well as to enhance the quality of patient care.

CONCLUSION: Radiology based Healthcare Information Technology environment is the key to improving quality and efficiency in healthcare setups. During the last 10 years in Pakistan, new technology has changed the role of radiology services in healthcare delivery process. Healthcare information technology (healthcare IT) can make patient interactions with the health care systems more convenient, reliable, less time consuming and improves the overall quality of healthcare delivery.

O-120

Use of portable gadgets in radiological clinical and academic activities: A questionnaire-based, cross-sectional study

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PURPOSE: Portable gadgets (tablets and smart-phones) provide rapid access to electronic resources and have the potential to improve clinical practice and academic activities. In the present study, we assessed knowledge, practices and perceptions of health-care professionals regarding portable gadgets.

METHODS AND MATERIALS: A questionnaire-based, cross-sectional study was performed on 100 health-care professionals working in the Department of Radiology at Aga Khan University Hospital, Karachi, Pakistan. Sampling methodology was convenience-based and a self-administered questionnaire was used as the instrument for data collection. Items in the study instrument pertained to use of portable gadgets, knowledge of radiology applications and perceptions regarding potential benefits or drawbacks of using such gadgets.

RESULTS: Study subjects included radiology residents (38%), consultant radiologists (34%) and radiographers (16%) with a mean age of 32.7 years. Four-fifths (80%) of the participants possessed a portable gadget; 46% had only smart-phones, 6% had only tablets and 28% had both. Although 64% of participants commonly used portable gadgets for clinical and academic activities, only 46% had heard of radiology applications. Most of them (80%) preferred hard-copies for studying books (as opposed to e-books). The prime reason for using smart-phones or tablets was portability, while the major impediment to

their usage was the small display. Most (78%) believed that portable gadgets had a positive impact on their clinical practice.

CONCLUSION: Portable gadgets were being used by a substantial proportion of radiographers, radiology trainees and consultant radiologists for clinical and academic activities. However, most of them still preferred hard-copies for studying over e-books.

O-121

Picture archiving communication system

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Perceptive PACS Connect is a proven workflow solution for hospitals and imaging centers. Built on open standards such as DICOM and HL7, PACS Connect enables IHE workflow for interoperability with your existing PACS. Simple and powerful software delivers data accurately and efficiently throughout your enterprise. Most importantly, PACS administrators can monitor and configure the application from any location on the network.

PACS Connect offers:

- Simple user interface that manages HL7 to DICOM MWL mappings
- Quick, wizard-based installation and configuration
- Validated against a wide variety of PACS and modalities
- Order and work list information for non-scheduled departments such as cardiology, gastroenterology, dermatology, orthopedics and pathology ETC.

PACS Connect lets technologists select the appropriate study at each modality without having to manually re-enter patient demographics, which eliminates data entry errors. The software includes full DICOM and HL7 trace logs, work list/patient queries, and lookup tables for easy data re-mapping.

A picture archiving and communication system (PACS) is a computerized means of replacing the roles of conventional radiological film. This review describes the Hammersmith PACS, and discusses the advantages and disadvantages of PACS systems.

O-122

HRCT approach to fungal lung infections in immunocompromised patients

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LEARNING OBJECTIVES: To review the HRCT findings of the various fungal infections.

BACKGROUND: Fungal infection is a common complication after immunosuppression. Despite advances in diagnosis and treatment, it remains a major cause of morbidity and mortality.

IMAGING FINDINGS:

- Different imaging patterns are recognized in fungal infections including nodules, masses, consolidation, cavitation, ground-glass opacification and tree-in-bud pattern.
- The majority of these patterns are non-specific due to similar and overlapping imaging manifestations.
- A few imaging patterns were recognized as more specific patterns including the "halo" and "air-crescent" sign.

CONCLUSION: Recognition of typical imaging patterns of fungal infections may assist clinical management of immunosuppressed patients.

POSTERS (P)

P-1

Renal artery aneurysm: A rare vascular lesion

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INTRODUCTION: Renal artery aneurysm is a rare clinical entity, but when encountered is of great clinical significance because of propensity for rupture, etc. Autopsy studies have revealed an incidence of renal artery aneurysm of 0.01 to 0.09%. In two studies, renal artery aneurysms were documented in 0.73 to 0.97% of arteriograms performed.

CASE REPORT: We report a case of 28 year old female who came to our radiology department for donor CT angiography. CT angiography showed single bilateral renal artery with evidence of a 10x6.0mm tear drop shape aneurysm arising from superior anterior branch of right renal artery at the renal hilum. No AV shunting or parenchymal perfusion defects were noted. Single bilateral renal vein identified. No immediate complication

DISCUSSION: As there is lack of controlled data, controversy persists regarding the management of asymptomatic renal artery aneurysms. Renal artery aneurysms may be true (saccular and fusiform), false (arising from penetrating or blunt trauma) or dissecting aneurysms. More than 90% of the renal artery aneurysms are extraparenchymal. The peak incidence occurs between the ages of 40-60 years. If fibrodysplastic cases are excluded, there is an equal incidence in males and females. Renal artery aneurysms are bilateral in 10% of cases. Approximately 75% of the renal artery aneurysms are saccular and almost invariably occur at the main renal artery bifurcation.

The vast majority of renal artery aneurysms is asymptomatic and discovered during imaging studies. Renal artery aneurysms may cause renovascular hypertension by: a) distal embolization with segmental hypoperfusion and renin-mediated vasoconstriction, b) fluid retention or c) compression of an adjacent renal artery branch or luminal stenosis due to extensive thrombus leading to renin-mediated hypertension.

Treatment options for renal artery aneurysm include operative or endovascular embolization using detachable coil or balloons. Indications for treatment include:

- rupture
- renovascular HTN
- embolization
- dissection
- aneurysm expansion
- size ≥ 1.5 cm to ≥ 2.5 cm
- women who are pregnant or of child bearing age 15.

P-2

Role of magnetic resonance urography (MRU) in various ureteric pathologies

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OBJECTIVES: Magnetic resonance urography (MRU) uses heavily weighted T2 coronal images with fat suppression pulse. Urine appears white on MRU, resembling an intravenous urogram (IVU). Contrast agents are not necessary. This study describes the use of MRU in the diagnosis of various ureteric pathologies.

MATERIAL AND METHODS: Using 1.5T MRI OF PHILIPS in 3 months period 23 patients of various ureteric pathologies undertaken MRU study using heavily weighted T2 coronal images with fat suppression pulse.

RESULTS: MRU provided high-resolution images in almost all cases; 3 patients showing congenital ureteric anomalies, 7 patients showing stricture, 4 patients showing ectopic ureters, 2 patient showing urothelial malignancy, 1

patient of ureteritis cystica. 6 patients with renal failure also had good visualization of the both ureters.

CONCLUSIONS: MRU provides a good alternative imaging for various ureteric pathologies.

P-3

Endometrial arteriovenous malformation after dilatation and curettage

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BACKGROUND: Uterine arteriovenous malformation is an uncommon but life-threatening condition. Increased suspicion and timely diagnosis of this condition is important because instrumentation done for other purposes of uterine bleeding can lead to massive bleeding.

CASE: Here we describe a case of uterine arteriovenous malformation of a 32-year-old woman, para 2, who presented with abnormal vaginal bleeding followed by induced abortion. Her ultrasound examination revealed retained products of conception, and then she underwent dilatation and curettage. After two months she relapsed with heavy bleeding. Ultrasound then showed dilated heterogeneous endometrial cavity and Spectral Doppler ultrasound revealed high velocity and low-resistance flow which raises the possibility of arteriovenous shunting. Pelvic angiography then confirmed the diagnosis. Embolization of bilateral uterine arteries was done successfully.

CONCLUSION: Uterine vascular malformations are rare but life threatening condition, clinicians should consider the high index of suspicion if patient presents with intermittent profuse vaginal bleeding after uterine curettage, especially if patient is nonresponsive to treatment. Although pelvic angiography is the gold standard technique for diagnosing uterine arteriovenous malformation, Doppler ultrasonography can be used as an initial noninvasive method.

P-4

Hyperreactio luteinalis (HL) with partial molar pregnancy

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INTRODUCTION: Hyperreactio luteinalis (HL) refers to moderate to marked cystic enlargement of the ovaries due to multiple benign theca lutein cysts and it is unusual for these cysts to be bilateral. It is most often associated with hydatidiform mole or choriocarcinoma. HL may present during any trimester as an abdominal mass or acute abdomen.

CASE REPORT: A 22 years old female from rural areas came to our department for ultrasound fetal well being as she was having mild vaginal bleeding. She was para1 plus 2 with history of one intrauterine death. On ultrasound, the uterus was filled with cystic spaces and a fetus corresponding to 10wks of gestation was seen in the uterine cavity representing partial molar pregnancy. Both ovaries were significantly enlarged and filled with numerous cysts of variable sizes.

CONCLUSION: Recognition of HL is important, since misinterpretation have resulted in unnecessary surgery, often with sterilization. They can be complicated by rupture, torsion or hemorrhage so careful monitoring is required. There were few cases reported in literature showing bilateral corpus luteal cysts associated with molar pregnancy.

P-5

Uterine Fibroid extending into the heart, a Pictorial review:

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PURPOSE: The purpose of this exhibit is to review imaging features of the unusual case of complicated fibroid, extending into the heart.

CONTENT ORGANIZATION: Pathology and epidemiology of uterine fibroids. Review of complications of uterine fibroids including unusual complications like intravascular parasitization, metastasizing leiomyomatosis, intravascular growth and parasitic growth with imaging examples from 128 slice MDCT.

SUMMARY: Leiomyomas are the most common uterine neoplasm with a very rare unusual complication of intravascular parasitic growth, which can be identified on imaging. We present an illustrative case and provide a review of the preoperative CT assessment using multiplanar reformatting and vessel selection tools, which can act as a road map for surgeons for ideal operative approach. The importance of a multidisciplinary approach to diagnosis and management is highlighted.

P-6

To study the frequency of placenta previa / accreta in patients with previous cesarean section.

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STUDY DESIGN: Prospective hospital based study

PLACE AND DURATION OF STUDY: Department of diagnostic radiology, Bahawalpur from May 2014 to October 2014.

PATIENTS AND METHODS: The study included patients with the suspicion of placental invasion with previous c-section, through the out patient and indoor department. Diagnosis was confirmed by transabdominal ultrasound and in patients with anterior placenta, previous cesarean section and placenta previa, doppler ultrasound was done to diagnose placenta accreta.

RESULTS: During the study period 38 cases of major degree placenta previa were diagnosed. 22 (57.89%) were admissions and 16 (42.10%) were out patient department. 29 (76.39%) patients had previous cesarean section and 9 (23.68%) patients had all previous vaginal deliveries. 8 (27.58%) patients had previous one cesarean section and 21 (72.41%) had 2 or more cesarean sections, 4 (10.52%) patients had placenta accreta and out of these 3 patients were diagnosed antenatally by doppler ultrasound and one patient was diagnosed at emergency cesarean section.

CONCLUSION: The major risk factor for the placental invasion is uterine scarring and therefore the incidence is increasing with increasing cesarean section rate. Placental accreta is one of the most serious complications of placenta previa. It is suggested that in patients with anterior major degree placenta previa and previous cesarean section, antenatal diagnosis of placenta accreta should be made by doppler ultrasound so that appropriate management plan can be made.

P-7

Knowledge Challenge: Garlet Sign on DXA Scan

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This is a 55 years old postmenopausal lady, being worked up for left sided breast cancer. On first to Radiology department she had a contrast enhanced abdomen chest CT studies and then had a Dual Energy X-ray Absorptiometry (DXA) scan. However, after reviewing the scan, the nuclear physician requested a repeat study after 3 days.

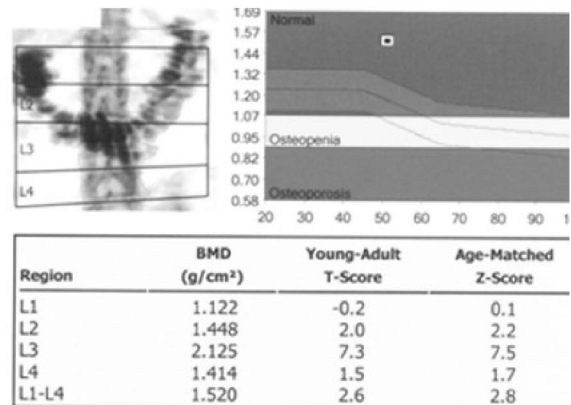


Figure 1: DXA scan of lumbar spine on first visit.

Question 1: Why a repeat study was suggested?

Answer:

- a. Patient was not positioned properly
- b. Error in energy window of X-ray
- c. Computer error in calculating T and Z-scores
- d. Optimal study but with abnormally high T and Z scores

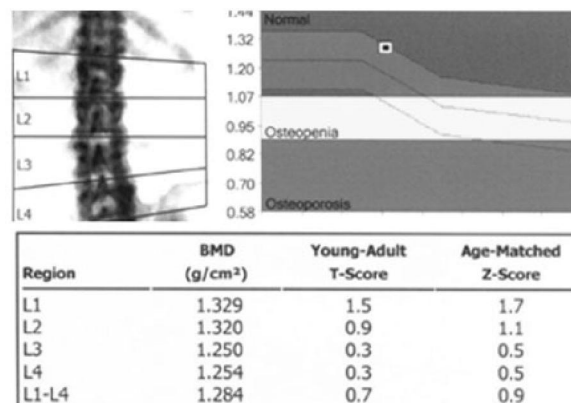


Figure 2: DXA scan of lumbar spine on subsequent visit.

After 3 days a repeat DXA scan done and this time exam was found satisfactory.

Q2: Why abnormally high T and Z-scores got normalized?

Answer

- a. Patient was positioned properly
- b. Technical error in DXA machine was rectified
- c. Oral contrast has been washed out
- d. Patient has received some treatment to bring her T and Z score into normal limits.

COMMENT: Correct answers are 1d and 2c. One her first visit she had a contrast enhanced CT study which was followed by a DXA scan. Due to presence of oral gastrografen in transverse colon (visible in Figure 1 as a “Garlet Sign”) this has resulted in higher photon attenuation over the lumbar spine. This attributes to falsely elevated bone mineral density (BMD), T and Z-scores for her age. Repeat scan after 3 days shows absent “Garlet Sign” due to clearance of gastrografen and correct measurement of BMD and other scores over lumbar spine. It is important to defer a DXA scan for at least 2 weeks after an intravenous contrast, 3-7 days after an oral contrast and 1-2 days after a nuclear medicine procedure performed with Tc-99m to avoid falsely high BMD, T and Z-score values.

P-8**Multifocal haemangiomas including a giant hepatic haemangioma with capsular retraction and Kasabach-Meritt's Syndrome**

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Haemangiomas are the most common benign lesions of liver with female gender preponderance. These are usually silent and become symptomatic when larger in size (>4 cm – giant haemangioma). Multifocality and capsular retraction on computerized tomography are rare features. We are presenting a case of multifocal haemangiomas with a giant hepatic lesion showing capsular retraction on CT images.

P-9**Management of radioactive spills in nuclear medicine; teaching and assessing with OSATS (objectively structured assessment of technical skills)**

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LEARNING OBJECTIVES: By the end of this paper the readers will have learnt how to use "OSTAS" (objective structured assessment of technical skills), for the teaching and assessment of the learning of the protocol for "Radioactive Spill Management". It involves the use of a simple checklist (OSAT checklist), that teaches as well as evaluates learning. This checklist may act as a tool for formative learning and assessment or may be used to certify the learning objective for credentialing purposes.

ABSTRACT BODY: Routine work in nuclear medicine requires the careful elution of radioactivity and its subsequent, storage and handling. Though all effort is maintained to prevent any "spill" of this radioactivity, accidents are bound to happen. The response to this spill is a methodically worked out plan that is written and adopted as a "standard operating procedure" (SOP). This protocol is taught to all involved in the area of working as a mock drill/apprenticeship model. No formal evaluation of the learning is in place except for the mock drills.

The OSATS is a variation on the OSCE, or Objective Structured Clinical Examination which is a form of workplace based assessment. The OSATS is cited in the ACGME Evaluation Toolbox on the website as the most desirable evaluation tool for the Patient Care topics.

It is the objective of this paper is to introduce the "OSATS" for the teaching, and assessment of the learning, of the protocol for the management of radioactive spill. As a review of the literature on the subject failed to reveal any such teaching protocol/material/document for this important technical skill, we hope that it may act as a landmark for the development of teaching and assessment of other technical skills also.

P-10**Comparison of PET/CT to conventional diagnostic modalities in pre-treatment staging, response monitoring, restaging, surveillance of Hodgkin's disease and high grade Non-Hodgkin's lymphoma**

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PET/CT has been established superior to CT scan in assessing lymphoma; it is more sensitive and specific with 96% accuracy as compared to 56% in case of CT scan and a sensitivity of greater than 91%.

It is a retrospective study including patients of Hodgkin's lymphoma and high grade Non-Hodgkin's lymphoma that have been simultaneously worked up with a CT scan and PET/CT scan and duration of the study is from January 01, 2014 to June 30, 2014.

We have compared PET/CT scan and CT scan in detecting disease in all stages through work up i-e diagnosis, staging, restaging, interim response assessment and end of treatment and have tried to elaborate the impact of either modality on morbidity, mortality and cost of treatment.

P-11**Temporal Trends in Results of 9170 Myocardial Perfusion Imaging Studies (2004 to 2013)**

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BACKGROUND: To assess the frequency of normal and abnormal myocardial perfusion imaging (MPI) in a consecutive cohort of patients over a period of 8.5 years from Pakistan.

MATERIAL AND METHODS: We assessed 9170 patients who had undergone stress-rest MPI between January 2004 and June 2013. Patients were assessed for change in demographics, risk factors, and frequency of abnormal and normal MPI.

RESULTS: Overall mean age and male predominance of studied cohort was ~ 55 year and ~ 55:45 (M:F) respectively with no appreciable decline or rise. Marked decline in exercise as mode of stress (from 71% to 35%, p value significant) was noted during the study period. Regarding the risk factors for CAD, only hypertension was noted to have a significant rising trend during the study period. Trend of MPI results over study period was found non-significant from 2004 till 2006 but from 2007 onward (except 2008), a marginal but significant decline in abnormal MPIs (from 45% to 42%; significant p value) and rise in normal MPI (from 55% to 58%; significant p value) was noted.

CONCLUSIONS: We conclude that over the past 8.5 years, a marginal but significant decline in abnormal and a rise in normal MPI trend have been observed. An exorbitant rise in use of vasodilator as stressor than exercise was also observed. We envisaged a follow-up study to ascertain lower negative predictive value of vasodilator as a possible reason and till then results of this and other such studies must be read cautiously.

P-12**Megacystis microcolon intestinal hypoperistalsis syndrome (MMIHS) – A rare case of intestinal obstruction in newborn**

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Megacystis Microcolon Intestinal Hypoperistalsis Syndrom (MMIHS) is a quite rare congenital and fatal disease which was firstly described by Berdon et al. It characterized by massive abdominal distension caused by a largely dilated non-obstructed urinary bladder, microcolon and decreased or absent intestinal peristalsis. Its cause and prevalence is unknown but the disease has been reported in 230 patients, of which 71% are females. It is usually lethal within the first

year of life. Prenatal diagnosis of MMIHS is mostly based on fetal ultrasound, revealing enlarged urinary bladder and hydronephrosis. Recent reports have proposed prenatal magnetic resonance imaging (MRI) in combination with analysis of enzymatic changes to contribute to prenatal diagnosis of MMIHS. There is no curative treatment for MMIHS. Various surgical interventions including gastrotomy, jejunostomy and vesicostomy have been reported and have been generally unsuccessful in most patients. Several multivisceral transplantations have also been reported. In the majority of patients total parenteral nutrition is required. However, prognosis and life expectancy of this generally fatal disease remains poor. Death is mainly caused by sepsis, malnutrition or multiple organ failure.

We present the case of a female newborn with antenatal ultrasound revealing an intraabdominal cyst with bilateral hydronephrosis. The case presented in the Emergency department for intestinal obstruction after birth. We report a case of a term baby girl (2.1 kg birth weight) with an antenatal diagnosis of intra-abdominal cyst and bilateral hydronephrosis born through caesarean section due to decreased fetal movements. After 72 hours delay of urination and meconium, she was referred to our department. She presented with abdominal distension, inability to pass urine and stools and bile stained vomiting since birth. On inspection, she was lethargic, icteric and dull looking. There was gross abdominal distension on per abdominal examination. Nasogastric tube was passed and intravenous fluids were given. Her abdominal radiograph showed Massive distension of abdomen with fluid with small gas filled stomach shadow in left upper quadrant. Rest of the abdomen was gasless.

Her ultrasound abdomen revealed a Large thin-walled anechoic cystic lesion occupying most of the abdomen, compressing the abdominal viscera causing moderate to gross bilateral hydronephrosis. Subsequently CT scan of abdomen and pelvis was performed which showed occupation of the entire abdominal cavity by significantly distended urinary bladder which is resulting in gross hydronephrosis. The visualised bowel loops were collapsed. A suggestion of megacystis microcolon intestinal hyperperistalsis syndrome was made and barium enema was advised for confirmation. Non-ionic contrast was given through rectum which opacify small appearing colonic loops concentrated in the midline. No reflux of contrast is noted in the small bowel loops. The appearances confirmed microcolon.

Silicon catheter was passed which decompressed her grossly distended urinary bladder. Serum electrolytes and urinary output were strictly monitored, antibiotics were given. Patient's parents were counseled of grave prognosis of disease. It was planned to explore the case surgically but suddenly the patient's condition deteriorated and was put on ventilator support but unfortunately she died on 9th day of her life.

P-13

Cecal Vanishing Tumor Associated With Cytomegalovirus Infection in a Transplant Recipient

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Gastrointestinal involvement in cytomegalovirus (CMV) infection is well documented among immunocompromised patients and is also observed in immunocompetent individuals. The presentation of this infection can sometimes mimic those of other diseases, thus making accurate diagnosis difficult. We herein report a case of an immunocompromised young adult transplant recipient with gastro intestinal CMV infection. Patient presented with low B.P, anemia abdominal pain and bleeding per rectum. He has history of renal transplant two years back and there was no history of ischemic bowel disease. Colonoscopy revealed a tumorous lesion with ulcerations involving the cecum. Histopathology showing intranuclear inclusion bodies consistent with CMV infection on immunohistochemical staining.

P-14

Fibrolamellar Hepatocellular carcinoma: Mimicking Hydatid cyst

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INTRODUCTION: Fibrolamellar Hepatocellular carcinoma is a rare histopathological subtype of hepatocellular carcinoma associated with better prognosis. Its clinical presentation is non-specific as in this case. Pathology is the gold standard in confirming the diagnosis.

CASE REPORT: A middle age female from rural area presented with right hypochondrial pain for more than six years. She had history of exposure to pet animals. CT scan abdomen done five years back was reported as atypical hemangiomas in both lobes of liver. Ultrasound examination revealed multiple cystic-cum-solid lesions with internal septations, giving snow storm sign, spoke wheel appearance favoring the diagnosis of hydatid cyst. Ultrasound was followed by triphasic CT scan abdomen which showed multiple complex multi-loculated cystic lesions of varying sizes scattered through-out the liver. These lesions show heterogeneous septal and peripheral enhancement on arterial phase with partial washout on portal venous phase and significant washout in delayed images, enhancing central scar in few of the lesions raises the suspicion of Fibrolamellar Hepatocellular carcinoma. Serum Alpha-fetoprotein level, Hepatitis B virus, Hepatitis C virus and Echinococcal titre were sent which were all negative. Biopsy of the mass led to the histopathological diagnoses of Fibrolamellar Hepatocellular carcinoma.

CONCLUSION: Patient presented to us with history and radiological findings which were highly mimicking Hydatid cyst but in the end proved to be an atypical Fibrolamellar Hepatocellular carcinoma on histopathology.

In this case the patient remained undiagnosed for many years due to the atypical radiological presentation of the lesions. As the lesions were multiple, some of the lesions were not showing the central scar and on ultrasound they appeared to be solid-cum-cystic with multiple daughter cysts with internal septations.

P-15

Internal biliary drainage performed through cystic duct in patient of Non-hodgkin's Lymphoma

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PURPOSE: To highlight the unusual approach of internal biliary drainage through cystic duct.

BACKGROUND: A 37 years old male diagnosed case of gastroduodenal Non-hodgkin's Lymphoma underwent cholecystojejunostomy and gastrojejunostomy developed obstructive jaundice. He underwent PTC using right sided access, pre procedure cholangiogram performed showed abrupt cut off of the distal CBD and pre dominant flow of contrast through the cystic duct into jejunal loops across the anastomosis which its self appeared stenotic.

Attempts were made to access the distal CBD but failed and resulted in iatrogenic biliary leakage during the attempts. Subsequently due to lack of alternative, attempt was made to engage cystic duct. Cystic duct was engaged which was successful. Access into jejunum through the cystojejunostomy site was obtained and internal external biliary drain placed. Adequate flow of contrast was observed across both the right and left biliary channels and into jejunal loops.

We searched medline database case report limited human studies for any such case but did not find any.

CONCLUSION: Internal biliary drainage can also be performed through cystic duct for patients who have had prior surgical intervention.

P-16**Embolization of renal angiomyolipoma with PVA-A case series**

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BACKGROUND: Renal angiomyolipomas (AML) larger than 4cm carry the risk of spontaneous hemorrhage and need treatment. Angiography and embolization is the current standard of care

CASE SERIES:

CASE 1: A 59 year lady with multiple co-morbid (Diabetes, hypertension, prior H/O cardiac valve surgery, CABG and pace maker in situ) presented with left flank pain. CT showed a large left renal lower pole angiomyolipoma measuring 7cm with perirenal hematoma. After obtaining medical and cardiac fitness, antiplatelet and anticoagulant therapy was held to obtain normal coagulation status. Angiography demonstrated an ectatic aneurysmal segmental left renal artery supplying AML. Embolization was performed using 2 vials of PVA particles (500-700 micron) through C2 catheter. Post procedure angiogram demonstrated preserved left renal parenchyma without any flow into the AML. Patient had uneventful recovery and anticoagulant therapy was re-instated the following day after procedure.

CASE 2: A 44 year lady with no co-morbid presented with severe left flank pain followed by hypotension. She was resuscitated at an outside facility and work up showed a large right upper renal pole AML measuring 9cm with large perirenal hematoma, small intraperitoneal hemorrhage and right pleural effusion. The AML was predominantly being supplied by a small branch arising directly from aorta adjacent to superior mesenteric artery leading to multiple large aneurysmal dilations within the AML. It was engaged with 5Fr SIM-2 catheter and 2.7Fr microcatheter was then used to embolize the AML using a combination of 3 vials of PVA particles and 5 coils of various sizes. Post procedure angiogram demonstrated near complete occlusion of the feeding artery. Patient had an uneventful recovery.

CONCLUSION: Embolization of renal AML is safe minimally invasive procedure preserving maximum renal parenchyma, with the added advantage of preventing perioperative morbidity. We recommend it as first line treatment for all angiomyolipomas needing treatment.

P-17**Percutaneous retrieval of displaced catheter from pulmonary trunk in an infant; A case Report**

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BACKGROUND: Intravascular foreign body is an emergency in IR suite; with rising incidence as a result of overall rise in number of vascular access procedures. While retrieval of fractured and displaced guide wires is tricky in itself; we had an unusual case in which catheter had migrated and embolized to the pulmonary artery like a saddle embolus.

CASE: Porta Catheter is long term indwelling catheter especially for pediatric oncology patients for administration of chemotherapy. Displacement of part or complete catheter with migration to the heart or pulmonary arterial tree is one of the rare complications, which can be potentially life threatening.

A one year old child with knownhepatoblastomahad porta catheter placement 2 months back. He received 3 courses of chemotherapy via catheter uneventfully. On his admission for 4thcycle, the nursing staff was unable to aspirate blood from the port. Chest radiograph demonstrated dislodged catheter lying in the pulmonary arteries like a saddle embolus extending into right and left pulmonary artery; the child was asymptomatic.

Radiological intervention was offered under anesthesia with high risk consent from parents including possibility of cardiac complications like arrhythmias and valvular damage due to intra-cardiac manipulation of catheters. The 18cm

long catheter was successfully retrieved using goose neck snare and the baby had uneventful recovery.

CONCLUSION: Radiological intervention is a safe method of retrieval of intravascular foreign bodies including those from pulmonary arteries with added advantage of being minimally invasive compared to open pulmonary arteriotomy.

P-18**Incidence of Cholangitis and Sepsis Associated with Percutaneous Transhepatic Biliary Drain Cholangiography and Exchange: A Comparison with International Standards**

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OBJECTIVE: The purpose of our study was to determine the rate of sepsis and cholangitis associated with percutaneous biliary drain cholangiography and subsequent drain exchanges and to compare the incidence of these complications with internationally set standards.

MATERIALS AND METHODS: A retrospective review of 131 consecutive patients who underwent a total of 200percutaneous biliary drain cholangiography examinations and exchanges (January 2010 to Nov 2012) was performed. Cholangitis was defined as fever (> 38.5°C) and sepsis included cholangitis in addition to hemodynamic instability.

RESULTS: The overall incidence of cholangitis and sepsis after percutaneous biliary drain exchanges was 2.5% (n = 5/200 exchanges) and 0.5% (n = 1/200 exchanges), respectively. The mean hospital stay due to postprocedural complications was 4 days for observation and supportive treatment. One of these patients required an intensive care stay.

CONCLUSION: Percutaneous biliary drain cholangiography and exchange is associated with a low rate of postprocedure cholangitis and sepsis. These complications require brief hospitalizations.

P-19**Post radiation fibrosis or recurrence involving brachial plexus? How to solve the dilemma**

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PURPOSE: To highlight the imaging features of post radiation fibrosis versus disease recurrence involving brachial plexus.

BACKGROUND: Brachial plexus can be involved in a variety of cancers including lung, breast CA, lymphoma and also melanoma. Diagnosis of recurrence versus post radiation fibrosis in a treated cancer patient can be tricky for a radiologist at various places; this is further complicated by the inherently complex anatomy of brachial plexus. Furthermore, the clinical presentation can have a varying combination of sensory and/or motor symptoms. Infrequently requested imaging of the brachial plexus can be a challenge for both the novice and experienced reader. Invasive methods of diagnosis, such as biopsy, yield variable result and carry the risk of causing permanent sensory and/or motor deficit and may also cause long term neuralgic pain. The aim of this poster is to highlight the imaging features of disease recurrence and post radiation fibrosis (with special emphasis on role of MRI); the diagnosis of either of which forms the backbone of further patient management. Recurrence is treated and post radiation fibrosis is followed up in all cases.

CONCLUSION: Imaging can help differentiate post radiation fibrosis and disease recurrence involving brachial plexus.

P-20

Brachial plexus mass lesions: Diagnosis and characterization with MRI

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PURPOSE: To discuss MRI features of primary and secondary tumors of brachial plexus on MRI.

BACKGROUND: Brachial plexus (BP) MRI interpretation has been a daunting task for the clinical radiologist. Even though primary tumors of BP are not very common, secondary involvement can be seen in a variety of disease processes including lung and breast cancers, as well as lymphomas. The clinical presentation can have a varying combination of sensory and/or motor symptoms. This coupled with infrequent requests for MRI of brachial plexus poses further diagnostic difficulty for both the novice and experienced reader. Invasive methods of diagnosis, such as biopsy, have an inherent possibility of being non diagnostic; carry the additional risk of causing permanent sensory and/or motor deficit and may also cause long term neuralgic pain. This is especially to be avoided for benign lesions. MRI is an invaluable non invasive modality which demonstrates characteristics of the BP lesions and helps in characterization. The aim of this poster is to highlight the imaging features of primary and secondary BP tumors.

CONCLUSION: MR Imaging can help characterize brachial plexus masses.

P-21

Not Every Hyper intense Glitter on Brain MRI is Lymphoma. A Pictorial Case report

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INTRODUCTION: Primary or secondary CNS lymphoma remains a concern in the cancer world with its presentation varying between involvements of a nerve up to the brain parenchymal involvement itself. While we deal with CNS involvement, a number of differentials need to be considered for appropriate diagnosis, effective management and better outcome for the patient.

CASE: A 34 year male with diffuse large B- cell lymphoma landed in ICU with altered sensorium progressing into total unresponsiveness and unequal pupils. Patient underwent brain imaging with MRI features being initially labeled to be lymphomatous involvement while MR spectroscopic analysis highlighting the mismatched findings to that of lymphoma. A retrospect analysis of previous imaging including PET scans and thoracic imaging led us to diagnosis of tuberculous involvement of nervous system with overlapping MRI features that of lymphoma, while brain spectroscopy creating the difference.

CONCLUSION: The case is a limelight in drawing the attention of considering other differentials even in patient with diagnosis of lymphoma.

P-22

Baló's concentric sclerosis (BCS)

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Baló's concentric sclerosis (BCS) is a rare demyelinating disease considered to be a variant of multiple sclerosis. Diagnosis is based on MRI, but very few data are available concerning the lesion features using serial proton magnetic resonance spectroscopy (MRS). We describe the spectroscopic imaging findings in a 40-year-old male with Balo concentric sclerosis. MR spectroscopy offers insight into the possible pathophysiology of this rare disease. The MRS study of 2 concentric ring-enhanced lesions showed a decreased N-acetyl-aspartate (NAA) peak, and an increased choline peak. These findings are similar to those reported in demyelinating disorders, such as multiple sclerosis. It is the first report of 1MRS findings in Balo's concentric sclerosis in our department. MRS may provide neurochemical arguments for inflammation and demyelination, and indicate the severity of axonal damage and recovery.

P-23

A typical locations of dermoid - Case series

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Dermoid are benign slow growing neoplasms that have predominantly been reported in the midline of body primarily at sites where embryonic parts fuse together. However these may occur anywhere in the body. We report a case series of three patients having dermoid at atypical locations seen in our department from July '14 to December 2014. These unusual sites included intraventricular and orbital dermoid in two young adult females while retroperitoneal dermoid in a four year old child. All cases were diagnosed based on the characteristic CT and contrast enhanced MRI findings.

P-24

Erdheim chester disease: A case report

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INTRODUCTION: Erdheim-Chester disease (ECD) is a rare non-Langerhan's cell, non-familial granulomatosis, with widespread manifestations and of highly variable severity. Musculoskeletal involvement is most common, with multifocal extra skeletal involvement seen in 30-50% of patients. There is bilateral, symmetric metaphyseal and diaphyseal sclerosis giving increased uptake on Tc-MDP bone scan. Inferior vena cava and pelvic are typically spared, which are useful cross-sectional imaging findings for differentiation of retroperitoneal. It also shows dural accumulations, that may mimic, with enhancing soft tissue masses.

CASE REPORT: 59 year old lady with history of diabetes, HTN initially diagnosed with retroperitoneal and orbital fibrosis presented with worsening symptoms with development of mediastinal fibrosis. CT guided biopsy of mediastinal mass documented Erdheim Chester disease with involvement of retro peritoneum, mediastinum, orbital masses and symmetric osseous sclerosis.

DISCUSSION: In retroperitoneal fibrosis the are classically medially deviated, giving a distinct path different from their usual course. Contrast enhancing fibrosis encompassing the retroperitoneal structures causing ureteric and vascular obstruction and displacement. While ureters and IVC are typically spared in erdheim chester disease.

P-25**MRI findings in chronic methanol intoxication in a young male**

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INTRODUCTION: Methanol, also known as wood alcohol, is a commonly used organic solvent in variety of materials like enamel, textile, dyes etc. Because of its toxicity, it can cause metabolic acidosis, neurologic sequelae, and even death, when ingested. It is a constituent of many commercially available industrial solvents and of poorly adulterated alcoholic beverages. Methanol toxicity remains a common problem in many parts of the developing world, especially among members of lower socioeconomic classes.

Sophisticated imaging techniques like MRI have enabled a better understanding of the clinical manifestations of methanol intoxication. Additionally, neurologic complications are recognized more frequently. This is possible because of early recognition of the toxicity and advances in supportive care.

CASE REPORT: A 30 year old habitual alcoholic male presented in emergency department in unconscious state with difficulty in breathing after a bout of heavy drinking with his friends. Chest x ray, ECG, blood CP, and blood sugar was normal. After regaining consciousness he had loss of vision in both eyes. His MRI was done which showed abnormal signal intensity areas in bilateral putamen, external capsule and subcortical white matter in frontal and occipital lobes appearing hypointense on T1WI and hyperintense on T2WI and FLAIR images showing restriction on DWI.

DISCUSSION: This case illustrates that the methanol poisoning is an acute emergency usually result of fraudulent adulteration of alcoholic drinks producing severe metabolic acidosis and serious neurological effects. MRI brain plays important role in delineating neurological involvement so Early diagnosis with urgent and prompt treatment can be planned.

P-26**Anatomical and morphological variations of circle of willis (COW) by 3D TOF magnetic resonance angiography**

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AIM AND OBJECTIVE: The aim of the study is to evaluate the prevalence and pattern of Circle of Willis arterial variants in Three Dimensional Time of Flight (TOF) Magnetic Resonance Angiography.

MATERIAL AND METHOD: A retrospective and prospective study was carried out with the time duration of 8 months that comprises of 100 subjects, Age ranges 20-80years, 45 of whom were males and 55 of them were females. All subjects underwent three-dimensional Time of Flight (TOF) MR Angiography of the arterial circle at 1.5T (Signa GE Medical System). The anatomic variants of anterior and posterior parts of the circle were determined separately on maximal intensity projection (MIP) images. The completeness of the entire circle was assessed and the diameters of all component vessels were measured.

RESULTS: A review of the results of 100 consecutive subjects undergoing 3D Time of Flight (TOF) MR Angiography of Circle of Willis (COW) was performed. On MR Angiogram 75 (75%) subjects demonstrated a complete anterior part of the circle, 22(22%) subjects demonstrated a complete posterior part of the circle and 18 (18%) subjects demonstrated an entirely complete Circle of Willis (anterior and posterior parts of the circle combined). Ten types of variations of anterior and posterior parts of the circle were recognized.

CONCLUSION: The Circle of Willis variation is a common phenomenon. MRA could enable to reflect the physiological morphology of Circle of Willis in a comprehensive manner and provide some reference for prognosis and treatment of Cerebro-vascular diseases.

P-27**Evaluation of neurologic complications by MRI brain in Kidney transplant Recipients**

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OBJECTIVE: The aim of this retrospective study was to evaluate brain MRI findings in patients who showed neurologic complications after kidney transplantation.

MATERIAL & METHOD: The result in 50 renal transplant recipients who had brain MRI evaluated retrospectively. We performed 50 MRI on kidney recipients. Neuroradiologic findings were classified in three groups:

In Group 1: Findings were related to transplantation.

In Group 2: findings were related to chronic parenchymal diseases.

In Group 3: To neither transplantation nor chronic parenchymal disease.

RESULTS: In group 1: 1(2%) patient after kidney transplantation had posterior reversible encephalopathy syndrome. 3(6%) patients had tuberculosis granulomas. 1(2%) patient had nocardial abscess. 1 (2%) patient had pontine myelinolysis. 2 (4%) patients had ADEM.

In group 2: 8(16%) patients had old lacunar infarcts. 8 (16%) patients had ischemic changes, 3 (6%) patients had intracranial hemorrhage. 1 (2%) patient had metabolic encephalopathy.

In group 3: 1 (2%) patient had meningioma. 2 (4%) patients had vasculitis. 1 (2%) patient had leukoencephalopathy. 1 (2%) patient had MS. 1(2%) patient had anaplastic astrocytoma. 1(2%) patient had arachnoid cyst. 1 (2%) patient had lipoma.

CONCLUSION: Neurologic complications after renal transplantation may be secondary to transplantation itself, to chronic parenchymal disease or to neither transplantation nor chronic parenchymal disease.

P-28**Complete Situs Inversus, Polysplenia, Extensive varices**

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We report a case of 24 year male Known case of hep c +ve. Patient came to gastrointestinal opd with complains of per rectal bleeding, hematemesis and fever. He was severely anemic with hb of 6.7mg/dl. coagulation profile showed protein s,c and antithrombin 3 deficiency.

His colonoscopy was performed which showed no active bleeding site. His upper GI endoscopy was performed which showed blood clots in stomach, varices at duodenal bulb, distal duodenum, proximal and mid jejunum. Radiological imaging, Chest x ray dextrocardia, Us abdomen showed situs inversus, dilated portal vein with varices in right side of abdomen, polysplenia, no ascites. CT angio was done which showed, Complete situs inversus Normal size liver with dilated portal vein measures 1.4cm, upto portosplenic confluence without filling defect. Polysplenia Celiac artery is small thinned, collateral channel identified between superior mesenteric artery and inferior mesenteric artery (artery of drummond) which is dilated secondary to narrowing of celiac artery. Thrombus are seen in superior mesenteric vein, right common iliac vein with involvement of 6.8 cm in length, left external iliac vein, inferior vena cava with secondary development of multiple varices noted at duodenojejunal junction draining into splenic vein. These varices are extending upto pelvis. Gallbladder, pancreas, both kidneys and both adrenal glands are unremarkable. No ascites. Exploratory laprotomy was carried out and decompression of IVC to Varix PTFE shunt placed.

P-29**Neonatal hemangiomatosis – A case report**

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Neonatal hemangiomatosis is a rare condition in which cutaneous and visceral hemangiomas may coexist. Hemangiomatosis is described as multiple, typically five or more, hemangiomas located sub cutaneously and/or the potential organ systems including gastro intestinal tract, larynx, lungs, central nervous system, spleen and liver. We report a 12 months old patient presenting with complaints of off and on hematuria. His birth history revealed delayed cry, developmental history showed delayed milestones (no neck holding, sitting or crawling till present), and past history was positive for seizures at 1 month of age for which he was started on anti-epileptics. Past investigations included a CT brain done at some local tertiary hospital which was normal. His blood chemistry was positive only for anemia. Ultrasound abdomen of the patient was done which showed several well-marginated, hyperechoic lesions within both the right and left lobes of liver. A large, right renal mass arising from midpole with central calcification was also noted. Contrast enhanced CT abdomen findings correlated with the sonography finding. Renal angiogram was normal. RBC Tc-99m scintigraphy was done which showed decreased perfusion on early dynamic images and gradual increased activity in blood pool images over time confirming the diagnosis for right renal and hepatic hemangiomas. An exploratory laparotomy was followed and biopsy specimen was taken from right renal mass which was positive for cavernous hemangioma. 2D echocardiography was done which was normal hence embolization of the renal hemangioma was not done. Patient was started on steroids and is doing well on follow up.

P-30**Agenesis of Inferior Vena Cava with cavernous transformation - A rare congenital vascular anomaly .**

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INTRODUCTION : Anomalies of inferior vena cava are present in 0.3-0.5% of otherwise healthy individuals and in 0.6-2% of patients with other cardiovascular defects. The IVC is developed as a result of a complex embryologic process between the sixth and eighth weeks of gestation. Three pairs of primitive veins (postcardinal, subcardinal, and supracardinal) appear in this order and give rise to the four segments of the adult IVC: hepatic, suprarenal, renal, and infrarenal . AIVC could be present with DVT. An inadequate blood return through collaterals may increase the venous blood pressure in the veins of the legs, thus facilitating DVT. The dysgenesis of the IVC has been described in coincidence with clotting defects.

This paper describes a case of complex congenital malformation with absent IVC in association with azygous continuation, patent anterior abdominal wall venous collaterals, varicocoele, and lower limb varicose veins.

CASE REPORT: The patient was a 19 year old male, who came to outpatient department (OPD) with complain of lower limb varicose veins, and abdominal pain. Patient referred to radiology department for abdominal imaging, abdominal ultrasound revealed dilated anterior abdominal wall veins with splenomegaly/splenomegaly, nor portal hypertension was observed. There was no associated above defined co-morbidities as well. A post contrast CT abdomen was suggested following abdominal sonography, CT scan revealed absence of the Inferior vena cava with cavernous transformation, enlarged azygous and hemiazygous veins with a cluster of collaterals in the pelvic region as well as anterior abdominal wall. CT scan revealed no venous thrombosis.

DISCUSSION: Normally the IVC is formed by the junction of the common iliac veins anterior to the fifth lumbar vertebral body, a little to its right. It ascends cephalad to receive blood from the renal and hepatic veins and having passed through the diaphragm to empty into the right atrium. The azygous vein a posterior thoracic structure that lies to the right of the spine and empties into the superior vena cava, normally receives blood from the right ascending lumbar

and lower right intercostal veins. Similarly the hemiazygous vein ascends to the left of the spinal column and receive blood from the left lumbar, the left renal and fourth through seventh intercostal veins . In lower thorax both azygous and hemiazygous veins course parallel to the descending aorta. At the level of eighth thoracic vertebral body the hemiazygous vein crosses the midline behind the aorta to drain into the azygous vein. The reasons for the developmental failure are unclear. One hypothesis is embryonic dysontogenesis, but some authors suggest that it is the result of an intrauterine or perinatal thrombosis. But in our case patient did not presented with DVT despite of dysgenesis of IVC.

P-31**Comparison of MR appearance of intact anterior talofibular ligament with sonological features in healthy local population**

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INTRODUCTION: In lateral ankle sprains, anterior talofibular ligament is observed to be the most frequently torn ligament. ATFL is best imaged on MRI which is considered as a gold standard modality in detecting its injuries; however it is pretty expensive and not readily available, limiting the access of clinicians and patients for immediate diagnosis. High frequency ultrasound is an excellent alternative modality for diagnosing ATFL injuries with 90% accuracy, which is also widely available and cost effective. High frequency ultrasound can become a first line modality for imaging ATFL with comprehensive knowledge of normal anatomy and learning specific probe positioning at various skeletal landmarks.

OBJECTIVE: The purpose of this study was to compare the sonological features of intact ATFL with MRI appearance in healthy local population.

METHODS AND MATERIALS: This was a descriptive cross sectional study on 35 patients of either age or gender in Radiology department, Shifa International Hospital, Islamabad. All individuals having intact ATFL on MRI were examined with high frequency 7.5 M-Hz ultrasound for ATFL evaluation. The patients with torn ATFL on MRI were excluded from this study.

RESULTS/FINDINGS: A total of 35 patients, 26 males and 9 females were evaluated with high resolution ultrasound (7.5 MHz probe) and axial T2W MRI. The age range was 18-53 yrs. In all individuals with normal ATFL on MRI, ultrasound revealed ATFL as thick, tight fibrillar structure. Its length varied from 1.8cm to 2.2cm (mean length =2cm) and thickness from 2.7 mm to 3.3 mm (mean thickness = 3 mm). ATFL was visualized as a hypo echoic band in all cases.

CONCLUSION: Our study demonstrated that normal ATFL is well visualized by high frequency ultrasound with proper technique and practice. Ultrasound can be offered as a first line investigation in the assessment of ATFL which is the most commonly torn lateral ankle ligament in trauma.

P-32**Serial Bone Density Testing: Monitoring BMD changes, the timing and the importance of the precision assessment**

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LEARNING OBJECTIVES: By the end of this talk the audience will have learned about the Serial Bone Density (Serial DXA) Scanning, its importance, its timing and the importance of the inclusion of the precision error of the management technique and least significant change.

ABSTRACT BODY: Osteoporosis, because of the morbidity and mortality associated with the fractures it causes, and the ensuing costs, has been termed as a silent killer. The modern day definition defines it as “a disorder characterized by compromised bone strength predisposing to an increased risk of fracture”.

DXA is the gold standard towards its diagnosis. Once diagnosed a patient is started on a myriad of drugs to help improve the bone mineral density. These drugs, besides being high on costs also have their known side effects. It is essential therefore for the clinician to know the response to the prescribed drug on the patient and hence serial bone density scans come into play. Serial scans are not just done for this sole purpose. They are also used to follow patients who are deemed at risk by virtue of family history or medical treatment for various illnesses. This follow-up does not involve a mere reporting of "change" in the serial BMD, but rather a lot of other factors must be taken into consideration.

The aim of this talk is to focus on

- Monitoring osteoporosis with DXA
- Precision error and least significant change
- Discuss which skeletal site to measure, which densitometric method to use, and how often to test
- Explain clinical relevance of changes in BMD

P-33

Rare location and presentation of a common bone tumor – Osteochondroma of ventral surface of scapula presenting as snapping scapula with bursitis

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Osteochondromas are benign bone tumors which can arise in any bone which develops from enchondral ossification. These are usually seen in children during rapid skeletal growth period. Distal femur, proximal tibia and proximal humerus are sites of predilection. Osteochondromas of the scapula are very rare finding accounting for only 3.6 – 4 % cases. To best of our knowledge, very few cases of osteochondromas of the scapula have been reported in literature and those of the ventral surface are even rarer. However, such a rare diagnosis has to be considered in the differential diagnosis in patients who presents with snapping shoulder or pseudowinging of scapula. A 28-years old female patient presented to us with complaints of a painless smooth hard fixed swelling on the posterior aspect of right shoulder which moved with the movement of scapula. Imaging findings revealed an osteochondroma of ventral surface of scapula.

P-34

Femoroacetabular impingement: One of the less frequently seen cause of premature hip osteoarthritis: Case report.

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Femoroacetabular impingement has been well recognized in the recent past as a potential predisposing factor to the development of hip osteoarthritis (OA). Femoroacetabular impingement term includes dysmorphic and orientation abnormalities of the femoral head, femoral head-neck junction, and the acetabulum. There are two main types of Femoroacetabular impingement; CAM and Pincer type. CAM type is related to abnormality in the femoral head-neck junction while Pincer type is related to acetabular abnormality.

Literature review shows established association of these structural abnormalities with patients' symptoms and signs, radiographic and pathologic abnormalities, and the development of degenerative hip arthritis. FAI is now believed to be a very important predisposing factor for the development of degenerative hip arthritis, particularly in younger adults.

40 year old male presented to our department with complaints of right hip joint pain and decreased range of motion. Both on plain radiography and Computed tomography, classical features of CAM type of deformities were observed.

The objective of this case report is to provide an outline of the basic concepts of FAI, including clinical presentation and radiographic findings, so that radiologist/orthopedic surgeons becomes more familiar with this emerging entity. Furthermore, it is well documented that early recognition of potential FAI surgical candidates, before OA is advanced, determines the postsurgical outcome.

P-35

Diagnostic accuracy of ultrasound in urinary bladder carcinoma keeping histopathology as gold standard

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OBJECTIVES: Primary carcinoma of the urinary bladder is aggressive malignancy that affects men more frequently than women. Despite advances in cross-sectional imaging, early-stage tumors are not often encountered. Ultrasound is widely used for diagnosis of urinary bladder carcinoma. However in obese patients ultrasound has limited role due to patient body habitus and degradation of image quality and anatomic details.

MATERIAL AND METHODS: This cross sectional validation study was conducted at the Radiology Department of Postgraduate Medical Institute, Hayatabad Medical Complex, Peshawar over 207 patients from 1st June 2011 to 31st December 2011.

RESULTS: In this study, 207 patients with suspected urinary bladder carcinoma had observed through ultrasound and underwent biopsy for confirmation. Male to female ratio was 3.05:1. Average age was 54.75 years \pm 13.28SD with range of 22-86 years. Over all the diagnostic accuracy of ultrasound in diagnosis of urinary bladder carcinoma is 86.96%.

CONCLUSION: Ultrasonography (US), which is readily available, noninvasive, and cost-effective, is the imaging modality of choice for UB carcinoma.

P-36

Critical evaluation of the role of imaging modalities in decision pathways of osteosarcoma

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AIM: This study aims to evaluate the role of diagnostic imaging investigations in management of osteosarcoma. It will also provide an insight of the role of multidisciplinary teams in clinical decision making process for the appropriate choice of imaging investigation and its influence on patient management. Recommendations from guidelines and international standards for the diagnostic pathway of osteosarcoma will also be discussed.

MATERIALS AND METHODS: Patients diagnosed with osteosarcoma were selected during multidisciplinary team meetings and followed prospectively. Patients' clinical notes and details of medical investigations were accessed from the hospital information system (HIS) and Picture Archiving and Communication System (PACS). Patients' personal information i.e. name, medical record number and Images of medical investigations were anonymised following the RCR standards for patient confidentiality and PACS (2008). Informed consent was obtained from patient before using patients' case notes. A critical review of all the imaging investigations was done comparing with the international standards.

CONCLUSION: Imaging examinations are essential in the work-up and staging of osteosarcoma. The critical role of diagnostic imaging modalities in detecting, staging and treatment planning was reviewed. This case-study highlighted unjustified imaging examinations and the decision making process at every step of patient management. The key to efficient patient diagnosis and management is proper utilisation of these imaging modalities by adhering to guidelines. Analysis of this case study provided an insight to achieve best patient outcomes.

P-37**Is Ultrasonography of breast a reliable tool for the characterization of breast lesions?**

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OBJECTIVE: To determine the reliability of ultrasonographic features in differentiating benign and malignant solid breast mass.

METHODS: 100 Patients were reviewed referred to the radiology department of Shaukat Khanum Memorial cancer hospital from the other departments without specification of gender that fulfill inclusion criteria after taking history of patient.

RESULTS: One hundred cases of solid breast mass in females with a tissue diagnosis available were reviewed. Two radiologists reviewed the sonographic features of breast lesions without knowledge of clinical history or histologic examination results. Ultrasound features were corrected later with histologic features to determine the reliability of the former in benign or malignant nature of nodules.

Ultrasound features that most reliably characterize breast lesion as benign were a round or oval shape, circumscribed margins and a width to antero-posterior (AP) dimension ratio greater than 1.4. Features that characterized breast lesions as malignant included irregular shape, spiculated margins and width to antero-posterior (AP) dimension ratio of 1.4 or less. If these three most reliable criteria had been strictly applied by the primary reporting radiologist, the overall cancer biopsy yield would have increased.

CONCLUSION: The data confirms that certain ultrasound features can help differentiate benign from malignant masses. However, practice and interpreter variability should be further explored before these criteria are applied to defer biopsy of solid masses.

P-38**Significance of Computed Tomography Pulmonary Angiography (CTPA) for identification of vascular abnormalities- A Review of incidental findings**

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BACKGROUND: CT pulmonary angiography (CTPA) is being used increasingly as a diagnostic imaging modality for patients with suspected pulmonary embolism (PE). Pulmonary embolism (PE) has a significant associated morbidity and mortality. CTPA simultaneously reveals incidental findings related to lung parenchyma, mediastinum, pleural spaces, and chest wall. The aim of this study was to evaluate the spectrum of incidental vascular findings and their significance.

METHODS: A retrospective review was done on 208 patients with suspicion of PE in Radiology department of Shaukat Khanum Memorial Cancer Hospital & Research Centre between March and September of 2014. 12 scans were excluded because of motion artifacts & poor image quality. A record was made on 196 patients of the presence of PE and any additional pathology, with particular interest given to incidental findings, or unsuspected pathologies which were significant enough to change the patient's management. A note was also made as to the adequacy of the study.

RESULTS: PE was demonstrated in 73 (37.2%) examinations. Additional pathologies were seen in 123 examinations (62.7%), of which 26 were categorised as incidental. Calcification of the aorta and coronary arteries was the most common finding 37.1%, followed by dilatation of the pulmonary trunk 12.6% and thoracic aortic aneurysms 7.3%. A few cases of reactivated pulmonary tuberculosis, recurrent bronchial carcinoma, pulmonary fibrosis, an SVC filling defect were found.

CONCLUSION: CTPA delineates vascular findings other than PE. Majority of these findings are not acute, but warrant recognition and follow up. This emphasizes the usefulness of CTPA in providing additional diagnostic information and alternative diagnoses in patients with suspected PE.

P-39**A Review of Techniques and Applications of CT enteroclysis in a Cancer-care setup: How we do it, and the pathology we see**

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INTRODUCTION: CT enteroclysis overcomes the individual deficiencies of barium enteroclysis and conventional CT; and combines the advantages of both into one technique. This article examines the techniques of CT enteroclysis and presents an overview of its clinical applications relative to other methods of small bowel imaging.

MATERIALS AND METHODS: A retrospective review was done on 63 patients in Radiology department of Shaukat Khanum Memorial Cancer Hospital & Research Centre between January to August of 2014. Data was recorded to include indications for the CTE, techniques of performing the examination and imaging findings related to small bowel pathology with associated extra luminal findings and incidental extra-intestinal non small bowel findings that was statistically analyzed.

RESULTS: Of the 63 patients included in the study 22 were females and 41 males. 14 (20.5%) had small bowel pathology and 10 (16.4%) had non-small bowel pathology that could explain the clinical symptoms. Malabsorption/chronic diarrhea group was the largest indication for referral (26% of referrals). Most prevalent small bowel findings were in the inflammatory bowel subgroups where 30% had imaging features of active inflammatory bowel disease.

CONCLUSION: With our modified technique performed, readily available and affordable infusion equipment and enteral contrast we achieve diagnostic quality small bowel distention to demonstrate and diagnose with confidence small bowel pathology in our population.

P-40**Impact of attenuation correction on myocardial perfusion SPECT**

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AIMS: To assess the impact of attenuation correction in reducing artifacts and the influence of gender and body mass on attenuation.

METHODS: 102 patients referred for myocardial perfusion imaging (mean age: 53.24 ± 12.7) were enrolled. They all underwent stress (dynamic or pharmaceutical) and rest Tc-99m MIBI studies. Polar maps of the left ventricular cavity with 17 segments of both the non- corrected (NC) and attenuation corrected (AC) images were generated and semi-quantitatively automatically.

RESULTS: Segmental scores in inferior wall were significantly low ($p < 0.05$) particularly in male population irrespective of BMI. AC didn't do significant impact in score values in anterior wall of female population ($p > 0.05$). AC also generated artifactual perfusion defects in apex and apical segments ($p < 0.05$).

CONCLUSION: This study demonstrates that Attenuation correction using hybrid SPECT-CT improved average myocardial perfusion uptake in inferior regions and this technique is more beneficial to male populace.

P-41**Predictive value of pyramidal lobe, % thyroid uptake and age for ablation outcome after 15 mCi fixed dose of radioiodine-131 in Graves' disease**

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OBJECTIVE: Aim was to find out efficacy of a fixed 15 mCi radioactive iodine-131 (RAI) dose and predictive values of various factors for inducing hypothyroidism in patients with Graves' disease (GD).

METHODS: This was a retrospective study conducted from January 2012 till August 2014. Records of all patients with GD treated with RAI were evaluated. Patients who had a Tc-99m thyroid scan, thyroid antibodies, received fixed 15 mCi RAI and did follow endocrine clinics for at least 6 months were selected. Patients with GD who did not meet these criteria were excluded. RAI was considered successful if within 06 months of RAI therapy patients developed hypothyroidism.

RESULTS: Out of 370 patients with GD who had RAI during study period, 210 (57%) qualified study criteria. Mean age of patients was 48 ± 15 years with female: male ratio of 69:31, positive thyroid antibodies in 61%, means thyroid uptake of 15.09 ± 11.23% and presence of pyramidal lobe in 40% of total population. Within 06 months after RAI therapy, 161 (77%) patients developed hypothyroidism while 49 (23%) patients failed to achieve it (remained hyperthyroid or euthyroid on antithyroid medication). Patients who became hypothyroid were significantly younger with higher proportion of presence of thyroid antibodies and pyramidal lobe and lower % thyroid uptake on thyroid scan than those who failed. Multiple logistic regression analysis revealed that age (odd ratio; OR= 2.074), pyramidal lobe (OR = 3.317), thyroid antibodies (OR = 8.198) and % thyroid uptake (OR = 3.043) were found to be significant prognostic risk factors for post-RAI hypothyroidism within 06 month. Gender was not found to have any significant association with the development of post-RAI hypothyroidism. Receiver operating characteristic (ROC) analysis revealed age ≤ 42 years and thyroid uptake ≤ 15% as threshold values for the development of post-RAI hypothyroidism.

CONCLUSION: We conclude that fixed (15 mCi) RAI dose is highly effective in rendering hypothyroidism in patients with GD. Age (≤ 42 years), thyroid uptake (≤ 15%) and presence of pyramidal lobe are strong predictors of hypothyroidism and must be considered for selecting optimal RAI dose.

P-42**Incidence of toxic goiters, pyramidal lobe, antithyroid antibodies and preference of fixed doses of I-131 for ablation of various toxic goiters in Karachiites**

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BACKGROUND: Hyperthyroidism has variable incidences depending upon the regional iodine status and thyroid imaging is used to ascertain type of toxic goiters. Radioiodine-131 (RAI) therapy is considered an effective therapeutic option with variable utilization in different parts of world. Aim of this study was to find out the incidence of toxic goiters, various clinical and scintigraphic parameters and preference of RAI treatment in different types of toxic goiters.

MATERIALS AND METHODS: This was a retrospective observational study conducted at Nuclear Medicine sections of Aga Khan University Hospital (January 2012 till August 2014) and Dr Ziauddin Hospital Karachi (April 2013

till August 2014). Records of all patients who were referred for thyroid scan during the study period were reviewed. Patients who were diagnosed with toxic goiters and later on had had RAI were reviewed for demographic data, type of toxic goiters, scintigraphic patterns (% uptake and pyramidal lobe), thyroid antibodies and administered dose of RAI.

RESULTS: The overall incidence of toxic goiter was found to be 27% (370/1365). The mean age of the patients with toxic goiters was 46 years with female: male ratio of 69%: 31%. Graves' disease was found in 317 (86%) patients followed by autonomous toxic nodule in 44 (12%) and toxic MNG in 09 (02%). Pyramidal lobe was seen in 156 (42%) predominantly with GD. Thyroid antibodies was positive in 250/370 (68%) and negative in 120/370 (32%) and mean dose of RAI administered was 15± 3.51 mCi.

CONCLUSION: We conclude that incidence of toxic goiters was in accordance with published data and GD was found to be the most common cause while the TMNG as the least common despite Pakistan lies in iodine deplete region. Antithyroid antibodies as an indicator of autoimmunity were found positive in majority of patients with GD and presence of pyramidal lobe has strong correlation with GD. Fixed doses of RAI was used for ablation of toxic goiters but outcome of this approach needs to be evaluated.

P-43**Percutaneous image guided celiac plexus neurolysis**

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Intractable abdominal pain is a common debilitating problem in patients with abdominal malignancy and often severely affects quality of life and survival. Many such patients are non responsive to NSAIDs and narcotic analgesics. Celiac plexus neurolysis with agents such as ethanol is an effective means of diminishing pain that arises from these structures. Percutaneous image guided celiac plexus neurolysis has been established as an invaluable therapeutic option in the management of intractable pain thus improving palliative care and life quality. Use of MDCT for imaging guidance has superseded other modalities and allows direct visualization of the spread of the neurolytic agent in the antecrural space.

A 45 years old female patient with severe intractable pain secondary to pancreatic neoplasia was referred to our department for celiac plexus neurolysis. The procedure was successfully performed under MDCT guidance with administration of neurolytic agent into the antecrural paraortic space after informed consent. Patient experienced marked reduction in pain intensity few days after the procedure.