

# Abstracts presented at the 10th International Radiological Conference held on November 7<sup>th</sup> to 9<sup>th</sup> 2009, in Karachi, Pakistan

Venue : Karachi Sheraton Hotel

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## 10th International Radiological Conference Abstracts

### **INVITED LECTURES (T)**

#### **Session-I : Women and Genitourinary Imaging T-01**

##### **Role of Radiologist in IVF (In Vitro Fertilization)**

PROF. DR. M.NAWAZ ANJUM

*Parkview Clinic , 684 Main Road, Shadman I, Lahore, Pakistan.*

**OBJECTIVE:** To educate the radiologists how important their role is in IVF and assisted pregnancies especially in male infertility ICSI

**MATERIAL AND METHODS :** Male and female infertility are common problems in our country. When the patient visits the gynaecologist he/she is referred for sonography. In males mainly for testicular size, volume, texture and presence of varicocele. In the females sonography is done for the size of the uterus and ovaries, uterine /adnexal masses, cysts, polycystic ovaries inflammatory process. During the 12th to 16th day of menstrual cycle follicular monitoring is done. If normal follicular activity is not seen ovarian stimulation is done by administration of Prolifin or Clomid The follicular monitoring and endometrial response is monitored by TVS. Total number of follicles and their size is recorded & closely followed up on alternate days. When mature, the follicles are harvested (aspirated) and under microscope eggs are picked up and put in special dishes containing nutrients. There are two way to fertilize the aspirated ova.

1. Freshly obtained sperms are added to the dish containing ova. The fertilization takes place and on the 3rd day the embryo is transferred to the uterus. This is standard IVF.
2. ICSI (Itra Cytoplasmic Sperm Injection). This procedure is done if sperms are weak or count is low. The sperm is picked by a pipette under microscopic control and injected in the ovum. The embryo is transferred on the 3rd day the embryo is transferred to the uterus. This is standard IVF.

**CONCLUSION :** The radiologist plays a crucial role in initial workup, During ovarian stimulation, follicular monitoring, ova harvesting and follow up of embryo and fetus till delivery. This lecture is based on my whole day visit to ICSI center in Islamabad. This is for the information of all the radiologists especially PG Trainees.

#### **Session-I : Women and Genitourinary Imaging T-03**

##### **Image Guided Breast Interventions**

DR. SARWAT HUSSAIN

*University of Massachusetts, USA.*

Advance skills in the diagnosis of breast disease and working knowledge of breast pathology and current trends in surgical management are pivotal to the performing guided breast interventions Radiological work up is aimed at diagnosing cancer when it is non-palpable. Radiologist plays multiple roles in the diagnosis and management of non-palpable breast cancer: screening mammography and risk assessment, confirmation of tissue diagnosis, needle localizing target for surgical excision and confirmation that the target has been completely excised. Tissue characterization requires biopsy under ultrasound, stereotactic of MR guidance. Imaging is also used for ablation of breast cancer. Stereotactic mammographic guidance is reserved for the sampling of suspicious calcifications, but occasionally for needle localization. Localization may be performed under mammographic or ultrasound assistance. Pre-surgical injection

of isotope prior to sentinel lymph node biopsy in Radiology also contributes to patient management. Other interventions include galactography usually for a papilloma, axillary lymph node biopsy for cancer staging, aspiration of galactocoele and post operative abscess or seromas management. Presentation will be illustrated with case examples.

#### **Session-II Neuro Imaging T-04**

##### **Functional and Diffusion MR for Intracranial Tumors**

PROFESSOR A.K. SHARMA

*GB Pant Hospital and Maulana Azad Medical College New Delhi, India.*

##### **INDICATIONS:**

- Localization of areas in brain activated during specific process.
- Clinical applications mainly for pre - surgical planning

##### **PHYSIOLOGICAL BASIS OF MRI:**

- Increase in neural activity in a region of cortex stimulates an increase in local blood flow.
- The change in blood flow actually exceeds that which is needed, so the concentration of deoxyhemoglobin within tissues decreases

##### **EFFECT OF OXYGENATION:**

- OxyHb has similar magnetic susceptibility with other tissues
- deOxyHb is paramagnetic
- Replacement of deoxygenated blood by oxygenated blood makes the local magnetic environment more uniform Increase of signal in T2\* weighted sequence
- Blood Oxygenation Level Dependent (BOLD) Contrast MRI study design
- MRI study design
- Alternating measurements without and with stimulus (Block design)
- Repeated acquisitions (volumes) with short measurement time
- Periods without data acquisition between the two states

##### **MR SPECTROSCOPY:**

Magnetic resonance spectroscopy (MRS) is becoming more widely available for clinical applications and is able to provide information about the metabolic properties of regions of normal and abnormal tissue morphology.

##### **FUNCTIONAL IMAGE-GUIDED SURGERY FOR BRAIN TUMORS:**

The next decade will witness further sophistication of these techniques, with data available from larger studies. It is expected that imaging will continue to provide new and unique insights in neuro-oncology, which should hopefully contribute to the better management of patients with brain tumors

#### **Session-ii Neuro Imaging T-06**

##### **Imaging In Acute Stroke: Neurologist's Perspective**

DR. SAAD SHAFQAT

*Aga Khan University Hospital, Karachi, Pakistan.*

Stroke is characterized by a sudden-onset focal neurological deficit corresponding to a zone of infarcted brain tissue. It is a medical emergency in which time is of the essence. Imaging requirements in acute stroke focus on confirmation of infarction, identification of impending infarction, and delineation of intracranial and relevant extracranial vascular anatomy. At present, these needs are not comprehensively met by a single technological modality. Computed tomography (CT) scanning has advanced substantially in perfusion and anatomic vascular

imaging but does not detect brain infarction in the hyperacute phase, the critical period for therapeutic decision-making. Magnetic resonance imaging (MRI) is capable of immediate and reliable infarct detection but has lower vascular resolution, is more susceptible to artifact, and is contraindicated in the population of stroke patients with cardiac pacemakers. Both techniques, particularly MRI, are logistically cumbersome for use with acute stroke patients, who are often restless, aphasic, paralyzed, or comatose. In current clinical practice, CT is the modality of choice for suspected ischemic stroke in which thrombolysis is being contemplated, a treatment with a 4.5-hour critical therapeutic time window. MRI, which can identify even small infarcts with exquisite sensitivity through diffusion-weighted imaging (DWI), is preferred for all cases of subacute stroke. DWI holds particular attraction for the practicing neurologist because it has tremendous potential for bringing diagnostic clarity. From the neurologist's perspective, the ideal imaging technology in acute stroke would combine the sensitivity of DWI with the vascular resolution of CT angiography and the penumbra-detecting potential of perfusion imaging.

### Session-III : Radiology Oncology and Multidisciplinary Session T-07

#### CT PET in Oncology

DR. ZIA FARUQUI  
*Department of Radiology, Shaukat Khanum Memorial Cancer Hospital, Lahore, Pakistan.*

CTPET is perhaps the most important recent advance in oncological imaging. PET scanners have been in clinical use for over a quarter of a century but the development of hybrid CTPET scanners has greatly increased the specificity of the technique. The technology is limited by the short half life of the isotopes used, around 110 minutes for FDG which is the most commonly used. These isotopes are cyclotron produced and the cyclotron has to be within a reasonable distance of the scanner for viable scanning. Shaukat Khanum Cancer Hospital has installed the first cyclotron and CTPET in Pakistan and clinical scanning has started. This presentation will give a brief overview of the process involved in starting this project and the difficulties faced. The indications, uses and limitations of CTPET in oncological imaging will be discussed. Commonly used isotopes and compounds used in CTPET will be discussed with a look at future developments in this field.

### Session-III : Radiology Oncology and Multidisciplinary Session T-08

#### Whole Body MRI – Has Diffusion got a Role? (DWIBS)

DR. ASIM SHAUKAT  
*Punjab Medical College / Allied Hospital, Faisalabad, Pakistan.*

**OBJECTIVE:** To ascertain the role of DWI in Whole body MR imaging

**MATERIAL AND METHODS :** Continuous patients with multiple system involvement were taken. Whole body MR imaging was done on 1.5T MRI system of Phillips. Fat suppressed T2 images were added and in the end DWI images were taken and correlated. The study is descriptive with convenient sampling. Done in the Department of Radiology and Medical Imaging Punjab Medical College/ Allied Hospital, Faisalabad from December 2008 – July 2009.

**RESULTS :** DWI imaging enhanced the diagnostic capabilities in various ways especially in Oncological staging of the patients, metastatic work up. Interestingly it shows more potent results than a Bone scan in Bony metastatic work up and had a higher sensitivity in picking up pancreatic metastasis as well. Diffusion on Breast was also applied with interesting results.

**CONCLUSION :** DWI has a definite role in Whole Body MR imaging and can modify treatment planning

### Session-V : Head and Neck Imaging and Pediatrics T-09

#### Functional Anatomy of the Brain

DR. ZAFAR SAJJAD  
*Department of Radiology, Aga Khan University Hospital, Karachi, Pakistan.*

The function of the brain has fascinated man from the earliest realisation that this organ is the seat of human thought and consciousness. As it was not possible to visualise the human brain in the living subjects, the earliest correlation of anatomy and function came from post mortem studies of patients that had undergone brain damage. These studies were supplemented by animal modelling.

With the advent of computed tomography it became possible to see inside the living brain. This ability was further improved with the development of magnetic resonance imaging. This ability not only allows diagnosis of disease states but also allows us to study the brain anatomy with exquisite detail.

Not only can anatomy be studied, the function of the brain can also be studied in vivo. This was initially the domain of Nuclear Medicine with Brain SPECT looking at brain perfusion and PET studies looking at brain glucose utilisation. Both of these suffered from limited spatial resolution. With functional MRI becoming available on clinical machines we can study function of the brain in real time with a very high spatial correlation.

The short talk will review the anatomy of the brain with an emphasis on anatomic/physiologic correlation and its clinical utility. This will be done using the understand that has been achieved with all of the above sources.

### Session-V : Head and Neck Imaging and Pediatrics T-10

#### Doppler Ultrasound. Evaluation of Waveform in the Diagnosis of Vascular Pathology

DR. TARIQ HAMEED  
*University Hospital, Indianapolis, USA.*

Flow in blood vessels follows general physical principles and is affected by multiple factors including changes in the size of the vessels. Different pathologic conditions cause alteration in blood flow pattern, velocity and direction which vary in different body regions and organ systems but the physical principles underlying these changes are similar. These changes in blood flow are detected by Doppler ultrasound and understanding basic concepts of Doppler ultrasound is helpful in diagnosis of vascular abnormalities which can be applied throughout different organ systems. Evaluation of vascular waveform with normal and abnormal Doppler ultrasound findings in different body systems will be presented.

### Session-V : Head and Neck Imaging and Pediatrics T-11

#### Transvaginal Ultrasound Evaluation of Normal and Abnormal 1st Trimester Pregnancy

PROF. DR. SAFDAR ALI MALIK  
*Fatima Jinnah Medical College / Sir Ganga Ram Hospital, Lahore, Pakistan.*

**OBJECTIVE:** To demonstrate the role of transvaginal ultrasound in 1st trimester pregnancy.

**ABSTRACT :** Ultrasonography provides a window of unsurpassed clarity into the gravid uterus. The high resolution real-time ultrasound has undeniably become the most prevalent and accurate means of obstetrical imaging, capable

of providing exquisite details regarding the fetus and the intrauterine environment. Information provided by prenatal sonography has been found to be indispensable for evaluating and managing a variety of common obstetric problems especially molar pregnancy (invasive mole), failed pregnancy, ectopic pregnancy, multiple pregnancies, congenital anomalies etc. Of all the fetal anomalies, anencephaly is the most lethal and 100% accurately diagnosed before the end of the first trimester.

1st Trimester ultrasound is very important to know the exact gestational age with an error of two days only for future fetal well being; because the last trimester ultrasound can give you an error of 2-3 weeks.

**CONCLUSION :** 3D/4D studies greatly improve accuracy of diagnosis and in-fact reveal information never available before. In screening down syndrome 3D/4D ultrasound has advantage in volume scanning and assessment of nuchal translucency which is almost 100% accurate.

### **Session-VI : Chest and CVS Imaging T-14**

#### **Ct Imaging of Thoracic Aorta. State of the Art**

DR. TARIQ HAMEED  
*University Hospital, Indianapolis, USA.*

Acute aortic pathology is associated with high mortality and morbidity and early diagnosis is important. CT imaging plays an important role in the diagnosis of aortic trauma and acute aortic syndromes. ECG gated imaging is utilized to reduce the potential for pulsation artifact in ascending aorta. Protocols for imaging of thoracic aorta on 64-channel and 128-channel (256-slice) multidetector CT scanners will be presented. ECG gated imaging with strategies for reducing the radiation dose with retrospective and prospective techniques will be presented. Imaging findings of acute aortic conditions and the role of CT imaging in pre and post surgical evaluation and follow up of aortic pathology will be discussed.

### **Session-VII : Musculoskeletal Imaging (Videoconferencing from London) T-15**

#### **Imaging of the Rotator Cuff: MR vs. US**

DR. SYED BABAR AJAZ  
*Hammersmith Hospital and Imperial College, London, UK.*

Assessment of the rotator cuff is one of the most commonly asked clinical questions in problems related to the Shoulder. Shoulder pain is a common problem and rotator cuff abnormalities account for a sizeable portion of the underlying aetiology. Ultrasound and MR are being widely used to assess the cuff. The choice depends on the local expertise and personal preference of the clinicians and radiologists. Ultrasound and MR have similar sensitivities, specificities and accuracy for detection of rotator cuff tears. Generally speaking ultrasound is more used in the European continent whilst MR is generally considered the modality of choice in USA.

The aim of the talk is to delineate the basic ultrasound and MR anatomy, technique and also demonstrate the ease with which rotator cuff problems can be resolved on both modalities. In a country like Pakistan, where ultrasound is so readily available, developing an expertise in doing shoulder ultrasound may be useful for clinicians and radiologists alike. The option of MR and MR arthrography, however, remain equally relishing.

### **Session-VII : Musculoskeletal Imaging T-16**

#### **Imaging of Hip and Groin Pain in Young and Active Patients**

DR. HR. ANIQ  
*Liverpool, UK.*

More and more young people are actively taking part in supporting and recreational physical activities. Diagnosis of hip and groin pain is dilemma for sports physicians as a lead radiologist. It accounts for up to 18% of all supporting injuries. The causes of groin and hip pain are diverse and there is significant overlap in history and physical examination. Young men involved in running and kicking sports are most commonly affected due to repetitive microtrauma or acute injuries. Understanding of functional anatomy is essential to make best use of imaging modalities for the purpose of diagnosis. Causes of pain may be intraarticular or in the surrounding soft tissues. Intraarticular causes of hip pain include labral tear, femoroacetabular impingement and chondral damage. Hip pain may be caused by femoral neck stress fracture, snapping hip, iliopsoas tendinosis and iliotibial band friction syndrome. Groin pain is mostly due to adductor sprain however other conditions which like osteitis pubis, gilmore's groin, tendon avulsion and groin hernias should also be considered. I will present imaging features of these conditions on different radiological modalities.

### **Session-VII : Musculoskeletal Imaging T-17**

#### **MR Imaging of Soft Tissue Tumours**

DR. TARIQ HAMEED  
*RNOH, Stanmore, UK.*

Assessment of a soft tissue lump can be done by using a variety of imaging modalities.

MR however is the main modality which remains the most useful in this evaluation. Radiological assessment of soft tissue lumps confirms if a tumour is present or not. We can also accurately describe its anatomical relationships and in some patients, make a reasonable estimate of its cause.

In this presentation, I shall describe the radiological principles which help in assessment of a soft tissue lump on MR. Importance of the estimate of its size, location and clinical presentation would be described. Some of the important imaging features which point towards a tissue specific diagnosis will be discussed.

As lipomatous lesions are very commonly encountered in most radiology practices, the presentation will conclude by discussing the protocol with which these lumps are assessed in our department.

### **Session-VII : Musculoskeletal Imaging T-18**

#### **Imaging of Bone Marrow**

DR. ASIF SAIFUDDIN  
*RNOH, Stanmore, UK.*

Disorders of the bone marrow can be broadly classified as being either generalised or focal, generalised conditions including chronic anaemias and myeloproliferative diseases, while focal abnormalities may be secondary to trauma, tumour, infection, inflammation, ischaemia or are idiopathic in nature (eg. bone marrow oedema syndromes).

A variety of imaging techniques are available for imaging the bone marrow and include plain radiography, scintigraphy ( $^{99m}\text{Tc}$  MDP, colloid, FDG-PET), CT, MRI and biopsy.

Radiographs are relatively insensitive to generalised marrow disorders/marrow inflammation and widespread marrow reconversion/replacement may have occurred despite the presence of normal radiographs. With chronic marrow replacement beginning in childhood, an Erlenmeyer flask deformity of the long bones may be evident. Similarly, radiographs may miss small focal marrow lesions. However, radiography is of great value in the characterisation of many focal bone lesions, allowing an accurate assessment of the aggressiveness of the pathological process based on features such as pattern of bone destruction, lesion margin/zone of transition, bone expansion, cortical destruction, soft tissue extension and the type of periosteal response, while the pattern of matrix mineralisation (osseous, chondroid, fibrous) gives an indication of underlying tissue of origin. Using these criteria, the likely diagnosis of a suspected primary bone tumour can be suggested in 85-95% of cases.

$^{99m}\text{Tc}$  MDP bone scintigraphy is a relatively sensitive but non-specific test, its main value being in the rapid assessment of the entire skeleton, particularly for identification of metastatic disease. However, its role in the characterisation of a solitary bone lesion is limited. FDG-PET may have a role in the assessment of metabolic activity of marrow lesions.

CT can demonstrate marrow replacement by a change from fat to soft tissue density. However, its main value lies in the further assessment of focal bone lesions, where it optimally demonstrates radiographically occult matrix mineralisation. It is also of value in the setting of image guided biopsy. MRI is currently the technique of choice for assessment of the marrow, being very sensitive and commonly specific. Normal adult marrow shows increased SI on T1W SE and T2W FSE sequences and reduced SI on STIR, fat suppressed T2W/PDW FSE and gradient echo sequences, these reflecting the relatively high fat content of adult marrow. Consequently, pathological marrow manifests as reduced SI on T1W SE or increased SI on STIR/fat suppressed T2W FSE sequences due to an increase in the water content accompanying various marrow pathologies, these changes being either generalised or focal. MRI is also very sensitive in the demonstration of marrow oedema, which can commonly be differentiated from marrow replacement based on its SI characteristics (intermediate between fat and skeletal muscle on T1W SE, while marrow infiltration is typically isointense to skeletal muscle). This differentiation is vital if non-neoplastic or benign neoplastic processes associated with extensive reactive marrow oedema are not to be mistaken for malignant marrow infiltration.

### Session-VIII : Nuclear Medicine T-19

#### Gated Cardiac Spect Imaging: A Robust Diagnostic and Prognostic Tool

DR. MASEEH UZ ZAMAN

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

Nuclear cardiology has seen several major advances within the past 20 years. Some of these advancements include single photon emission computed tomography (SPECT) imaging systems, multidetector SPECT imaging systems, and the addition of technetium Tc-labeled myocardial perfusion agents. These advancements offer improved image contrast and spatial resolution over that of traditional planar imaging with thallium-201. Recent developments include faster and more powerful computer systems that allow for such applications as attenuation correction and gated SPECT imaging.

Gated SPECT imaging has become a routine procedure in many nuclear medicine and nuclear cardiology laboratories due to its ability to offer additional valuable information to the interpreting physician. Gated SPECT is an acquisition technique wherein the patient's electro-cardiogram (ECG) is used to guide the acquisition. It provides invaluable information about myocardial perfusion, cardiac volumes, myocardial thickness and global and regional ejection fraction.

Gated SPECT has better sensitivity and specificity as compared with non-gated perfusion studies. In addition, it has emerged as a robust and reliable prognostic tool in clinical decision making.

### Session-IX: Body Imaging T-21

#### Current Concepts of Small Bowel Imaging: Do we still have a Role?

DR. NASIR JAFFER

*Department of Medical Imaging University of Toronto Abdominal Radiologist  
Joint Department of Medical Imaging, MSH, UHN & WCH, Canada.*

Imaging the small bowel had been the domain of medical imaging until recently with the introduction of newer techniques such as 'Pull/Push endoscopy and more recently capsule endoscopy. These new tools have brought about changes in the value of and indication of various conventional imaging of the small bowel.

This presentation will discuss the various radiologic studies ranging from small bowel barium meal to CT enterolysis, highlighting the techniques, indications, and limitations of each of the studies. Emphasis will be placed on the proper triaging of patients clinical symptoms and probable diagnosis to the appropriate imaging studies. Imaging findings of various common and less common diseases will be presented along with discussion on approach to interpretation of imaging studies.

The participants will be shown several imaging studies at the beginning of the presentation followed by review of the cases at the completion of the presentation.

### Session-IX: Body Imaging T-22

#### 64 MSCT in Acute Abdomen

DR. A. K. BHATIA

*Sr. Consultant Radiologist / HOD Apollo Hospitals Group ,Pune ,India.*

Accurate and rapid diagnosis is essential to reduce morbidity and mortality in the management of Acute Abdomen as clinical assessment is sometime not helpful due to overlap of sign and symptom.

Although (USG) is first investigation of choice but in obese patients, excess of bowel gas may not give accurate result in addition to the fact that it is operative modality. Therefore MSCT has high sensitivity of 100 % and specificity of 98.5% for detection of free air, radio-opaque calculi, intestinal obstruction, sub acute appendicitis etc.

64 MSCT allows imaging of the abdomen in an extremely short time of 10 - 12 in a single breath hold or even patient is breathing there are few motion artifacts.

The modification in soft ware, reconstruction of images in different planes, provides additional information. MSCT has advantage of optimal utilization of contrast bolus which allows precise evaluation in different phases of enhancement.

**CONCLUSION :** 64 MSCT in expert hands can be of great help for patients in cases of Acute Abdomen to reduce mortality and morbidity in conditions like Acute Cholecystitis, Pancreatitis, Appendicitis, inflammatory disease, urolithiasis, splenic infarct / abscess, inflammatory bowel disease, intestinal obstruction and Acute mesenteric ischemia.

**T-02****The role of diffusion weighted imaging and ADC mapping in Prostate Cancer**

DR. IMRAN SYED  
*Consultant Radiologist, UK.*

**T-05****Spinal Interventions with special reference to Kyphoplasty and Vertebroplasty**

DR. ROGER SMITH  
*Consultant Neuroradiologist, Toronto Western Hospital, Toronto, Canada.*

**T-12****State of the Art: Venous Interventions**

DR. IFTIKHAR AHMAD  
*Associate Professor, Division of Interventional Radiology, University of Pittsburgh Medical Centre, Pittsburgh, USA.*

**T-13****Post Surgical Cardiac MDCT and Evaluation of Coronary Graft**

DR. ARCHNA GUPTA  
*Department of Radio Diagnosis, Sanjay Gandhi Postgraduate Institute of Medical Sciences, Lucknow, UP, India.*

**T-20****Management of Hepatocellular Carcinoma - An Update**

DR. NAJAM UD DIN  
*Consultant Radiologist, Department of Radiology, Shaukat Khanum Memorial Cancer Hospital, Lahore, Pakistan.*

**T-23****Virtual Colonoscopy**

DR. NAJUMUSSAQIB RAO  
*Consultant Radiologist, USA.*

**PAPERS IN RESERVE (RES-T)****Session-I: Women and Genitourinary Imaging  
RES-T-1****Role of Imaging in Evaluation of Prostate Cancer**

DR. M. NADEEM AHMAD  
*Department of Radiology, Aga Khan University Hospital, Karachi, Pakistan.*

Prostate cancer is the commonest cancer in the man, especially in the later part of the life. The imaging workup of prostate cancer is becoming more and more important and complex as, due to introduction of prostatic specific antigen (PSA) test, screening of early prostate cancer is becoming a norm. There is increasing demand on the radiologist to diagnose either through imaging or through invasive methodology i.e. biopsy the early prostate cancer when there are symptoms and indications from the laboratory test. There is also more demand on the radiologist to stage the prostate cancer as accurately as possible for surgical/nonsurgical management.

This presentation essentially is a primer of prostate imaging in context of prostate cancer. In this presentation there is a review of basic prostatic anatomy, staging of the prostatic cancer and then noninvasive imaging. Transrectal ultrasound is discussed along with its indications and use and then the transrectal ultrasound biopsy will be discussed. CT scan and MRI imaging and their importance in the diagnostic workup of prostate cancer will be discussed and then the newer methods in the MRI scan i.e. diffusion and a spectroscopic study is will be presented especially their role in the current armamentarium of prostatic diagnostic workup. In the later part of the presentation some of the emerging tools and newer concepts will be discussed in the context of the prostatic cancer imaging. Essentially this presentation will serve to build the understanding of prostatic cancer imaging that how best the current available diagnostic and imaging tools can be utilized for this workup.

**Session-I: Women and Genitourinary Imaging  
RES-T-2****Staging of Ovarian Malignancy**

DR. IMRANA MASROOR  
*Department of Radiology, Aga Khan University Hospital, Karachi, Pakistan.*

Ovarian cancer causes more deaths than any other cancer of the female reproductive system, with approximately 70% of patients having peritoneal involvement at the time of diagnosis.

The incidence and mortality rates of ovarian cancer increase with age and peak at 80 years.

The staging system is surgically based in accordance with recommendation of the International Federation of Gynaecology and Obstetrics, with stage I disease being limited to one or both ovaries. In stage II disease, there is extra ovarian spread of the tumor but it does not extend beyond pelvis. Stages III and IV disease are considered advanced, with stage III ovarian cancer including diffuse peritoneal disease involving the upper abdomen and stage IV disease having distant metastases including hepatic lesions. The survival rate is 93% for localized disease, in contrast with 55% and 25% for regional and advanced disease respectively. The detection of advanced disease prospectively needs to be improved for treatment planning in particular, for possible need to refer the patient to oncologist. An accurate description of sites of disease is important because it helps to determine the sites at which biopsy will be performed at surgery.

Role of imaging modalities for staging of ovarian malignancy and future role of PET/CT is discussed.

**Session-II: Neuro Imaging**  
**RES-T-3****Neurovascular Imaging**

DR. MUHAMMAD AZEEMUDDIN  
*Department of Radiology, Aga Khan University Hospital, Karachi, Pakistan.*

Recent advances in non-invasive neurovascular imaging techniques, including magnetic resonance angiography (MRA) and computed tomography angiography (CTA), have reduced the number of catheter –based neurovascular angiogram performed for purely diagnostic reasons. Digital Subtraction Angiography (DSA) remains, however, the most accurate imaging technique for evaluation of the neurovascular system. This presentation will give a brief overview of different imaging techniques currently utilized for this purpose as well as imaging findings of common pathologies related to neurovascular disease.

**Session-IX: Body Imaging**  
**RES-T-6****CT Colonoscopy**

DR. ZISHAN HAIDER  
*Department of Radiology, Aga Khan University Hospital, Karachi, Pakistan.*

**OBJECTIVE:** Colorectal cancer is among the three most fatal cancers in men and women and is the second most common cause of cancer death among men aged 40 to 79 years in World especially in the West. Most colorectal cancers are believed to arise within benign adenomatous polyps that develop slowly over the course of many years. Screening has been shown to save lives by detection and removal of pre-malignant polyps and early stage cancer.

Since the introduction of CT colonoscopy (CTC) or virtual colonoscopy in 1994, significant progress has occurred in the development and clinical implementation of this new technique. Currently, CTC is performed on an elective basis in several institutions around the world. A recent advance in CTC is the application of multislice CT (MSCT) technology.

CT colonoscopy is considered to be non-invasive tool which is considerably quicker than other techniques of colonic evaluation. It can also identify extra-colonic lesions and helpful in staging the disease in cases of known malignancy. The sensitivity for detection of polyps larger than 1 cm (over 90%) is widely accepted. It is more comfortable than Barium enema examination. It can be used effectively in cases where colonoscopy could not be completed or obstructing lesion could not be negotiated.

Thin-section multi-detector row computed tomographic colonography (CTC) affords increased opportunities for diagnostic imaging of the large bowel. Currently colonography is establishing itself as a powerful tool for the detection and classification of colonic lesions.

**RES-T-4****Teleradiology - In Radiologist Perspective**

DR. ARCHNA GUPTA  
*Department of Radio Diagnosis, Sanjay Gandhi Postgraduate Institute of Medical Sciences, Lucknow, UP, India.*

**RES-T-5****Interpretation of HRCT**

DR. WASIM AHMAD MEMON  
*Assistant Professor, Department of Radiology, Aga Khan University Hospital, Karachi, Pakistan.*

## FREE PAPERS (F)

### Session-I: Women and Genitourinary Imaging F-1

#### Diagnostic Accuracy of Magnetic Resonance Imaging (MRI) In Ultrasonographically Indeterminate Masses of Female Pelvis Against Histopathological Findings

SALEHA ANWAR  
GULZAR HAMEED  
BUSHRA REHAN  
*Hamdard University, Karachi, Pakistan.*

**OBJECTIVE:** To establish the diagnostic accuracy of magnetic resonance imaging (MRI) in ultrasonographically indeterminate masses of female pelvis against histopathological findings.

**MATERIAL AND METHODS:** Sixty three patients with ultrasonographically indeterminate pelvic masses underwent MRI of their pelvis and subsequently underwent surgical procedures for histopathological diagnosis. The MRI results were compared with the pathological results to find out its sensitivity and specificity in terms of determination of nature of mass (benign or malignant) and anatomical site of origin of mass.

**RESULTS:** The results proved that sensitivity and specificity of MRI for assessment of benign lesion was 95.8% and 93.3% respectively, and for malignant lesion was 93.3% and 95.8% respectively. Sensitivity and specificity of MRI in diagnosing uterine mass was 100% and 97.5% respectively and for ovarian mass was 97.3% and 96% respectively. Sensitivity and specificity of MRI in diagnosing extra uterine/extra ovarian mass was 66.6% and 100% respectively.

**CONCLUSION:** MRI is highly accurate in characterizing the pelvic masses as benign or malignant and in determining their site of origin.

### Session-I: Women and Genitourinary Imaging F-2

#### Accuracy of MR Imaging In Staging of Endometrial Carcinoma: Role of Diffusion Weighted Imaging

MUHAMMAD ZEESHAN  
IMRANA MASROOR  
MUHAMMAD NADEEM AHMED  
HUMERA AHSAN  
*Department of Radiology, Aga Khan University Hospital, Karachi, Pakistan.*

**OBJECTIVE:** To determine the diagnostic accuracy of MR imaging utilizing diffusion weighted sequences in detection of endometrial cancer.

**MATERIALS AND METHODS:** From January 2007 to March 2009, 26 patients diagnosed to have endometrial carcinoma on MR imaging and subsequent histopathology were evaluated retrospectively. The study was conducted at Department of Radiology, Aga Khan University Hospital Karachi. The retrospective descriptive study design was used. The medical records of patients undergoing MRI pelvis were reviewed. Those patients were selected who were diagnosed to have endometrial cancer on MRI and subsequently underwent surgery. The MR findings including diffusion weighted sequences were compared with the surgical findings and diagnostic accuracy was calculated.

**RESULTS:** The patients were 42-84 years of age (mean age 63 years). Three patients were perimenopausal, while 23 patients were postmenopausal. The diagnostic accuracy of MRI for endometrial cancer detection was calculated to be 92%.

**CONCLUSION:** MR imaging is a very useful technique in detection of endometrial cancer. By utilizing diffusion weighted sequences, we found diagnostic accuracy of 92% in correlation with histopathology in endometrial cancer detection.

### Session-I: Women and Genitourinary Imaging F-3

#### Conventional Versus Digital Mammography Reducing Retake Rates

ZOHRA SULTAN  
WASEEM AKHTER  
IMRANA MASROOR  
*Department of Radiology, Aga Khan University Hospital, Karachi, Pakistan.*

**OBJECTIVE:** To determine the film retake rates and causes in digital mammography comparison to conventional mammography method.

**MATERIALS AND METHODS:** The study was conducted at the Radiology department Aga Khan University. AKUH has shifted from conventional to digital mammography as modality in April, 2008. We studied mammography films that were conducted during the period of six months (1st Oct. 2007 to 31st Mar. 2008) preceding the shift to digital mode. Moreover, for comparison of post shifted (1st April 2008 to 31st Oct. 2008) that utilized digital imaging was also reviewed.

As procedure, four films are routinely taken for each patient who undergoes mammogram. A Performa is developed to capture the information on independent variables. Measurements were done for number of mammography films retake due to different quality control reasons for both the conventional and digital radiography in which quality was questionable.

**RESULT:** During six months 107 mammograms were repeated in conventional mammography due to artifacts (16%), blur (0.94%), double exposed (0.94%), over exposed (14%), position error by technologist (31%), position error by radiologist (10%), exposure selection error (1.88%), under exposure (22.6%). Positioning error and under exposure were the most frequently responsible factors of repetition as compared to any other factor. In digital mammography during six months 50 films were repeated, due to blur (4%), double exposed (2%), positioning error by technologist (84%) and positioning error by radiologist (10%), the most frequent cause was positioning error.

**CONCLUSION:** With digital mammography significantly lesser number of retakes as compare to conventional mammography; hence it minimizes the patients' radiations dose and cost as caused by discarded films. Positioning error remains a dilemma for retake even in digital mammography indicating the need for improvement in training programs and practice for mammography technicians.

### Session-I: Women and Genitourinary Imaging F-4

#### Progression of Fetal Renal Anomalies in Post-Natal Life

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**OBJECTIVE:** Renal anomalies are the 2nd most common fetal anomaly after neural tube defects. They are easily detected in prenatal ultrasound. Common renal anomalies include PUJ obstruction, posterior urethral valves, polycystic kidneys and renal pylectasis. The objectives of our study was to perform post-natal follow-up scan in our patient population of pre-natal renal anomalies to determine their progression.

**MATERIAL AND METHODS:** Prospective study over 5 year duration. Informed consent was obtained from all patients. Patients with renal anomalies were requested to come for post-natal ultrasound scan which was kept as part of the prenatal scan. Renal anomalies were detected in about 500 fetuses. Approximately 100 were lost to follow up. Lethal renal anomalies were excluded from study.



**RESULTS :** Of 500 renal anomalies, approximately 200 patients came for post natal follow up scan. Postnatal follow up showed severe anomalies are treated immediately after birth such as posterior urethral valves. Most anomalies need regular check ups such as mild PUJ and AR Polycystic kidney disease. Renal pylectasis if mild usually disappear after birth. If renal pelvis AP diameter is more than 10 mm reflux is likely.

**CONCLUSION :** High concordance of pre-natal and post natal ultrasound scan of renal anomalies. Patient with renal anomalies should come for follow up scan to decide if there is need of surgical treatment, medical treatment or just follow using ultrasound.

### Session-I: Women and Genitourinary Imaging F-5

#### Renal Transplant Dysfunction- Interventional Radiological Management

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HAMID MAJEED  
SAMAN CHAUDHRY

*Department of Radiology, Shaukat Khanum Memorial Cancer Hospital, Lahore, Pakistan.*

**OBJECTIVE:** Objective of my paper is to identify the anatomy of renal transplant, describe various post operative complications and discuss interventional radiological techniques in the management of some of these complications.

**MATERIAL AND METHODS :** From 01-06-2008 to 31-08-2009, 40 cases with renal transplant were studied who were referred to us by nephrologists and urologists to evaluate and manage renal transplant complications. Around 25 patients (10 females, 15 males; age 35-65yrs) with evidence of renal transplant dysfunction were treated with interventional radiological methods. 4 renal artery stenosis (treated with TPA), 3 pseudo aneurysms (treated with coiling), 2 AVF (treated with transcatheter embolization), 6 ureteral obstructions (treated with nephrostomy and stenting), 3 urine leaks (treated with nephrostomy) and 4 lymphocoeles (ultrasound guided catheter drainage) and 3 other perigrat fluid collections were managed accordingly.

**RESULTS :** Success was obtained with primary interventional procedure in 20 cases. Redo procedure was performed in 4 cases that went successful. While one case of ureteral obstruction needed surgical correction.

**CONCLUSION :** Correct knowledge of renal transplant anatomy and complications is pivotal in order to define proper interventional radiological management. The interventional procedures show good technical and clinical results with low complication rate and thus are the primary therapeutic approach in patients with renal transplant dysfunction.

### Session-I: Women and Genitourinary Imaging F-6

#### MRI Breast—Usefulness and Pitfalls

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**OBJECTIVE:** Objective of my paper is to highlight the usefulness of MRI breast in diagnosing and differentiating various benign and malignant breast disorders, determining multicentricity and disease in contra lateral breast. My study will also evaluate the role of MRI in imaging of breast implants, post surgical and post radiotherapy breast changes and at the same time various pitfalls that can be encountered while performing and reporting MRI breast.

**MATERIAL AND METHODS :** This was a retrospective study performed from 31-08-2008 to 31-08-2009, 100 cases of MRI breast were studied. All were females with ages ranging from 30-50 yrs. The usefulness of MRI breast

was assessed in terms of improved detection of breast lesions, their characterization, demonstrating disease in contralateral breast and assessment of implants. Results were compared with conventional mammography, tissue diagnosis and ultrasound.

**RESULTS :** In 12 patients, MRI could pick up multiple satellite lesions in ipsilateral breast that were not previously diagnosed. 4 patients had disease in contralateral breast also. 3 patients who had palpable lump and in whom mammogram and ultrasound results were occult, MRI could actually pick up the lesion. Breast implants were studied in 3 patients. 22 patients with post surgical and post radiotherapy changes were assessed, in whom 7 patients had residual disease on MRI that was misdiagnosed as post surgical change on mammogram and ultrasound. This was confirmed with biopsy. In 15 patients, MRI overestimated the disease in terms of satellite nodules that on biopsy came out to be benign breast parenchyma.

**CONCLUSION :** MRI breast is a very useful tool in imaging of the breast particularly in difficult cases. The patients with occult breast disease or in whom multicentricity and assessment of contralateral breast is needed, MRI offers great help. The role of MRI breast in differentiating residual disease from post surgical change is admirable. The importance lies in the proper knowledge of characteristics of various tissues on different MRI sequences and proper use of time enhancement curves.

### Session-II: Neuro Imaging F-7

#### Carotid Artery Disease in Patients Undergoing Elective Coronary Artery Bypass Surgery

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**OBJECTIVE:** To determine the frequency of carotid artery disease in patients undergoing CABG.

**MATERIAL AND METHODS :** 176 patients (150 Male 85%, mean age 65 years) undergoing CABG was evaluated preoperatively for CAD by neck color Doppler Sonography.

**RESULTS :** Proportion of CAD was 20% in these patients. Normal findings in right CCA, right ICA, left CCA and left ICA were detected in 46%, 53%, 42% and 53% of cases respectively. Plaques in right CCA, right ICA, left CCA and left ICA were detected in 48%, 36%, 50% and 35 % of cases respectively. Stenosis of less than 50% in right CCA, right ICA, left CCA and left ICA were detected in 4%, 3%, 6% and 4% of cases respectively. Stenosis of 50% to 75% in right CCA, right ICA, left CCA and left ICA were detected in 2%, 4%, 2% and 5% of cases respectively. Stenosis of 75% to 80% was detected in left ICA in 1% and 2% of cases in left ICA. Almost complete occlusion was detected in right ICA was 2% and in left ICA in 1% of all cases.

**CONCLUSION :** Patients undergoing CABG show a high proportion of significant carotid artery disease.

### Session-II: Neuro Imaging F-8

#### Audit of Appropriateness and Outcome of Computed Tomography Brain Scanning for Headaches in Paediatric age group

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**OBJECTIVE:** To assess the appropriateness and outcomes of computed tomography brain scanning for headaches in pediatrics age group.

**MATERIAL AND METHODS:** This Descriptive study was conducted at the Radiology Department Hayatabad Medical Complex, Peshawar over a period of 1 year i.e. from 9-07-08 to 9-07-09.

Patients of both genders between the ages of 4-18 years presenting with headache either isolated or common/classic migraine were included in this study. These variants of headache were allocated an appropriateness rating of 2 for CT scan by the American College of Radiology Appropriateness Criteria (ACRAC) for children with headaches.

**RESULTS:** Out of the 100 patients only 4% patients showed abnormal findings on CT scan while the remaining 96% of the scans were absolutely normal. The four patients with abnormal findings all had sinusitis.

**CONCLUSION:** This audit suggests that a proportion of the computed tomography studies performed for children with isolated headaches or common/classic migraine may have been inappropriate. The development of a local guideline for imaging referral is indicated.

### Session-II: Neuro Imaging F-9

#### Screening MRI Brain, Is it Worthwhile?

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MUHAMMAD TAMEEM AKHTAR  
ANWAR AHMED  
KAMRAN HAMEED

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**OBJECTIVE:** To review the screening MRI Brains done at Ziauddin University Hospital and determine their utility in terms of diagnosis and exclusion of disease.

**MATERIAL AND METHODS :** This is a retrospective study. Screening MRIs of Brain done during last one year were reviewed by two radiologists having more than five years experience in MRI reporting. Axial T-2 weighted images were acquired through brain using high resolution 1 Tesla MRI. Clinical Indications, positive findings along with demographic data were noted. Note was also made of cases in which full study was recommended. In these cases findings of full study were also noted. All the diagnosis was based on MRI findings and additional histological confirmation was not obtained.

**RESULTS :** Will be drawn once the study results have been analyzed.

**CONCLUSION :** Will be drawn once the study results have been analyzed.

### Session-V: Head and Neck Imaging and Pediatrics F-10

#### Improved Visualization and Staging of Buccal Mucosal Tumors using Puffed Cheek CT Technique

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SAIMA IMRAN  
TARIQ MAHMOOD  
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**OBJECTIVE:** To determine whether puffed cheek CT technique provide additional information in staging of buccal mucosa than routine examination or not.

**MATERIAL AND METHODS :** A prospective study conducted in the department of Radiology & Oncology at JPMC over a period of five months (from May 2009 to September 2009), age ranged from 35 to 55 yrs, patient

with biopsy proven buccal mucosal tumor underwent CT examination. CT scan was performed during normal resting condition and using puffed cheek technique. Images were interpreted on console and results were compared with findings on clinical examination and on histopathology when required.

**RESULTS :** Final results including sensitivity & specificity will be compiled after completion of study by the end of September 2009. **CONCLUSION :** Early mucosal disease was better assessed on CT done using puffed cheek technique. This technique also provides more precise information about the local extension of tumor.

### Session-V: Head and Neck Imaging and Pediatrics F-11

#### Significance of Ultrasound Features in Predicting Malignant Solid Thyroid Nodules: Need for Fine-Needle Aspiration

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**OBJECTIVE:** The purpose of this study was to provide sonographic and color flow criteria helpful for differentiation between benign and malignant solid thyroid nodules.

**MATERIALS AND METHODS:** This prospective study was carried out at Sindh institute of Urology and Transplantation (SIUT), Karachi Pakistan from 01.05.07 to 31.12.08. Sonographic scans of 78 thyroid nodules in 66 patients were carried out and characteristics of thyroid nodules that were studied included microcalcifications, an irregular or microlobulated margins, marked hypoechogenicity, a shape that was taller than it was wide and color flow pattern in Color Doppler ultrasound. The presence and absence of characteristics of nodules were classified as having positive or negative findings. If even one of these sonographic features was present, the nodule was classified as positive (malignant). If a nodule had none of the features described, it was classified as negative (benign). The final diagnosis of a lesion as benign (n= 53) or malignant (n= 25) was confirmed by fine needle aspiration biopsy, and patients who were proved to have benign lesions were followed-up for 6 months and malignant lesions which were proved on histopathology after FNA were subjected to surgery. The sensitivity, specificity, positive predictive value, negative predictive value, and accuracy were then calculated on the basis of our proposed classification method.

**RESULTS:** Among 78 solid thyroid nodules 35 lesions were classified as positive considering the sonographic characteristics and 23 of them were proved to be malignant on histopathology. Out of 43 lesions which were classified as negative, 2 were proved to be malignant. The sensitivity, specificity, positive predictive value, negative predictive value and accuracy based on our sonographic classification method were 93.8%, 66%, 56.1%, 95.9%, and 74.8%, respectively.

**CONCLUSION:** Ultrasound is valuable for identifying many malignant or potentially malignant thyroid nodules. No single ultrasound criterion is reliable in differentiating all benign from malignant thyroid nodules, but many US features aid in predicting the benign or malignant nature of a given nodule. Fine-needle aspiration biopsy should be performed on thyroid nodules classified as positive, regardless of palpability.

### Session-V: Head and Neck Imaging and Pediatrics F-12

#### The Alliance for Radiation Safety in Pediatric Radiology

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**OBJECTIVE:** This presentation will introduce to the radiology community in Pakistan an international organization called the Alliance for Radiation Safety

in Pediatric Radiology, whose goal is to promote awareness to minimize radiation dose in pediatric interventional radiology.

**MATERIAL AND METHODS :** The Alliance for Radiation Safety in Pediatric Imaging is a coalition of health care organizations dedicated to providing safe, high quality pediatric imaging worldwide. Its primary objective is to raise awareness in the imaging community of the need to adjust radiation dose when imaging children. The ultimate goal is to change the practice. The presentation will introduce the Alliance; discuss its goals, indications for such an initiative, and how it promotes awareness of its campaign. Details of the educational resources offered by the Alliance, including examples of slide presentations, protocols and information brochures, and how they may be accessed will be presented.

**RESULTS :** The results of the Alliance campaign will be assessed on the basis of the international participation the organization has established to date, notwithstanding that this presentation itself is an example of its awareness effort.

**CONCLUSION :** The concluding remarks will encourage the audience to assess the need and relevancy of the campaign in Pakistan, relay the message to their respective institutions and act as its ambassador.

### Session-V: Head and Neck Imaging and Pediatrics F-13

#### Radiographic Evaluation of Pediatric Trauma Patients

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**OBJECTIVE:** The purpose of this study was to determine role of Trauma Series established by American college of surgery for patients of multiple traumas including lateral cervical spine, anteroposterior chest, and anteroposterior pelvis in Pediatrics Trauma Patients Evaluation.

**MATERIAL AND METHODS :** A retrospective descriptive study was carried out between June 1, 2008 and June 30, 2009 in diagnostic radiology department of Aga Khan University Hospital Karachi. Subjects of our study were pediatric age (0-15) patient with trauma who had undergone trauma series. Reason of trauma included RTA and fall from height.

**RESULTS :** Total of 296 x-rays of 97 children were reviewed. The mean age was 5(1-9) years.

52 patients (53.60%) had trauma from RTA and 45(46.40%) from fall.

86 Children (88.65%) had a complete trauma series performed; 11(11.34%) had one or two x-rays of the series performed.

Trauma series were considered negative in 82 children (84.50% of total) as all of them had normal lateral cervical spine, anteroposterior chest, and anteroposterior pelvis x-rays while considered positive in 15 cases(15.50%) amongst which 6 patients(6.10%) had lung contusion ,8(8.25%) fracture femur and 1(1.03%) with fracture pubic rami.

In addition to trauma series 22 cases had other x-ray performed on the basis of clinical examination amongst which 12 X rays (54.54%) revealed fractures and 10(45.45%) were reported normal.

**CONCLUSION :** This study suggests that use of whole trauma series in the conscious pediatric patient, when an adequate clinical examination can be performed is unnecessary. This approach increase exposure to ionizing radiation of pediatric trauma patients, time of evaluation, and cost.

Rather selective use of individual components of the full trauma series in the conscious pediatric patient, when an adequate clinical examination can be performed, would be safe.

### Session-VI: Chest and CVS Imaging F-14

#### Venous Incompetence; A Leading Cause of Erectile Dysfunction

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**OBJECTIVE:** The objective of this study is to determine the frequency of venous leakage in patients with erectile dysfunction.

**MATERIAL AND METHODS :** This study was conducted at the Radiology department of Liaquat National Hospital, Karachi. A total of 44 patients between the ages of 22 to 52 years presenting with a history of inability to attain or maintain a satisfactory erection were evaluated using Doppler ultrasound. End diastolic velocity (EDV) and maximum peak systolic velocity (PSV) were obtained for each patient at 5 minutes intervals for 30 minutes following intracavernosal injection of 20µg Alprostadil (Prostaglandin E1). All patients also underwent physical examination of the external genitalia and evaluation of bulbocavernosus reflex, perineal and abdominal sensation were normal. The endocrine profile was normal.

**RESULTS :** The mean age of the patients was 32 years (range 22 to 52 years). Following 20µg PGE1, 14 out of 31 patients (32%) had normal PSV (more than 35 cm s<sup>-1</sup>) and EDV (dropping below 5.0cmS-1 or flow reversal). 26 out of 44 patients (59%) had an EDV of more than 5cmS-1 indicating venogenic dysfunction while 4 patients (9%) showed a PSV of less than 35 cmS-1 indicating arteriogenic dysfunction.

**CONCLUSION :** Erectile dysfunction is a common and debilitating condition with physical, psychological and pharmacological etiologies. Doppler Ultrasound allows accurate location and evaluation of penile vessels and vascular pathology may be differentiated after an intracavernosal injection with a vasomotor agent. The results of our study show the high prevalence of venous leakage in patients referred for evaluation of erectile dysfunction. Recognizing the pathological pattern assists in choosing the best method of treatment.

### Session-VI: Chest and CVS Imaging F-15

#### Significance of MRI Breast Prior to Treatment in Patients with Primary Breast Cancer. Preliminary Experience at Tertiary Care Hospital

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**OBJECTIVE:** Purpose of the study was to determine the role of magnetic resonance imaging of breast as an additional tool in ipsilateral and contralateral breast in patients with primary diagnosed breast cancer

**MATERIAL AND METHODS:** This is a retrospective analysis of 40 patients (age range of 24-66 years with the mean age of 40years) with biopsy proven primary breast cancer that underwent contrast enhanced MRI breast. MRI imaging was done at 1.5 tesla machine with dedicated bilateral breast multicoil array. Data was collected from Jan 2007-Jun 2009. In ipsilateral breast enhancing lesions with type II or III curve other than the index cancer considered as multicentric disease. Contralateral breast was also evaluated for enhancing suspicious lesion. All visualized suspicious lesions in ipsilateral and contralateral

breast were correlated histologically. In case of breast conserving surgeries and in contralateral breast follow-up were also reviewed where available.

**RESULTS:** In ipsilateral breast suspicious lesions other than the index cancer were in 8 patients (20%). 5 (12%) lesion were malignant on histopathology. Four (10%) patients had suspicious enhancing lesions in contralateral breast on MRI. In two patients (5%) lesions were malignant on histopathology. One was infiltrating ductal carcinoma and other was lobular carcinoma. The sensitivity of MRI was 88% in detecting multicentric disease and 100% for contralateral breast. For index lesion sensitivity and specificity of MRI was 98% and 90% respectively. Negative contralateral breast on MRI one to two follow ups yearly by mammography was available in 26 patients. No significant difference in BIRADS was noted since previous scan in all of them

**CONCLUSION:** The preliminary results demonstrate that MRI identified additional sites of cancer in 17% of patients. The yield was highest in women under the age of 35 years (15%). Thus MRI breast is recommended for preoperative evaluation of the newly diagnosed breast cancer in young patients.

#### Session-VI: Chest and CVS Imaging F-16

##### Patient Outcome Prediction by Quantification of Pulmonary Embolism Load and Right Ventricular Dysfunction on CT-Pulmonary Angiogram.

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**OBJECTIVE:** To assess the value of quantification of pulmonary embolism load and right ventricular dysfunction on CT pulmonary angiogram in patients with various malignancies.

**MATERIAL AND METHODS:** Out of the 126 CTPA examinations performed on 64-slice CT scanners (Toshiba Aquilion and Phillips Brilliance systems) over the last 3 years, 30 patients with proven pulmonary embolism and co-existing malignancies were selected. Detailed evaluation of the patient medical records was performed. Pulmonary-arterial obstruction index along with right ventricular dysfunction indices (RV/LV diameter ratio, PA/Ao diameter ratio and interventricular septum shape) were calculated for each patient and correlated with clinical signs & symptoms and outcome (survival or death) within 3 months of the embolism event.

**RESULTS:** All patients (6) with CT-PE Index above or equal to 0.6 died within 3 months of the embolic event. No mortality was noted in any patient below a PE-Index of 0.6. 2 patients died due to other co-morbidities and were excluded from the above mentioned results. Regarding Right ventricular dysfunction RV/LV diameter ratio above 1.0 correlated well with clinical signs and symptoms and was seen in all mortality cases and patients with CT PE index above 0.5. Pulmonary artery to aortic diameter ratios and interventricular septum shape did not correlate well with right ventricular dysfunction.

**CONCLUSION:** CT-PE Index above 0.6 is a valid and accurate figure for predicting morbid patient outcomes, while RV/LV diameter ratios >1.0 is an accurate parameter for assessment of right ventricular dysfunction.

#### Session-VI: Chest and CVS Imaging F-17

##### Added Value of Computer Assisted Diagnosis (CAD) of Pulmonary Nodules by Using 64 Slice Multi Detector Computed Tomography as Screening Tool.

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**OBJECTIVE:** To evaluate the additional value of CAD software in detection of pulmonary nodules by calculating its performance against gold standard in terms of sensitivity and specificity and on the basis of its results to advocate CAD as screening tool in a country where screening program for lung cancer is not available.

**MATERIAL AND METHODS:** Retrospective cross sectional study of consecutive 100 patients who underwent routine MDCT chest. Images reconstructed to 1mm and 5mm axial, 3mm coronal and 3mm sagittal sections, sent for routine reporting by radiologist and CAD software for automated detection of pulmonary nodules. The performance of CAD and reporting radiologist was evaluated against gold standard (combination of a consultant radiologist with > 15 years experience and a third year resident). Sensitivity and specificity of CAD and reporting radiologist was calculated against gold standard. Mann-Whitney U test applied to compare the medians of CAD and reporting radiologist against gold standard. P value <0.001 were considered significant.

**RESULTS:** Gold standard declared 198 nodules in 53 patients as true nodules. CAD calculated 610 nodules in 87 and reporting radiologist calculated 90 nodules in 28 patients.

Gold standard excluded nodules in 47, CAD in 13 and reporting radiologist in 87 patients. In detection of pulmonary nodules CAD has sensitivity of 94% and specificity of 28%, whereas reporting radiologist has sensitivity of 53% and specificity of 100%. Statistically significant difference found in CAD and reporting radiologist in detection of nodules with p value <.0001 respectively.

**CONCLUSION:** Considering the high sensitivity of CAD and incremental value to pick the additional nodules which are missed by reporting radiologist we recommend the application of CAD as screening tool in all patients undergoing CT chest examinations for the early detection of pulmonary nodules and triaging the suspicious ones for timely management of lung carcinoma.

#### Session-VI: Chest and CVS Imaging F-18

##### Maximum-Intensity-Projection Image Processing for the Detection of Small Pulmonary Nodules

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**OBJECTIVE:** Our purpose was to assess the utilization of maximum-intensity-projection image processing for the detection of pulmonary nodules, of less than 1cm size, in patients with known primary malignancy and to assess the inter observer variability in their detection.

**MATERIALS AND METHODS:** We retrospectively reviewed 50 patients with known primary malignancy. Two radiologists reviewed both the normal lung window images and the MIP images separately and then together to have

a final consensus opinion. All interpretations were made on the workstation (Vitrea2). The presence and absence of the nodules was noted along with their number and location within lung. Only nodules of less than 10mm in size were counted.

**CONCLUSION:** The addition of MIP images in the routine assessment of lungs increases the detectability of small lung nodules of less than 10mm in size and also improves the inter observer agreement for this purpose.

### Session-VI: Chest and CVS Imaging F-19

#### Multidetector CT in the Evaluation of Congenital Heart Disease in Pediatric and Adult Population Patients

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**OBJECTIVE:** Echocardiography is the diagnostic modality of choice in patients with CHD. The aim of the study was to establish the role of multidetector CT complimentary to echocardiography in order to assess morphologic and functional information especially in pre and post surgical evaluation and detection of concurrent extracardiac anomalies.

**MATERIAL AND METHODS:** Thirty patient with known CHD of different ages and both sexes were included in the study after a preliminary clinical examination by a pediatric cardiologist and echocardiographic examination. All MDCT studies were performed to resolve equivocal features on echocardiography and to answer specific questions raised by an inconclusive echocardiography and assessment of extra-cardiac abnormalities. The images were reviewed by two senior radiologists.

**RESULTS:** All patients diagnosed with congenital heart disease on echocardiography with an inconclusive on equivocal features were successfully evaluated on MDCT. Generally complex and combination of anomalies were seen. Extracardiac anomalies were seen in 17 cases. Intracardiac communication were seen in 10 cases. Tetralogy of Fallot was noted in 6 cases. Right sided aortic arch and isomerism were seen in 1 case each. Abnormal vascular connections were observed in 5 cases. Anomalous coronary arteries were seen in 3 cases. Bilateral SVC was seen in 2 cases. 4 Post surgical cases included RSP shunts, aortic graft with mural thrombosis and pulmonary valve replacement.

**CONCLUSION:** The study was able to present a wide variety of anatomic and pathologic examples of CHD pertinent to the cardiac surgeon for presurgical assessment and road mapping. As rapidly growing advancements in surgical techniques became more sophisticated and intricate, the need and demand for a thorough and better understanding and orientation of normal anatomy and morphologic features of CHD has increased. MDCT has revolutionized the imaging spectrum and successfully met the challenge. It has now established itself as the most optimal imaging modality in accurate diagnosis of congenital heart diseases.

### Session-VI: Chest and CVS Imaging F-20

#### Percutaneous Trucut Biopsy of Liver: Our Experience in Patients with Chronic Liver Disease

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**OBJECTIVE:** To report our experience with ultrasound guided trucut biopsies

of liver, using 18 gauge biopsy needle.

**MATERIAL AND METHODS :** 535 Percutaneous core liver biopsy procedures were reviewed, which were performed on both in and outpatient basis in our department over a period of five years (Jan 2004–Dec 2008). Patients included were both males ( 297,55.5% ) and females 238,44.4% )with age ranging between 20–70 years. Mean (46yrs). Clinical charts , pathology and radiology files were reviewed. In all cases biopsies were performed with 18 gauge Pro-Mag tm biopsy needle, by a senior radiologist under real time ultrasound guidance. Informed and written consent were obtained from all patients and any bleeding diathesis was checked for by recording the patient's PT, INR , APTT and platelets count. The number of biopsy passes and the adequacy of the specimen for histopathological analysis were evaluated.

**RESULTS :** All our biopsies were performed for chronic liver disease, with majority of our patients having Hep.B (132,24.3% ) and Hep.C(392,73.2%) as the indications for the procedure. The remaining 11 patients were diagnosed to be sero–ve CLD. Patients were observed for 4 hours post procedure. All outdoor patients were discharged after completing four hour observation and the in-patients were observed in wards. Pain was the most frequent immediate complication that was treated with analgesics. One patient developed internal hematoma which was resolved after conservative management. No major complication was seen and no biopsy related deaths occurred. All patients underwent single-pass liver biopsy, 27 samples were fragmented(5%) so the technical success rate was 95%. 526 biopsy samples were deemed diagnostic and 9 samples(1.68%) were non diagnostic and patients had to be re-biopsied.

**CONCLUSION :** Our experience in the Percutaneous ultrasound guided trucut biopsy of liver with 18 gauge biopsy needle in real-time suggest that it is a safe procedure that provides definitive pathological diagnosis.

### Session-VII: Musculoskeletal Imaging F-21

#### Role of MDCT 64 in the Complex Facial Fractures and other Abnormalities.

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**OBJECTIVE:** The purpose of this study was to evaluate the diagnostic value of three-dimensional (3-D) image reconstruction of skull and facial abnormalities including complex fractures, in association with high-resolution CT scanning and define the regions and conditions in which we were able to deliver maximum useful information in comparison with conventional radiography

**MATERIAL AND METHODS :** 69 trauma patients over the period of 2 years were subjected to conventional radiography and CT for the evaluation of skeletal abnormalities and fractures. Results were compared.

**RESULTS :** Out of these 30 had facial fractures or abnormalities. Further it was seen that in 33% (n=10) imaging was performed with the clinical question regarding temporomandibular joint. Rest were related to complex facial fractures(n=14), cranial synostosis(n=3) and miscellaneous conditions including dentigerous cyst (n=1). Assessment was made using a simple scoring system

**CONCLUSION :** It was seen that although the volumetric data in CT contains complete actual information which can be reviewed in multiplanar reconstructions but the use of volume rendering greatly augments the assessments of proper orientation and complete definition of the extent of the skull and facial fractures and other above mentioned abnormalities.

### Session-VII: Musculoskeletal Imaging F-22

#### Postmortem Computed Tomography for Diagnosis of Cause of death in Male Prisoners

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**OBJECTIVE:** To determine the utility of postmortem CT (PMCT) examination in establishing the cause of death among male prisoners dying in Karachi jails  
**DESIGN:** A descriptive study.

**DURATION AND SETTING:** From February 2006 to September 2007, CT Scan section, Civil Hospital Karachi and the Mortuary, Dow Medical College, Dow University of Health Sciences, Karachi.

**METHODOLOGY:** Adult male prisoners dying in the Karachi central prison and referred to the study setting for determining the cause of death for medico legal purpose were included. Female prisoners and those cases where the final report of cause of death was not available were excluded. CT scan of the vital body regions (head and neck, thorax, abdomen and pelvis) was carried out in all cases. The scan was read and reported by two radiologists. Anatomical dissection based autopsy was carried out by the forensic expert. Final report regarding the cause of death was issued by the forensic expert based on the combined findings, histopathology, and toxicology results and circumstantial evidence. The CT scan and autopsy findings were compared and percentage agreement was determined using kappa statistics.

**RESULTS:** There were 14 cases in all with mean age of 41.2 years. The alleged mode of death was custodial torture in all cases. CT scan determined the cause of death to be natural cardio-respiratory failure in 10, strangulation in 01, pulmonary tuberculosis (TB) in 02 and trauma to spine in 01 case. The autopsy determined natural death in 11 and pulmonary TB in 02 and asphyxia in 01. The percentage agreement between CT and autopsy was 92% (k=0.92) and between CT and finalized cause of death was 100% (k=1.0).

**CONCLUSION:** PMCT is as effective as dissection autopsy in identifying pulmonary infections and natural causes of death. It is more effective in identifying vertebral fractures which may exclude hanging and corroborate trauma to spine.

### Session-VII: Musculoskeletal Imaging F-23

#### Whole Spine Imaging on MRI

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**OBJECTIVE:** To know the efficacy of Whole Spinal imaging on MRI

**MATERIAL AND METHODS:** 75 patients with spinal problems were imaged by Whole Spinal protocol in the Department of Radiology and Medical Imaging in Punjab Medical College/ Allied Hospital, Faisalabad. Convenient sampling was done. Fat suppressed sequence was added to the conventional series. Imaging from Craniocervical region til the sacral level was done in a single go.

**RESULTS:** Whole spine imaging was helpful in patients with unknown sensory level, transverse myelitis, metastatic disease, multifocal tuberculosis.

**CONCLUSION:** Whole spine MR should be employed in patients in which sensory level is unknown, trauma and multifocal disease

### Session-VII: Musculoskeletal Imaging F-24

#### Validating Anthropometric Prediction Equations for Assessment of body fat Composition in Secondary School Children using DEXA as Gold Standard

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**OBJECTIVE:** A cross-sectional analytical study was performed with the objective to validate previously formed prediction equations by slaughter (SL), Dezenberg (DZ) and Goran (G) for measuring percentage body fat (%BF) and fat mass (FM) in kilograms in our population using Dual Energy X-ray Absorptiometry (DEXA) as gold standard.

**MATERIAL AND METHODS:** 99 children were enrolled from community schools. DEXA scanning was also performed using the Hologic Discovery QDR series with alternating fan beam radiations for estimation of %BF and FM. Prediction equations of SL, G and DZ were used for prediction of %BF and FM using anthropometric measurements of triceps and subscapular locations using skinfold caliper. For rendering the equation valid following criteria were evaluated. 1) Strong correlation coefficients ( $r > 0.7$ ). 2) Accuracy  $>90\%$ . 3) No significant bias between the estimated and predicted values. 4) Good agreement between the 2 modalities with good intra class coefficients (ICC) ( $r > 0.5$ ).

**RESULTS:** Excellent correlations were obtained of 0.76 for the SL equation for predicting %BF and 0.80 and 0.86 for DZ and G equations respectively. The over all accuracy for the SL, DZ and G equations was 98.4%, 90.3% and 83.3% respectively. Significant bias was obtained between estimated FM by Dexa and that predicted from the DZ and G equations (p-value  $<0.05$ ). No significant bias was seen between the predicted and estimated percent body fat (p-value 0.4). Good intra class correlation coefficients were seen in all groups suggesting good agreement (SL 0.82, DZ 0.85 and G 0.86).

**CONCLUSION:** Based on the criteria for validity the Slaughter equation for validating percent body fat is valid and can be deployed in the field work instead of DEXA.

However the equations for fat mass did not fulfill the validation criteria and DEXA is still the best modality for assessing fat mass.

### Session-VII: Musculoskeletal Imaging F-25

#### Musculoskeletal Imaging with Computed Tomography. When is Computed Tomography the Study of Choice?

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**OBJECTIVE:** To evaluate the role of CT as a diagnostic imaging modality

in clinical cases for imaging pathologies of the Musculoskeletal System.

**MATERIAL AND METHODS :** The study was carried out at CMH Attock and Abrar CT Scan centre Rawalpindi from MAY 2008 to MAY 2009. Representative cases of one year experience with multidetector-row CT will be presented. A total of 27 CT scans of different musculoskeletal entities were performed.

**RESULTS :** Musculoskeletal CT had a high diagnostic accuracy in cases of infective, vascular, Inflammatory and neoplastic etiology. In our study, diverse pathologies including primary and secondary synovial osteochondromatosis, extensive myositis ossificans, complications of rheumatoid arthritis, complicated skeletal Hydatid disease, hemophilia, tuberculous musculoskeletal disorders and few neoplasms were diagnosed on different CT features.

**CONCLUSION :** Computed tomography (CT) is an important diagnostic modality in the work-up of musculoskeletal diseases. CT provides advantages in the evaluation of musculoskeletal diseases with excellent capability of anatomic localization. CT provides the ability to detect and characterize calcification, cortical disruption, soft tissue ossification, periosteal reaction, presence of fat, joint space width and type of fluid or solid component.

### Session-VIII: Nuclear Medicine F-26

#### Utility of Combined Tc-99m MIBI and Bone Scan in Solitary Musculo- Skeletal Pathology

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**OBJECTIVE:** The aim of this study was to assess the utility of combined <sup>99m</sup>Tc-MIBI scintigraphy and bone scan in patients with clinical and radiologic features of solitary musculo-skeletal pathology.

**MATERIAL AND METHODS :** The scintigraphic findings for 30 patients were compared with the surgical and histologic findings. Each patient underwent three-phase bone scanning with <sup>99m</sup>Tc-methylene diphosphonate (MDP) and dynamic and static MIBI scintigraphy. The MIBI scans were evaluated by visual and quantitative analysis. The count ratio of the lesion to the adjacent or contralateral normal area (L/N) was calculated from the region of interest drawn on the MIBI scan. The Mann-Whitney test was used to determine the differences between the uptake ratios of malignant and benign lesions.

**RESULTS :** Although increased MDP uptake was not specific for bone malignancy, a significant difference was found between benign tumors (L/N = 1.22 ± 0.40) and malignant tumors (L/N = 3.5 ± 2.23) on MIBI scans.

**CONCLUSION :** The major diagnostic worth of MIBI scintigraphy is its high negative predictive value. Although not capable of replacing tissue biopsy as a definitive diagnostic modality for musculoskeletal neoplasms, MIBI scintigraphy does appear to have a role in better preoperative assessment and in distinguishing between benign and malignant pathologies.

### Session-VIII: Nuclear Medicine F-27

#### Predictive Value of Pathological Q Waves for Fixed Perfusion Defect and its Impact on LV Function Estimated by Gated Spect

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**BACKGROUND:** Sensitivity of pathological Q waves (pQw) has been questioned by perfusion and metabolism imaging. Present study was conducted to find its sensitivity and impact on LV function.

**SUBJECT AND METHODS:** This prospective study included 306 consecutive cases (187 male; mean age 55.07 years) referred for same day (rest- stress) gated SPECT study (MPI).

**RESULTS:** pQw were positive in 55/306 (18%) patients and 40/55 (73%) had fixed perfusion defects while 15/55 (27%) had no fixed defect on MPI. In 47 patients fixed defects without pQw were seen. Overall sensitivity, specificity, negative and positive predictive values (NPV and PPV) of pQw for MI were 46%, 93%, 81% and 73% respectively. pQw in anterior leads had highest sensitivity than others regional leads. In patients with true positive pQw, mean LV ejection fraction (%EF), mean end diastolic (EDV) and mean end systolic (ESV) volumes were 36 ml (±11.87), 170 ml (±70.28) and 114.38 ml (±67.40) respectively. More severe LV dysfunction was seen with true positive pQw in anterior ± inferior and lateral leads.

**CONCLUSION:** pQw has an overall high specificity, low sensitivity but positive anterior leads have highest sensitivity. pQw has negative impact on LV function and more pronounced when present in anterior leads.

### Session-VIII: Nuclear Medicine F-28

#### Regulatory Requirements for the Radio-Healthcare Professionals

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The purpose of this presentation is to increase awareness and provide guidance to the radiology community in Pakistan to optimize radiation safety and protection during their daily operations involving ionizing radiation. The regulatory requirements for the Nuclear Medicine, Radiology, Radiotherapy and other ionizing radiation related services are well established in Pakistan under the auspices of Pakistan Nuclear Regulatory Authority (PNRA). The requirements not only include the physical arrangement to ensure radiation safety in healthcare setups but also the administrative requirements such as qualification and training for the radiation workers (Medical Physicists, Radiologists, Radiation Oncologists, Nuclear Medicine Physicians, Nuclear Cardiologists, Radiographers, Nuclear Medicine, RT technicians and others.) As per PNRA regulations, the annual occupation exposure limit for radiation

workers is 20 mSv. Along with the PNRA's definition of radiation workers, we at the Aga Khan University & Hospital also abide by the international classification; that is, those who work in controlled areas where the annual limit may exceed 6 mSv are designated as radiation workers. This latter designation, more stringent than the PNRA one, is not always clearly understood by all concerned. This paper will enhance the knowledge of such colleagues and help them protect themselves and others from the radiation.

### Session-VIII: Nuclear Medicine F-29

#### To Evaluate the Role of Myocardial Perfusion Scintigraphy in Patients with Poor Echocardiography Window for Wall Motion Analysis and Calculation of Functional Parameters

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**OBJECTIVE:** This study was designed to compare the effectiveness of 2D-echocardiography and gated myocardial perfusion scintigraphy with MUGA for evaluation of the functional parameters in patients with poor acoustic window

**MATERIAL AND METHODS :** A total of 18 patients with good acoustic window (age  $48 \pm 15.91$  years, 13 male and 5 female) and 38 subjects with poor acoustic window (age  $53 \pm 11.89$  years, 18 male and 20 female) were studied. On the bases of etiology of poor acoustic window, the group was subdivided into obese ( $n=21$ ), precordial fat pad ( $n=11$ ) and hyper inflated lung ( $n=6$ ) groups. All patients underwent resting echocardiography and  $99mTc$ -MIBI resting gated MPS on the same day and gated SPECT MUGA on the next day. LV volumes, LV ejection fraction and LV regional wall motion were compared.

**RESULTS :** The linear correlation for EF and ESV obtained from ECHO-MUGA and GMPS-MUGA was good in subjects with normal acoustic window as well as poor acoustic window group (for EF  $r= 0.90 - 0.98$  at  $p<0.0001$ , for ESV  $r= 0.95 - 0.98$  at  $p<0.0001$ ). For EDV the correlation between ECHO-MUGA as well as GMPS-MUGA was good in patients with normal acoustic window ( $r=0.92-0.99$   $p<0.0001$ ). In patients with poor acoustic window, correlation for EDV was better for GMPS-MUGA than ECHO-MUGA ( $r=0.91$  Vs  $0.83$  at  $p<0.0001$ ). Segment-to-segment comparison of wall motion determined by ECHO and GMPS in comparison with MUGA shows almost similar perfect matching (89.54% Vs 93.79%) in subjects with normal acoustic window. Considering all segments including those not adequately visualized on echocardiography, perfect segment to segment matching was lower for ECHO-MUGA than GMPS-MUGA in poor echocardiography group and subgroups with poor acoustic window due to obesity, precordial fat pad and hyperinflated lungs (68.27% Vs 93.34%, 65.27% Vs 91.23%, 74.33% Vs 97.33% and 67.65% Vs. 93.14% respectively). However when segments not adequately visualized on echocardiography were excluded, then segment to segment matching for ECHO-MUGA was close to that for GMPS MUGA (89.57% Vs 93.25%, 85.56% Vs 91.11%, 99.28% Vs. 94.70%, and 86.25% Vs. 92.50% respectively).

**CONCLUSION :** When compared with MUGA, in patients with normal and poor acoustic window, good correlation existed between ECHO and GMPS for EF, EDV and ESV. Good correlation was observed for wall motion between ECHO-MUGA and GMPS-MUGA in myocardium adequately visualized on echocardiography, while agreement for wall motion match was poor when whole myocardium was taken into account.

### Session-IX: Body Imaging F-30

#### Transarterial Chemo-embolization in Managing Hepato Cellular Carcinoma: Our Initial Experience

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**OBJECTIVE:** The purpose of this study is to evaluate the effectiveness of transarterial chemoembolization in the management of patients not eligible for surgical resection

**MATERIAL AND METHODS :** We selected 122 patients with HCC not eligible for surgical resection, who were treated exclusively with TACE during the 1-year period June 2007–June 2008. The diagnosis was confirmed with either biphasic CT, dynamic MRI scan or sonography-guided needle biopsy. Patients were included who had untreated HCC not suitable for curative treatment. The patients were not eligible for surgical resection because of advanced age ( $> 65$  years), tumor size (more than 5 cm), multi focal tumor or the presence of a severe co morbid condition.

The treatment protocol included TACE as the primary intervention, using a mixture of Doxorubicin and Lipiodol. Follow up triphasic CT scan was done in all patients undergoing TACE for response evaluation (Stable, progressive or regressive disease). Need for repeat TACE was advocated on these follow up scans and included the patients who had poor response to the initial therapy i.e. Increase in tumour size, Poor uptake of lipiodol, arterialization of the lesion, tumour involving both the lobes.

**RESULTS :** The overall 1 year survival of patients undergoing TACE is 55 %. Follow up scans showed response to TACE was significantly better for unifocal, small tumors (less than 5 cm) than for multi focal, larger tumor nodules

**CONCLUSION :** Our initial experience from a single centre does emphasize the value of palliative TACE treatment for unresectable HCC.

### Session-IX: Body Imaging F-31

#### Renal Biopsy: Ultrasound Guided Renal Biopsy using a Caudal Angulated Needle Path to Improve Cortical Sampling

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**OBJECTIVE:** We describe a technique where using an image guided caudally angulated needle which precludes medullary sampling, improving both safety and diagnostic yield of the renal biopsy.

**MATERIAL AND METHODS :** A prospective study from January 2008 to August 2008 was conducted in AKUH. Total 20 patients were included. Normal coagulation profile was mandatory for renal biopsy. The patient was placed in prone position for biopsy in ultrasound interventional room. Appropriate kidney was assess and lower pole was selected followed by local anesthesia infiltration 18G biopsy needle was inserted with caudal angulation and advanced until the capsule of kidney has been reached. Patient was asked to hold breath when biopsy was obtained after unlocking and firing of the biopsy device. A minimum two passes were made in all patients.



**RESULTS :** In all patients (100%) sufficient material was obtained for histopathology. Transient gross hematuria was not observed in any patient. After fifteen minutes of biopsy minimal perinephric hematoma was observed in one (5%) patients & on next day morning hemoglobin was not showing change as compared with pre-procedure values.

**CONCLUSION :** By using caudal angle of needle, under real time ultrasound guidance for core biopsy from lower pole of native kidney is an effective technique to get cortical tissues.

### Session-IX: Body Imaging F-32

#### Accuracy of Computed Tomographic Colonography in Detection of Colorectal Polyps: Systematic Review and Meta Analysis

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**OBJECTIVE:** To determine the quality of these studies as well as effectiveness of CT colonography in detection of colorectal polyps in symptomatic patients and screening population combined.

**MATERIAL AND METHODS :** Extensive online search was for the terms "computed tomographic colonoscopy" OR "virtual colonoscopy" OR "pneumocolon" AND "conventional colonoscopy" or "optical colonoscopy" in medical literature published from 2000-2009. Those studies in which participants underwent both CT colonography and colonoscopy were included. Quality of the studies was assessed using tool called "quality assessment of diagnostic accuracy studies". Per patient sensitivity and specificity of CT colonography for polyp of any size was computed for each study and pooled sensitivity and specificity was also calculated. Summary receiver operating characteristic curve (sROC) was computed. Pooled sensitivity was measured for polyps of various sizes. Meta analysis was performed using Meta DiSc version 1.4

**RESULTS :** 11 studies comprised of 3688 participants with 62.5% males and 37.5% females in an age range of 25 to 90 yrs. Patient spectrum was representative in all with eligibility criteria clearly described in 10/11 studies. 6 studies using conventional colonoscopy (CC) as reference standard were unable to explain its proper procedure in detail. Index test formed a part of the reference standard in 5 studies using segmental unblinding of the colonoscopy as the reference standard. Information bias in interpreting CT colonography results was found in none of them. Verification by CC was done in 6. Per patient pooled sensitivity and specificity for polyp of any size with 95% CI was 69% (66-72%) and 75% (73-78%) respectively with area under curve found to be 0.787 with standard error of 0.066. Pooled sensitivities for polyps <5mm, 6-9mm and =10mm with 95% CI was found to be 32% (30-34%), 65% (62-68%) and 74% (70-78%) respectively.

**CONCLUSION :** Per patient sensitivity for detecting polyp of any size is less as compared to its specificity and per polyp sensitivity increased with polyp size indicating that CT colonography may not detect smaller lesions accurately.

### Session-IX: Body Imaging F-33

#### Percutaneous Transhepatic Balloon Dilatation of Biliary Enteric Anastomotic Strictures

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**OBJECTIVE:** To assess the technical success, complications and re intervention rate of percutaneous transhepatic balloon dilatation of biliary enteric anastomotic strictures.

**MATERIALS AND METHODS:** The efficacy of this percutaneous transhepatic procedure was retrospectively studied in 19 patients who underwent balloon dilatation of benign postoperative biliary enteric anastomotic strictures at Aga Khan university hospital between Dec 2004 and Jun 2009. 4 patients were male and 15 females. Age range from 23-70 years (mean age 44.1 years). 8 mm – 12 mm diameter balloons were used for stricture dilatation followed by placement of 8 Fr – 14 Fr internal external drainage catheters. Mean follow-up was 144.76 days (range 14 - 834 days). Technical success, complications and rate of subsequent intervention was analyzed.

**RESULTS:** Technical success rate was 100%. There was no major procedural complication and no mortality. During follow-up 15 patients required subsequent intervention (78.9%) Repeat cholangioplasty in 11 patients Stenting in 3 patients. Drain replacement in 1 patient.

**CONCLUSION:** Percutaneous balloon dilatation is a safe and useful treatment option for biliary enteric anastomotic strictures but repeated interventions may be often required to maintain patency of anastomosis.

## PAPERS IN RESERVE (RES-F)

### RES-F-1

#### Radiologists Say- Breast MRI is Here To Stay!

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**OBJECTIVE:** To describe the frequently seen MR contrast enhancement and kinetic patterns in younger women with solitary suspicious breast masses on initial ultrasounds.

**MATERIAL AND METHODS :** Out of 195 MRI of the breasts performed in two years (March 2007-2009), 25 cases were selected for this retrospective study. Women less than 40 years of age, recently diagnosed with a suspicious solitary breast tumor, were included. Post-operative and post-chemo or radiotherapy cases were not included. All cases were biopsy proven. MRI of the breasts was performed under routine departmental protocol on a 1.5 T GE machine using dedicated breast coil. Post processing subtraction, MIP imaging and time-intensity curves were obtained. 'Enhancement patterns' were identified as rim, heterogeneous/patchy and homogeneous, while 'kinetic patterns' as washout, plateau and continuous. The interpretation of MRI was performed by consensus of two experienced radiologists blinded of the biopsy outcomes. Findings were then compared with the histopathological results.

**RESULTS :** The widest tumor dimension was 22 to 101 mm in the study group (age range- 21-35y) The histology in 25 cases were IDC-II (n=4), IDC-III (n=15), IDC-II with DCIS (n=1), IDC-III with DCIS (n=2), mucinous CA-II (n=1) and borderline phylloides (n=2). The most frequent enhancement pattern was found to be 'heterogeneous' (n=13, 52%) followed by 'rim' (n=10, 40%) and 'homogeneous' (n=2, 8%). 38.4% (n=5) of heterogeneously and 70% (n=7) of rim enhancing tumors demonstrated 'washout' kinetic pattern 'typical' for malignancy whereas 30.7% (n=4) of heterogeneous and 30% (n=3) of rim enhancement showed 'plateau' phase. 23% (n=3) of heterogeneous enhancement however did show 'continuous' kinetics; these were IDC-II with DCIS (n=1), IDC-III with DCIS (n=1) and IDC-III (metaplastic). Borderline phylloides exhibited homogeneous enhancement with continuous (n=1) and plateau phases (n=1). One case of heterogeneous enhancement (IDC-III) showed non-diagnostic kinetics.

**CONCLUSION :** Heterogeneous enhancement and early washout kinetic patterns were found in MRI of younger women with single suspicious breast masses.

### RES-F-2

#### Departmental Experience in Placement of Tunneled Central Venous Haemodialysis Catheters over A 2-Year Period

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**OBJECTIVE:** We report our experience with placement of tunneled Central Venous Catheters (CVCs) in 83 haemodialysis patients over a 2-year period.

**MATERIAL AND METHODS :** Our study was carried out at the Radiology department of Liaquat National Hospital, Karachi. Over a 2-year period, tunneled central vein catheters were placed by an interventional radiologist in 83 haemodialysis patients (49 females: 34 males) ranging in ages from 9 to 67 years (mean age = 42 years). Real-time ultrasound-guided puncture and fluoroscopic guidance were used. These patients were followed up until catheter removal or death and complications were noted.

**RESULTS :** Of all the 83 central venous catheters, 81 were placed through the internal jugular vein, with most being placed in the right internal jugular vein (70/83, 84.33%). 2 catheters were placed via femoral vein (2/83, 2.40%). Technical success of placement was 100% with no procedural complications. 5 out of the total 83 patients (6.02%) developed hemorrhage at the site of insertion which was conservatively managed. Infection developed in 11 patients (13.25%), 9 managed with IV antibiotics while in 2 patients catheter had to be removed to control the infection. Fracture of the catheter was observed in 3 cases (3.61%) near the hub.

**CONCLUSION :** The use of tunneled Central Venous Catheter (CVC) for dialysis has been a great advance for patients with End-Stage Renal Disease (ESRD), both for beginning and for continuing dialysis. Our experience showed that tunneled CVCs have the advantages of safer placement and a shorter placement procedure under radiologic guidance with a high technical success rate. In patients with difficult access to internal jugular veins, the common femoral or subclavian veins may be successfully used. The most frequent complication was that of clinically suspected infection of the indwelling catheter. Hemorrhage at the site of catheter insertion and fracture of catheter were the other complications seen.

### RES-F-3

#### Correlation Between Serum Pancreatic Enzymes Levels and Severity of Acute Pancreatitis on CT Scan

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**OBJECTIVE:** The objective of this study is to see that if there is any correlation between the pancreatic enzymes levels and severity of acute pancreatitis on CT scan.

**MATERIAL AND METHODS :** We conducted retrospective analysis of all the patients who were diagnosed as cases of acute pancreatitis and having contrast enhanced CT scan Abdomen, serum amylase and lipase levels were done during hospital stay. We included 115 patients from the period of July 2006 to June 2009 who fulfilled the criteria. CT Grading from A to E was done according to Balthazar classification. Serum amylase and lipase levels were taken done within 3 days of CT scan. Data was collected on a structured Proforma.

**RESULTS :** A total of 115 patients (age range; 11-83 years), 83 (72.2%) male and 32 (27.8%) female were included in the study. Relatively high levels of serum amylase and lipase were noted in Grade C and D in comparison to Grade A, B and E on CT Abdomen. However, statistically, no significant correlation was found between enzymes levels and severity of pancreatitis noted on CT scan. The pancreatic CT findings and corresponding mean serum amylase levels were in CT grade A 142 +/- 86 U/L (n = 3), in CT grade B 355 +/- 410 U/L (n = 2), in CT grade C 1000 +/- 1040 U/L (n = 52) .in CT grade D 1373 +/- 2185 U/L (n = 39) and grade E 386 +/- 471 U/L (n = 20). The pancreatic CT findings and corresponding mean serum lipase levels were in CT grade A 159 +/- 99.3 U/L (n = 3), in CT grade B 347 +/- 451 U/L (n = 2), in CT grade C 991 +/- 869 U/L (n = 52) .in CT grade D 826 +/- 892 U/L (n = 39) and grade E 442 +/- 602 U/L (n = 20)

**CONCLUSION :** We found rising levels of serum amylase and lipase with severity of pancreatitis on CT scan, however, statistically, no significant correlation was found between enzymes levels and severity of pancreatitis. So, in conclusion, serum amylase and lipase levels cannot predict the severity of acute pancreatitis on CT scan.

### RES-F-4

#### Role of Addition of Single Dose Intravenous Amikacin for Control of Infection after Ultrasound Guided Transrectal Prostate Biopsy

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**OBJECTIVE:** To determine the effect of addition of single dose intravenous amikacin antibiotic prophylaxis on rate of infection after transrectal core needle biopsy of the prostate

**MATERIAL AND METHODS :** Transrectal ultrasound examination was performed in the left lateral decubitus position using 6-8 MHz rectal probe. Biopsies were carried out with an 18 gauge core needle fired by the hand-held Biopsy gun. An average of seven core biopsies (range 6 to 8) was taken. Between

May 2007 and September 2007, 100 patients underwent transrectal needle biopsy of the prostate and infection rate was evaluated retrospectively. After addition of single dose of injection amikacin in the standard antibiotic regimen the infection rate was reevaluated.

**RESULTS :** Total of 100 patients evaluated who underwent transrectal ultrasound guided biopsy with standard antibiotic prophylaxis which included Ciprofloxacin 500mg BID and metronidazole 400mg TID for three days. Infection rate was found to be higher (8%) which is considerably higher than the literature. Single dose of amikacin 500-750mg was intravenously administered slowly 30 minutes before the biopsy. After the antibiotic addition next consecutive 110 patients were prospectively evaluated, this revealed infection rate dropping to less than 1%.

**CONCLUSION :** There is significant reduction in rate of infection after use of additional intravenous amikacin in patients who underwent ultrasound guided transrectal prostate biopsy.

## **POSTERS (P)**

### **Abdominal Imaging P-1**

#### **Abnormal Hepatic Vein Doppler Waveform in Patients Without Liver Disease**

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In patients with liver cirrhosis Doppler ultrasound often detects absence of the retrograde (hepatopetal) flow phase in the hepatic vein, suggestive of an increased stiffness of the liver parenchyma around the vein. This is rarely reported in healthy control persons. We examined the frequency of absent retrograde flow in a consecutive series of 25 patients referred for abdominal ultrasound. We placed the Doppler gate so that in non-forced end expiration it would sample the right hepatic vein or middle hepatic vein 4–6 cm from the vena cava. There was no association between the hepatic vein flow pattern and age, sex or body mass index. We suggest that absent retrograde flow in the hepatic veins may be seen not only in patients with overt liver disease but also in apparently liver-healthy patients. The hepatic vein Doppler waveform normally shows a triphasic pattern with two hepatofugal phases related to atrial and ventricular diastole, and a short phase of retrograde (hepatopetal) flow caused by the pressure increase in the right atrium at atrial systole. Absence of this retrograde flow phase is seen in about half of patients with cirrhosis, and is believed to reflect an increased stiffness of the liver parenchyma around the liver veins. This pattern may also be seen in fibrosis, elevated aminotransferases, fatty liver, chronic hepatitis C and in metastatic liver disease. However, we have seen an abnormal curve on occasion in patients without known liver disease and without any other ultrasound indication of liver disease.

**MATERIAL AND METHODS:** Only patients referred from a department in our hospital were included, to ensure that a case record would be available. Whenever the Doppler waveform showed absence of the retrograde flow phase, case notes were reviewed to decide whether there was any evidence of liver disease. The Doppler tracing was documented on video print. The curve pattern was categorized into: triphasic; biphasic, without a retrograde flow phase; flat, monophasic (10% fluctuation). Triphasic curves were considered normal, biphasic and monophasic curves were considered abnormal. For the statistical analysis of qualitative data we used Fisher's exact test.  $P < 0.05$  was considered significant.

**RESULTS:** Our study deals with a group of 25 adult patients (14 males and 11 females) referred for an abdominal ultrasound examination. The patients were unselected. In 15 patients (60%) we found an abnormal hepatic vein Doppler curve (10 patients with biphasic flow and 5 patients with monophasic flow), which in 9 of them (36%) could be explained by liver disease. In the remaining 6 patients (24% of the examinations) the case records gave no indication of liver disease.

10 patients (40%) showed triphasic flow pattern. 9 of them (36%) had normal livers. One patient (4%) had periportal fibrosis but normal liver texture. The study thus confirms both that abnormal hepatic vein flow curves may be seen in a spectrum of hepatic disorders, and also, more interestingly, that an abnormal hepatic vein waveform is quite common in apparently liver healthy patients. We suggest that an abnormal hepatic vein Doppler curve, believed to reflect an increased stiffness of the liver parenchyma around the hepatic veins, may be a non-specific indicator of liver abnormality, also in individuals with normal liver biochemistry.

### **Abdominal Imaging P-2**

#### **Biphasic CT Scan Really Helps!**

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**OBJECTIVE:** We present data to document the CT contrast enhancement patterns in liver tumors of patients presented with low serum AFP levels and to assess whether this imaging modality can be helpful in establishing a diagnosis in such group.

**MATERIAL AND METHODS :** A retrospective review of three-month data (from January to March 2009) of patients' diagnosed with HCC (single or multiple) on biopsy was reviewed considering contrast enhancement patterns on biphasic CT scans. Patients with tumor size of 2.0 cm or above and with AFP levels  $< 200$  ng/mL were selected regardless of their Child-Pugh score or hepatitis and cirrhosis status. Post-therapy (post-RFA, ethanol or TACE) cases were not included. Patients who were initially evaluated by dynamic MR study rather than CT scan (due to high serum creatinine levels) were also excluded. Incase of multifocal disease, pattern of contrast enhancement for the dominant lesion was documented. Enhancement patterns were labeled as 'typical' (hypervascularity in arterial phase and portal venous phase washout), 'atypical' (iso- or hypovascularity on arterial phase without portal venous washout) and 'equivocal but suspicious' (some enhancement in arterial phase and/or some washout with vascular invasion). The findings were documented after consensus by two radiologists.

**RESULTS :** CT scans of 64 patients (age range: 22 to 89 years, M: F 44 (69%):20 (31%) ratio) with widest tumor dimensions ranging between 2.0 to 19cm were reviewed. Out of these 64 patients, 50 cases (78%) demonstrated 'typical' while 8 cases showed 'atypical' (12%) and rest of 6 (9%) exhibited 'equivocal' enhancements.

**CONCLUSION :** Biphasic CT scan can be quite helpful in establishing a diagnosis of HCCA in patients with a suspected primary liver mass even with low serum AFP levels. The documentation of typical enhancement patterns on single cross-sectional imaging can obviate the need of biopsy in majority of cases.

**Abdominal Imaging****P-3****Median Arcuate Ligament Syndrome**

SYED MUHAMMAD SHAHNAWAZ HYDER

AYUB MANSOOR

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**OBJECTIVE:** We presented a case of 45 years old female patient known case of hypertension and chronic liver disease (Hep C+ve) with history of weight loss. She presented with severe abdominal pain, vomiting and bleeding per rectum. Triple phasic scan was performed on a multi-detector computed tomography (MDCT) which showed cirrhosis of liver and portal hypertension. There was partial thrombosis of distal portal and superior mesenteric veins. In addition to this, there was segmental narrowing of celiac artery (measuring 15 mm) at its origin from abdominal aorta with post stenotic dilatation (normal diameter of celiac artery is 6-10mm). The diaphragmatic crura were seen extending up to the celiac artery. Thus on the basis of clinical history and imaging findings, diagnosis of median arcuate ligament syndrome was made

**Abdominal Imaging****P-4****Hepatic Perfusion Disorders**

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**OBJECTIVE:** Objective of my poster is to identify various hepatic perfusion disorders in the arterial and venous phase study of Biphasic CT and utilize them for the diagnosis of various neoplastic and non neoplastic hepatic lesions.

**MATERIAL AND METHODS :** 100 patients were retrospectively studied between the year 2007 and 2008. The study was conducted in the Radiology department of SKMCH & RC. Biphasic scanning during HAP and PVP followed by delayed phase imaging was performed using MDCT.

**RESULTS :** The mean age was 40 years (range 30-55 years). The male to female ratio was 2.5:1. Different types of hepatic lesions including tumors, particularly HCC, hemangiomas, portal venous obstruction, inflammation, hereditary disorders and others showed various patterns of blood flow changes that appeared as areas of altered attenuation than the rest of hepatic parenchyma, in different phases of blood flow.

**CONCLUSION :** With its capability for dual-phase contrast-enhanced studies, MDCT can demonstrate alterations in the dynamics of hepatic blood flow. Such flow-related changes will be demonstrated with greater frequency because of the increasing use of MDCT to study the hepatic parenchyma. It is important to understand the physiology and pathophysiology of liver hemodynamics. Arterial and portal venous supplies to the liver are not independent systems and knowledge of MDCT appearances of perfusion disorders helps avoid false-positive diagnosis of pseudolesions when imaging the liver.

**Abdominal Imaging****P-5****First Case of Santorinicele Without Pancreatic Divisum Diagnosed by State of Art 64 Slice- MDCT Pancreatography**

MUHAMMAD IDRIS

NAZIA KASHIF

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**INTRODUCTION:** A santorinicele defined as a focal cystic dilatation of terminal portion of dorsal pancreatic duct (duct of Santorini) at the minor papilla. It has been frequently explained in association with complete and incomplete pancreatic divisum, but only few case reports are available without pancreatic divisum. We report a case of young female with recurrent pancreatitis in which santorinicele without any pancreatic anomaly was diagnosed by 64-slice MDCT pancreatography.

**CASE REPORT :** 29 years- female with recurrent pancreatitis presented with epigastric pain. She had endoscopic retrograde cholangiopancreatography (ERCP) done which showed normal CBD and attempts to cannulate pancreatic duct was failed. Ultrasound was performed which redemonstrated swollen pancreas without any pancreaticobiliary calculus or sludge. This was followed by MRCP which revealed dilatation of both pancreatic ducts joining at the minor papilla and suspicion of santorinicele was raised. She underwent 64-MDCT pancreatography which confirmed the diagnosis of santorinicele without showing any pancreatic anomaly however signs of pancreatitis were present.

**DISCUSSION :** Santorinicele is a name given to the cystic dilatation of dorsal pancreatic duct (duct of santorini) which is analogous to similar dilatation of CBD called choledochocele and ventral pancreatic duct called wirsungocele. The etiology of this condition is unclear and controversy exists regarding its origin. Since it is frequently seen in association with pancreatic divisum most of the authors favour congenital etiology. With recognition of fact that santorinicele can occur without pancreatic divisum acquired causes like relative stenosis of minor papilla has been suggested which leads to incomplete pancreatic drainage and increased intraductal pressure and episodes of recurrent pancreatitis. Only one case report is available in which santorinicele was not associated with any pancreatic anomaly. Our case is second in which there were no pancreatic anomaly but first ever diagnosed by state of art 64-MDCT pancreatography. Which explain the potential of this non invasive technique specially in cases where ERCP fail .

**Abdominal Imaging****P-6****Pancreatic Lymphangioma : A Case Report with Review of Literature**

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IMRANA MASROOR

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**OBJECTIVE:** Lymphangioma is a rare benign tumor which develops as a consequence of lymphatic malformation and blockage of lymphatic flow. Less than 100 cases of pancreatic Lymphangioma are reported in literature upto now without any local case report. . We present a case of pancreatic Lymphangioma incidentally discovered in an elderly lady with review of literature.

**CASE REPORT:** On routine physical examination of an 84 year old female the general physician discovered an epigastric mass on palpation. Ultrasonography showed a heterogeneous mass in the region of pancreas showing multiple cysts of varying sizes. CT scan was carried out that showed a large microcystic mass with enhancing septae arising from pancreas. The final diagnosis was Lymphangioma. Surgical excision was not done due to the close proximity of the lesion to the adjacent structures and as the patient high risk for surgery.

**DISCUSSION:** Pancreatic lymphangioma is a rare occurrence and an account for less than 1 % of cases. It is found more commonly in females the ratio being 29:16. The age of the patients ranged from 2-81 years. Size of the tumour varies from 3-20 cm in diameter. The tumour is commonly located in the region of body and tail of pancreas. Most of the time the patient is asymptomatic. The radiological imaging modalities that have been used to evaluate pancreatic lesions are ultrasound, CT scan and MRI/MRCP. CT scan shows a well circumscribed encapsulated homogenous polycystic with thin septae in or adjacent to pancreas the appearance similar to cystadenoma. The final diagnosis is histopathological with tumour cells showing CD 31 positivity. Complete surgical excision is the curative treatment. From this case and review of literature we can conclude that pancreatic lymphangioma a rare tumour that should be considered in the differential diagnosis of a multiloculated cystic pancreatic mass.

### Abdominal Imaging P-7

#### Atypical Appearances of Hepatocellular Carcinoma on Dynamic Biphasic CT Scan

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**OBJECTIVE:** The objective of this study is to determine the atypical appearances of Hepatocellular Carcinoma on dynamic biphasic CT scan.

**MATERIAL AND METHODS :** In order to evaluate atypical aspects of hepatocellular carcinoma at computed tomography we have retrospectively evaluated 50 patients with diagnosed hepatocellular carcinoma, based on biphasic imaging studies, regardless of age and sex. We have selected those cases with atypical findings at computed tomography imaging, including cystic lesions, bleeding tumors, with calcifications, with spontaneous regression, pedunculated tumors, hypovascular lesions, giant hepatocellular carcinomas, and those with unusual local invasiveness. The hepatocellular carcinoma is the most usual primary malignant lesion of the liver and usually it has a typical aspect and is associated with hepatic cirrhosis. However, in a significant number of cases, some uncommon findings can be responsible for a delayed diagnosis.

**RESULTS :** In our experience, about 20% of the hepatocellular carcinomas do not present the typical imaging aspects and have unusual presentations.

**CONCLUSION :** The hepatocellular carcinoma usually presents typical features in imaging studies. But, in a considerable number of cases, it may surprise the radiologist with unusual aspects deserving to be known, aiming at optimizing the efficacy of the available diagnostic tools.

### Abdominal Imaging P-8

#### All Inclusive Preoperative Living Liver Donor Evaluation With MDCT: Step-by-Step Pictorial Guide.

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**INTRODUCTION:** In light of the increasing incidence of hepatocellular carcinoma and chronic liver disease, living donor liver transplantation (LDLT) is becoming a rather common procedure in South Asia. However, the suitability of a living donor for liver harvest remains a major concern, due to the variability of hepatic vascular supply and the state of the donor hepatic parenchyma itself.

**OUTLINE REVIEW :** We present a "Step-by step" pictorial manual for comprehensive anatomic evaluation of living donors performed through 64-detector computed tomographic scanning. A scan of the abdomen, which included a non-contrast enhanced scan followed by contrast enhanced biphasic, arterial and porto-venous phase acquisitions is performed. Liver parenchyma is evaluated for macro-vesicular steatosis by comparing hepatic and splenic attenuation values on non-contrast axial images, and liver attenuation index (average hepatic attenuation minus average splenic attenuation) is calculated. Arterial and venous anatomy is evaluated in detail, with the help of maximum intensity projection and volume rendered images. Special emphasis is placed on segment IV supply and significant variations regarded as contraindications for transplant surgery. Total liver volume and graft volume is also measured by "region of interest inking" technique.

**CONCLUSION :** MDCT is invaluable in evaluation and screening of potential live liver donors. This helps in selection and pre-operative surgical planning, which is essential for donor safety and long term transplant success.

### Abdominal Imaging P-9

#### Hepatic Vasculature Variations in Living Liver Transplant Donors: A Pictorial Essay.

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**OBJECTIVE:** To describe commonly seen variations in the hepatic vasculature of living liver transplant donor candidates on Biphasic CT examination and their relevance regarding planning of transplant surgery.

**OUTLINE REVIEW:** Intravenous contrast enhanced CT of the abdomen was performed with arterial and porto-venous phase acquisitions in all liver donor candidates over a period of 2 years. Anatomic variations in the hepatic arterial supply, the hepatic veins and the portal veins, including surgically significant variations like replaced right hepatic artery, anomalous left lobe supply from left gastric artery, segment 4 dual supply, accessory hepatic vein, early bifurcation of middle hepatic veins, intra-hepatic portal vein division and portal trifurcation among others were noted.

**CONCLUSION :** Anatomic variations in the hepatic vessels are quite common, however most if not all, have significant implications in surgical planning in living liver donors.

**Abdominal Imaging****P-10****MASS Abdomen- Rare Presentation of Caries Spine**

MOBEEN SHAFIQUE

JAWAD JALIL

UMAR AMIN

*Department of Radiology, Combined Military Hospital, Rawalpindi, Pakistan.***OBJECTIVE:** Clinical presentation

**MATERIAL AND METHODS :** A 65 year old male was referred for sonography of the abdomen. He had a large painless abdominal mass with no associated complaints of backache, leg pain or neurological deficit. Ultrasonogram revealed a huge avascular 16 x 15 cm sized cystic mass with floating linear internal echoes in it. It was displacing the gut loops peripherally.

Post contrast CT scan was done for further evaluation. It revealed extensive contiguous destruction of multiple vertebral bodies. The cystic mass seen on the sonogram was in fact a huge anterior tubercular abscess projecting into peritoneal cavity. Bilateral huge calcified psoas abscesses along with bilateral posterior para spinal abscesses and a left anterior inguinal abscess – all part of the spectrum of the same pathology.

MR lumbar myelogram showed marked distortion of the thecal sac morphology with multiple compressions, indentations and obliterated lateral vessel recesses in lumbar spine.

**CONCLUSION :** Tuberculosis in our setup is very common clinical entity and has a wide spectrum of clinical and radiological features ranging from typical to very bizarre presentations. Due to chronic and insidious nature of the disease, radiological features may be very striking and wide spread in a relatively asymptomatic patient.

**Abdominal Imaging****P-11****Splenic Artery Aneurysm: A Rare Complication of Chronic Pancreatitis**

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**OBJECTIVE:** An uncommon but important complication associated with chronic pancreatitis is pseudoaneurysm formation which may rupture into a hollow viscus and cause G.I bleeding. It is known to have very low incidence upto 10 %. The most common artery affected by pseudoaneurysm is splenic artery which is involved by almost half of the cases because of its contiguity with pancreas.

**CONCLUSION :** A 14 years old female patient a known case of medullary sponge kidneys with chronic pancreatitis came to our emergency department with severe upper abdominal pain, G.I bleeding and malena. Her U/S examination was performed in our institute by using 3.5 MHz probe on Nemio 20 machine. It revealed an irregular hypoechoic area in left upper quadrant and pancreas showed changes of chronic pancreatitis. Color Doppler U/S showed intense flow within the lesion. Her upper G.I endoscopy showed fresh blood oozing from the gastro esophageal junction and a large blood clot was seen in the fundus of the stomach. CT angiography showed a large aneurysm of splenic

artery which was adherent to the stomach and was displacing the coeliac vessels. She was embolized after the angiogram and bleeding was successfully controlled by super selective micro coil embolization.

**Abdominal Imaging****P-12****Role of Abdominal Ultrasound in Trauma Patients**

VAQAR BARI

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**OBJECTIVE:** To evaluate sensitivity, specificity, feasibility and accuracy of ultrasound in detecting hemoperitoneum in blunt trauma patients.

**DESIGN:** A prospective and descriptive study.

**PLACE AND DURATION OF STUDY:** Radiology Department, Aga Khan University Hospital Karachi from Nov 2006 to 30th Feb 2007.

**SUBJECTS AND METHODS:** All victims of blunt abdominal trauma presenting to emergency room of Aga Khan University Hospital over the age of fifteen years were included in the study. Patients were excluded if a bedside ultrasound examination was not completed or expired in the early period before CT or other imaging examinations could be done or if injuries were not confirmed by laparotomy or autopsy.

**RESULTS:** Out of the 148 adult patients, 115 were males and 33 females. Presenting age ranged from 16 to 74 years. There were 15 true positive and 131 true negative results. One case was false positive and 1 false negative. Sensitivity was 93.75%, specificity 99.24%, accuracy 98.64%, positive predictive value 93.75% and negative predictive value 99.29%.

**CONCLUSION:** Ultrasound is safe, cost effective, sensitive, specific and accurate in detecting hemoperitoneum in patients with blunt abdominal trauma.

**Abdominal Imaging****P-13****Visualization of Normal Appendix on MDCT; Questioning The size Criteria for Appendicitis!**

SIBTAIN RAZA

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**OBJECTIVE:** To evaluate the frequency of visualization, position, caliber of appendix on MDCT in patients without any clinical suspicion of appendicitis or history of prior surgery.

**MATERIALS AND METHODS:** 100 CT Scans were prospectively reviewed and radiologists were aware of the history at the time of image interpretation. Both unenhanced and contrast studies were included in the study. Two Radiologists reviewed the scans together, assessing axial, coronal and sagittal images. The frequency of the visualization of appendix was recorded with the assessment of position and caliber.

**RESULTS:** Normal appendix visualized in 98% of patients and the range of normal caliber was found to be 4 – 11 mm.

**CONCLUSION:** MDCT is extremely useful for visualization of normal appendix. The normal appendix is very variable in its position and caliber. The understanding of variation in the thickness of the normal appendix and wide variation in its position and length will help in the evaluation of appendix and will improve accuracy in the diagnosis of appendix related pathologies especially appendicitis. In the absence of other signs, the diagnosis of acute appendicitis should be made with extreme caution without considering the thickness of the appendix solely.

### Abdominal Imaging P-14

#### Virtual Colonoscopy with 16 Detector Row MDCT: Sharing The Experience

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Colorectal cancer is the third most frequent cancer worldwide. Screening programs for early detection enable detection of tumors at an earlier stage reducing its mortality. Currently, colonoscopy is being used as the investigation of choice for colorectal cancer screening and for patients with suspected colorectal polyps and carcinoma. The need for anesthesia, a risk of perforation and bleeding make it unpopular among many patients. In addition, even experienced hands may be unable to complete the procedure due to multiple reasons.

CT colonography, also known as virtual colonoscopy, is a relatively new technique that is becoming increasingly popular. Virtual colonoscopy uses three-dimensional CT scans, which takes less time and is less invasive than traditional colonoscopy and has comparable sensitivity in most situations.

We share our limited experience with this procedure performed at our institute during one year. Outcomes of the examinations along with the technique and difficulties are discussed.

### Abdominal Imaging P-15

#### Does Increasing Level of Experience of Radiology Residents Reduce Fluoroscopy Time in Barium Procedures?

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**OBJECTIVE:** In academic institutes a large number of fluoroscopy procedures are performed per year by resident. Our objective of our study is to see if there is any reduction in the duration of fluoroscopy for common procedures with increasing level of experience in radiology residents

**MATERIAL AND METHODS :** Retrospective study on which fluoroscopy examinations conducted for patients during a period of 3 months. Only adult patients were included who had complete procedure. Pediatric patients and failed procedures were excluded. Data was obtained from fluoroscopic log books

**RESULTS :** 427 procedures in two fluoroscopy units performed in 3 months. 217 were done by single resident. Total average fluoroscopic times for junior resident (1 & 2 year experience) is 786 seconds and individual average times for Urethrogram is 139, for BEDC 94, Swallow 238, MCUG 192, NJ 36 and HSG 87. For senior resident (3 and 4 year experience) is total average time is 677 seconds and individual for Urethrogram is 149, for BEDC 108, Swallow, 213, MCUG 113, NJ 39 and HSG 55. The average total and individual time patient was kept in room was 720 minute for junior resident and 578 minute for senior resident. More than one resident in procedure significantly increased the fluoroscopy times.

**CONCLUSION :** Overall the average fluoroscopy time for procedure was less for senior resident compared to junior residents. Overall patients also spent less time in fluoroscopy units when senior residents did procedures. Involvement of senior resident overall can bring patient time in room less and reduce radiation dose by reducing the fluoroscopy times.

### Abdominal Imaging P-16

#### Complicated Liver Abscess Resulting in IVC and Right Atrial Thrombosis, A Rare Presentation: A Case Report

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**INTRODUCTION:** The liver abscess is a common entity in Asia, however, it rarely results in thrombosis of IVC and right atrium which can be devastating and may endanger patient's life.

**CASE PRESENTATION:** We are reporting a case of 43-year-old male who presented with complaints of right hypochondriac pain and high grade fever for 12 days. Subsequently, he was diagnosed as having liver abscess with thrombus extending into right hepatic vein into the IVC and right atrium on ultrasound examination. The contrast enhanced CT examination showed similar findings with extension into the right atrium.

**CONCLUSION :** Although it is a rare presentation of liver abscess, early diagnosis and treatment reduces patient's morbidity and mortality.

### Abdominal Imaging P-17

#### Perfusion Anomalies of Liver on Dynamic CT Pseudolesion vs True Lesion

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**OBJECTIVE:** To determine physiological basis and imaging appearances of various perfusion anomalies and how to differentiate them from other hepatic lesion.

## Abdominal Imaging

P-18

### Audit of the Percutaneous Liver Biopsy at Radiology Department AKUH

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**OBJECTIVE:** To assess the technical success and complication rate of ultrasound guided percutaneous liver biopsy

**MATERIAL AND METHODS :** Retrospective analysis was carried out of 114 liver biopsies performed in the year 2008. Data collected included Patient's Demographic, Detail of biopsy procedure including indication, needle size, number of passes and sample adequacy, experience of the performing Doctor and Procedure related Complications. The Data was compiled and analyzed using SPSS 16.0.

**RESULTS :** Out of the 114 patient there were 70 male and 44 Female with mean age of 44 years Indication for liver biopsy included deranged LFTs and Hepatitis (n=53 patients), Malignancy and focal lesion (n= 45 patients). Clinical indication for biopsy not known in 16 patients. The procedure was performed by Resident level III and IV in 30 patients and by faculty 84 patients.

16 G needles were used in 7 patients and 18 G needle in 107 patients. A single pass was made in 47 cases, 2 passes in 26 cases and three passes in 3 cases. Number of passes was not mentioned in the report in 38 cases. Adequate sample was obtained in 107 cases and the sample was inadequate in 7 cases. Major complication of hemorrhage was seen in three cases, in two of these, hemorrhage was severe and resulted in death of the patients. One of these patients was a known case of renal failure and the other of known malignancy. The third patient settled on conservative management. Pain was the only minor complication seen in 5 patients and settled with IV analgesia. No complication was seen in 106 patients.

**CONCLUSION :** The rate of hemorrhage resulting in death is of particular concern. Therefore careful patient's selection is required to identified patient with risk factors and comorbid to avoid major complications of liver biopsy.

## Cardio Vascular Imaging

P-20

### Outcome of Transjugular Intrahepatic Portosystemic Shunt at Aga Khan University

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**OBJECTIVE:** To assess the therapeutic effectiveness and safety of transjugular intrahepatic portosystemic shunt (TIPS) as a treatment strategy in patients with complications related to portal hypertension.

**MATERIALS AND METHODS:** 19 patients (10 males and 9 females, age range 25-69 years) were referred for TIPS at our radiology department from January 2001 to May 2008. All patients were evaluated with color doppler ultrasonography and cross sectional imaging. TIPS procedures were performed through internal jugular vein approach. Metallic self expandable uncovered stents were placed in 15 patients and covered stent in 1 patient. Follow up of patency was evaluated with ultrasound in majority and by venography in some patients. Safety of the procedure and clinical outcome were analyzed.

**RESULTS:** Indications of procedure included variceal bleeding (n = 8), ascites (n = 4), ascites & bleeding (n=1) and Budd-Chiari syndrome (n = 6). Technical success rate was 84.21%. Complication rate was 10.53%. Three days mortality was 15.79 %. Mean primary shunt patency was 306.62 days. During follow-up stent occlusion occurred in 5 patients (31.25%). Four of these patients underwent successful reintervention. Recurrence of symptoms occurred in 68.75% patients.

**CONCLUSION:** TIPS is useful for management of complications of portal hypertension that are refractory to pharmacological and endoscopic treatment, however shunt stenosis or occlusion often cause recurrence of symptoms. Repeated interventions may be required to maintain shunt patency.

## Cardio Vascular Imaging

P-20

### Endovascular Treatment of Femoral Artery Pseudoaneurysm and Arteriovenous Fistula by Stent Graft

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**BACKGROUND:** Pseudoaneurysms and arteriovenous fistulas are manifestations of vascular trauma. Surgical management is associated with major complications and morbidity. Endovascular approach permits less traumatic treatment. We present a case of a combined superficial femoral pseudoaneurysm/AVF successfully treated with a covered stent.

**CASE:** An adult male presented with right calf pain and swelling. He sustained gunshot injury in right thigh 7 months back. A doppler scan revealed pseudoaneurysm in distal right superficial femoral artery. Right lower limb angiography confirmed the pseudoaneurysm and also revealed presence of an arteriovenous fistula. The traumatic lesion was treated with two balloon expandable metallic covered stents. Complete occlusion of arteriovenous fistula was achieved with minimal residual filling of pseudoaneurysm.

**DISCUSSION:** Penetrating arterial injury cause damage to wall, resulting in formation of a pseudoaneurysm and rarely an arteriovenous fistula. Treatment is indicated for large, expanding symptomatic and complicated lesions. Use of stent-grafts in the treatment of post-traumatic peripheral pseudoaneurysms and AVFs has been described in literature. Advantages include decreased morbidity, shorter procedure time and reduced hospital stay.

**CONCLUSION:** Endovascular stent-grafting is a minimally invasive procedure which is safe and effective for treating posttraumatic pseudoaneurysms and concomitant AV fistulas in peripheral arteries.



**Cardio Vascular Imaging****P-21****Multidetector CT Angiography; From Head To Toe**

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Although considered as a gold standard in the evaluation of peripheral vascular disease, the role of DSA has now been challenged by recent advances in imaging technology, like color Doppler ultrasound, CT Angiography (CTA) and contrast enhanced magnetic resonance angiography (MRA). Though not considered a primary vascular imaging modality until a few years ago, CTA has experienced a major advancement with the introduction of multi detector technology and has gained widespread acceptance in the imaging of vascular diseases.

The technique can be used to image vascular structures through out the body including brain, neck, thorax, abdomen as well as the extremities.

We describe the clinical utilization of this imaging modality for the evaluation of vascular anatomy and pathology from head to toe.

**Cardio Vascular Imaging****P-22****Results of Radiological Placement of Peripherally Inserted Central Catheters at Aga Khan University Hospital Karachi**

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**INTRODUCTION:** Venous access is a critical issue in the care and management of wide variety of patients.

The insertion of central venous catheters for patients requiring long-term venous access is now common. Peripherally inserted central catheters provide effective short- and intermediate term intravenous access in patients requiring therapies like IV antibiotics, chemotherapy, hyperalimentation and administration of other medications.

PICCs have several potential advantages, including use of local anesthesia, a low risk of major hemorrhage, and no risk of pneumothorax. PICCs are now increasingly placed by interventional radiologists in angiography suite. With use of fluoroscopic and ultrasound guidance higher success rates are achieved as compared to bedside placement of these catheters.

The aim of this study was to evaluate the success and immediate complication rates of radiologically guided PICC line insertion.

**PATIENTS AND METHODS:** Six months data was retrospectively evaluated of patients who underwent PICC insertion in interventional radiology suit of our department. All procedures were performed under strict aseptic measures after infiltrating local anesthesia.

4 Fr single lumen catheters were inserted in all patients under fluoroscopy guidance after ultrasound guided puncture of an arm vein. Clotting parameters of all patients were assessed prior to venous puncture. Tip of the catheters were placed in distal third of superior vena cava.

**RESULTS:** A total of 416 PICC lines were inserted in 337 patients over the study period. 279 (82.7%) patients underwent single insertion and 58 (17.2%) patients underwent multiple insertions of PICC. Among these 58 patients who had multiple insertions total 137 (32.9%) PICC lines were placed. Success rate for PICC insertion was 99.52%. Immediate complication rate for insertion of PICC was 0.48%.

**CONCLUSION :** Radiologically guided placement of PICC by interventional radiologists is a simple, safe and effective procedure in patients requiring long term venous access.

**Genito Urinary Imaging****P-23****Birth Weight Estimation: A Sonographic Model for Pakistani Population**

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**OBJECTIVE:** To develop a sonographic birth weight estimation model for Pakistani population.

**MATERIAL AND METHODS :** Data collected for pregnant women who presented to radiology department of Aga khan University hospital Karachi from January 2007 to July 2008 and undergone ultrasound estimation of fetal weight within 4 days prior to a term delivery (37-42 weeks gestation). The neonate's actual birth weight was used to validate the published fetal weight estimation models and modified sonographic birth weight estimation model was derived for our population by using linear regression.

**RESULTS :** No significant difference (p-value >0.05) of actual and predicted birth weight derived from Our regression model, Campbell and Woo models noted, however least difference (p-value 0.7) was identified between our predicted model (Mean difference 14g, SD=37.7).

**CONCLUSION :** Our sonographic modified regression model of fetal weight estimation gave the least difference with actual neonatal birth weight and can be reliably used in Asian population. Hadlock 1, Hadlock2 and Wool2 models are not appropriate in our setting or should be used carefully while predicting fetal weight in our population.

**Genito Urinary Imaging****P-24****Twin Tubal Pregnancy after Tubal Ligation**

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A case of spontaneous unilateral ruptured twin ectopic pregnancy in the right fallopian tube is presented. Patient was diagnosed with transvaginal sonography and subsequently underwent with laprotomy and bilateral salpingectomy.

## Genito Urinary Imaging

P-25

### Lost IUCD-Case Report

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**INTRODUCTION:** A 30 years old female, Para 2+0, came to the ultrasound department in Puerperium, about 4 weeks post spontaneous vaginal delivery, for ultrasound pelvis to look for lost IUCD. Prior to conceiving, she had an IUCD inserted in the uterine endometrial cavity. Despite this she conceived and worried about IUCD. Her consultant and she herself could not find the thread/string of IUCD in vagina. She constantly felt pain, discomfort and irritability in left iliac fossa throughout the pregnancy. Multiple ultrasounds were performed during this pregnancy, at 12 weeks, anomaly scan at 21 weeks and growth scan at 33+ weeks. The question of lost IUCD was not mentioned on requests for these ultrasounds by the consultant except at the time of growth scan and the radiologist was unable to find the IUCD due to gravid uterus with large fetus.

**CASE SUMMARY:** 30 Years old young lady presented with lost IUCD, conceived with IUCD in situ, felt constant pain, irritability and discomfort in left iliac fossa throughout the pregnancy. Post partum ultrasound pelvis revealed empty endometrial cavity of the uterus. Targetted ultrasound of left iliac fossa, at the site of pain during pregnancy showed linear Hyper echoic structure with strong distal shadowing in left iliac fossa beside left iliac vessels, highly suggestive of LOST IUCD. Plain X-ray abdomen was advised which confirmed the IUCD in left hemipelvis. Laproscopic removal of IUCD was planned.

**CONCLUSION:** IUCD if displaced/lost, thorough search of pelvis including uterus, adnexa, lower and even upper abdomen by Transabdominal and transvaginal ultrasound must be made especially targeted at the site of pain, irritability or discomfort. Positive finding of lost IUCD include constant, hyperechoic linear/wavy structure with distal shadowing highly suggestive of LOST IUCD and plain X-ray abdomen including pelvis is required for further confirmation and location of IUCD. Appropriate management plan should be followed to remove the laproscopic / hysteroscopic or intraoperative Fluoroscopic guidance.

## Genito Urinary Imaging

P-26

### Conventional Four Field Pelvis Box Technique for Localized Prostate Cancer: A Comparison With CT Based Lymph Node Mapping.

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**OBJECTIVE:** Four field pelvis box technique is common practice worldwide for high risk localized prostate carcinoma. With advent of CT based simulation and treatment planning system, more irregular fields are encouraged. We aimed to see the adequacy of nodal coverage by conventional box field technique and possible solutions for centers which are still treating patients on this method.

**MATERIAL AND METHODS :** Forty patients with localized prostate carcinoma were simulated using CT scanner SOMATOM Emotion6 Siemens®. Non contrast enhanced CT images were contoured for gross tumor volume of tumor (GTV-T), clinical target volume of tumor (CTV-T), planning treatment

volume of tumor (PTV-T) and all uninvolved pelvic lymph nodes (CTV-N) were marked by taking Pelvic vessels as surrogate markers. Then all Vessel contours were hidden, and conventional box field technique was drawn. Distances were measured at different points of AP and lateral fields. Distances more than 5mm were thought appropriate. All data was collected on written proforma and was analyzed on SPSS version 16.0 and significant value was tested by Student's test.

**RESULTS :** On AP pelvis fields, there was significant overlap of obturator lymph nodes by femoral shielding (mean distance 0.20mm) and on Lateral fields significant overlap of sacral lymph nodes by rectal shielding (mean distance -0.47mm) and inadequate margins to external iliac LN (0.30mm).

**CONCLUSION :** The conventional four field box technique based on bony landmarks does not give optimal nodal coverage especially for obturator and sacral lymph nodes. CT based lymph node marking with vessel contouring give more precise and adequate nodal coverage. We recommend if box field technique is used, shielding must be considered with care.

## Genito Urinary Imaging

P-27

### Fetal Acrania; Prenatal Sonographic Diagnosis and Imaging Features of Aborted Fetal Brain

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MUHAMMAD NAFEES

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**OBJECTIVE:** To correlate prenatal and aborted fetal imaging features of the rare entity of fetal acrania

**MATERIAL AND METHODS :** We report a 35 year old female patient referred to our ultrasound department to rule out congenital anomalies. The fetus was found to have a completely formed brain, base of the skull and facial structures but lacking a cranium. The fetus was therapeutically aborted. We correlated our antenatal sonographic findings with gross pathological features and CT Scan of the fetal head. Despite an extensive search, CT features of aborted fetal brain and base of skull were not found in the literature.

**RESULTS :** Our prenatal sonographic diagnosis of fetal acrania correlated with aborted fetal pathological and imaging features.

**CONCLUSION :** Fetal acrania is a rare and lethal congenital anomaly that warrants the identification of fetal skull and cranium around the brain that should be normally calcified.

## Genito Urinary Imaging

P-28

### Lipoleiomyoma of The Uterus: A Rare Benign Tumor

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**OBJECTIVE:** Uterine lipoleiomyoma is a rare benign tumor, with a reported incidence of 0.03% - 0.20%. Most reported cases of lipoleiomyoma have been

retrospectively diagnosed after surgery; with some being pre operatively misdiagnosed as ovarian teratomas. This report is an incidental finding of 'fat' containing mass inside the uterus.

**CONCLUSION :** A 50 year old woman presented with bilateral flank pain and lower urinary tract symptoms. Unenhanced computed tomography was performed which showed a left ureteric calculus with hydronephrosis. In addition to this there was incidental finding of a homogeneously hypodense well defined 3.1x2.6 cms mass within the myometrium of the uterus. Trans abdominal ultrasound was performed which showed well defined hyperechoic mass within the uterine wall corresponding to the mass seen in the CT. The lesion was of fat density on the unenhanced CT. MRI was then performed with a 1.5T GE Signa advantage scanner. T1 weighted spin echo images showed a slightly inhomogeneous high intensity mass lesion in the uterine wall. On T2 weighted fast spin echo images the mass lesion was also seen to be slightly inhomogeneous and of high intensity. On fat saturation the mass was of low intensity. In the absence of other soft tissue components and calcification, with only fat within the mass the diagnosis of lipoleiomyoma was made.

### Genito Urinary Imaging

P-29

#### Case Report: Antenatal Diagnosis of Goldston Syndrome

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**INTRODUCTION:** Goldston syndrome is a rare disorder that comprises of Dandy walker malformation associated with multicystic kidneys. Antenatal diagnosis of this syndrome has been described below.

**CASE PRESENTATION:** A 28 year old woman para 1+0 in the 28th week of gestation reported to the radiology department for the first antenatal ultrasound of the present gestation. There was presence of oligohydramnios with enlarged, echogenic kidneys containing small cysts. The fetal brain revealed deficient vermis with a posterior fossa cyst communicating with the 4th ventricle. These findings point to the rare entity of goldstone syndrome which is an association of cerebro-renal abnormalities with or without hepatic fibrosis.

**CONCLUSION :** We report the antenatal diagnosis of Goldston syndrome in a 28 week old pregnancy with DWM and enlarged multicystic kidneys. In literature it is the third case reported on antenatal scan.

### Genito Urinary Imaging

P-30

#### To Determine the Frequency of Congenital Abnormalities In Antenatal Scan & IT's Out Come.

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**STUDY DESIGN:** Retrospective analytic study.

**SETTING:** The study was conducted at fetal medicine section (Ultrasound Department) AKHWC, Kharader, Karachi. It is the first unit of AKHSP established on April 15th, 1924 and currently working as a 48 bedded secondary care Hospital.

**DURATION OF STUDY:** 1st November, 2007 to 31st Oct, 2008.

**PATIENTS & METHODS:** All the data about fetal congenital abnormalities was collected from ultrasound patient's record register, ultrasound computerized reporting system, medical record files & obstetrical database. Just vision 2000 ultrasound- and nemio 10 ultrasound machines were used for scanning the patients.

**CRITERIA:** All the obstetrical antenatal scans are considered as an anomaly scan from 10th to 40th weeks of gestation. ideally all antenatal booked cases should be scanned thrice during the course of pregnancy; at first before 14th weeks of gestational age, second between 18-22 weeks of gestation and third between 32-36 weeks of gestation.

**RESULTS:** 5566 antenatal women were scanned during the period of one year (Nov. 1st 2007 to Oct. 31st 2008). 22 cases of various structural anomalies were picked during these examinations. the details, according to involved structures.

**CONCLUSION:** A total of 22 cases of structural anomalies were seen in 5566 (0.395%) antenatal women during this study period of one year. 81.82% (18 cases) of anomalies were picked at various stages of gestation during routine ultrasound scanning, while 18.18% (4 cases) of anomalies were missed on routine scans. There are a number of congenital anomalies which are not picked by ultrasound or are difficult to pick on routine scan, the example being cardiac defects which need echocardiography for evaluation and diagnosis. Hence there is need for more highly trained persons and state of the art equipment at least at secondary care units.

The effectiveness of anomaly scan can be gauged by the lower rate of maternal & child mortality and morbidity since the use of ultrasound scans became common practice. The diagnosis of the structural anomaly of foetus as early as 18-22 weeks results in parents' counseling and preparation for acceptance of a baby with malformation and/or timely management of the disorder.

### Genito Urinary Imaging

P-31

#### Uterine Adnexal Torsion; Spectrum of Sonographic Findings with Pathologic Correlation

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**OBJECTIVE:** To determine the spectrum of sonographic features in a series of pathologically proven cases of ovarian and adnexal torsion.

**MATERIAL AND METHODS :** The study included 22 patients with surgical confirmation of ovarian or adnexal torsion, or both, who underwent sonographic examination before surgery. All sonograms and pathology reports were reviewed retrospectively.

**RESULTS :** The average age of our patients was 28.5 years (range 14-54 years). Right sided involvement was seen in 13 (59%) patients and left side was involved in 9 (41%) patients. There was associated pregnancy in 1 patient. Sonographic pattern on gray scale was that of complex masses in 8(36 %) of 22 patients, cystic masses in 7 (32 %) patients, solid mass in 1 (4%) patient. Enlarged hypo echoic ovary was noted in 6 (28%) cases. There was fluid in cul de sac in 15 (68%) patients. An abnormal Doppler finding with no flow was noted in only 2 (9%) patients. Pathologic results revealed extensive hemorrhage with ischemic necrosis in 10 (45%) of patients, hemorrhagic cyst with torsion in 6 (28%), tubal torsion in 1(4%), Adnexal neoplasm were present in 5 (23%) patients (1 benign fibroma and 4 dermoid cyst)

**CONCLUSION :** The diagnosis of ovarian and adnexal torsion remains challenging. Consideration of this entity in the proper clinical setting and with the typical sonographic findings will facilitate prospective recognition and thereby improving the chances for salvage of the involved adnexa.

### Genito Urinary Imaging P-32

#### Unilateral Agenesis of the Seminal Vesicle – An Uncommon Developmental Anomaly

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**OBJECTIVE:** Anomalies of the seminal vesicles can be categorized into abnormalities of number (agenesis, fusion, duplication), maturation (hypoplastic), position (ectopia) and structure (diverticulum, cyst, communication with the ureter). Their significances lie in their frequent associations with mal-development of other mesonephric derivatives, such as the vas deferens, ureter and kidney. Among these abnormalities, agenesis of the seminal vesicle is perhaps the commonest. The seminal vesicles can be congenitally absent at one or both sides. The incidence of unilateral agenesis of the seminal vesicle is 0.6 %–1 %; while the incidence of bilateral agenesis is unclear.

Unilateral agenesis is frequently associated with ipsilateral agenesis of the ductus deferens and with renal agenesis--79% of patients with absence of a seminal vesicle have ipsilateral renal agenesis, 12% had ipsilateral renal abnormalities, and only 9% had normal kidneys bilaterally.

It was widely accepted that if an embryological insult occurs before 7 weeks' gestation when the ureteral bud separates from the mesonephric duct, the seminal vesicle anomaly may be associated with renal malformation. If the insult occurs after 7 weeks' gestation, the seminal vesicle agenesis will not be associated with renal agenesis.

Congenital bilateral absence of the vas deferens (CBAVD) and congenital unilateral absence of the vas deferens (CUAVD) are 2 causes of male sterility; these phenotypes are found in 1%–2% of men investigated for infertility and approximately 10% of men with azoospermia.

**CONCLUSION :** A 30 yrs old young healthy unmarried man of normal build presented to outpatient department of SIUT with history of burning micturation. No history of any other urinary symptoms were found. No significant past medical or surgical history was present. Laboratory studies including urine D/R, C/S and blood examination did not reveal any abnormality. On ultrasound examination right renal fossa was empty and compensatory hypertrophy of left kidney was seen. Search for right kidney in abdomen and pelvis was also not fruitful. On multi slice unenhanced CT scan of abdomen and pelvis right kidney could not be seen in abdomen and pelvis and the right renal fossa was occupied by bowel loops. Right ureter, right seminal vesicle and right vas deference were also absent.

### Genito Urinary Imaging P-33

#### Spontaneous Ovarian Hyperstimulation Syndrome in Pregnant Female

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**INTRODUCTION:** Ovarian hyperstimulation is a known complication following treatment of infertility in approximately 10% of cases. In 1–2% it is severe with ovarian enlargement >10 cm, ascites, pleural effusion, reduction of intravascular volume and haemoconcentration. Spontaneous ovarian hyperstimulation syndrome is a rare entity and has been reported in literature in women with pregnancy, hypothyroidism and polycystic ovaries. Very limited data is available and to our knowledge only five cases have been reported till date.

We report a case of ovarian hyperstimulation syndrome in a woman with naturally conceived pregnancy

**CASE PRESENTATION:** Thirty year old female presented in ER with 11 weeks amenorrhea, vomiting and severe abdominal pain for 15. Pregnancy was confirmed by outside AKUH ultrasound and also demonstrated large right adnexal mass with multiple septations. On examination right fornix was full and non tender and left fornix was clear whereas uterus was 11 weeks size. Outside AKUH CT scan showed bilateral large multicystic adnexa in addition to gestational sac. Patient was then referred to radiology department AKUH for ultrasound pelvis which redemonstrated 10 weeks pregnancy and enormously enlarged both ovaries containing multiple large follicles and mild ascites. Only routine labs were done showing mild anemia. Thyroid profile was not done. At that time suspicion of spontaneous ovarian hyperstimulation was raised and patient was conservatively managed. Follow-up ultrasound after 17 days showed significant regression in the size of both ovaries.

**CONCLUSION :** Spontaneous ovarian hyperstimulation syndrome is a rare entity and only few cases have been reported in literature. It is associated with pregnancy, hypothyroidism and polycystic ovaries. We have reported this case so that its associations should be kept in mind whenever ovarian hyperstimulation is seen in women that are not receiving any fertility treatment.

### Genito Urinary Imaging P-34

#### Zinner Syndrome: A Rare Urological Entity

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**OBJECTIVE:** Congenital malformations of the seminal vesicle are very uncommon and most of them are cystic malformations. Approximately two thirds of them are associated with ipsi-lateral renal agenesis, since both the ureteral bud and seminal vesicle originate from the mesonephric duct. These were first described by Zinner in 1914 and nearly 120 cases had been reported till 1993. Most patients with this anomaly are asymptomatic or present during early adulthood with non-specific symptoms such as prostatism, urinary urgency, dysuria, painful ejaculation and perineal discomfort.

**CONCLUSION:** We report a 39 year old male who presented with left lumbar heaviness, decreased force and ejaculatory volume. Rest of his physical examination and lab investigations were within normal limits. Trans-abdominal ultrasound showed urinary bladder to be normal with cystic structures noted on the posterior aspect superior to the prostate gland. Trans-rectal ultrasound revealed seminal vesicle cyst. Testes were normal on sonography. Ipsilateral renal agenesis was confirmed on CT pyelogram. The association of seminal vesicle cyst with ipsilateral renal agenesis is diagnostic of Zinner Syndrome.

### Genito Urinary Imaging P-35

#### Detection of Bladder Tumors in Patients using Trans Abdominal Ultrasound: Correlation with Cystoscopy/Histopathology

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**OBJECTIVE:** To assess the accuracy of trans abdominal ultrasound in detection of focal bladder tumors in patients with hematuria.

**MATERIAL AND METHODS :** We conducted retrospective analysis of focal urinary bladder abnormalities detected on transabdominal ultrasound examination in patients referred to the department of radiology with complains of hematuria. Patients were excluded who did not have cystoscopy +/- histopathology. Of 800 ultrasound bladder, 36 patients were included from the period of September 2008 to September 2009 reported as focal lesions in urinary bladder. Data was collected on a structured Performa and evaluated by SPSS.

**RESULTS :** Of 34 patients, 28 (82 %) were positive for bladder cancer on cystoscopy and histopathology. Biopsy of two lesions came out to be benign cystitis and in four cases, no mass lesion was seen on cystoscopy or biopsy.

**CONCLUSION :** We found that ultrasound is a reliable tool for the evaluation of bladder tumors in patients with hematuria.

### Genito Urinary Imaging P-36

#### Pattern of Pathologies on Hysterosalpingography in Primary Infertility and Review of Literature

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Hysterosalpingography (HSG) is the radiographic evaluation of the uterus and fallopian tubes and is used predominantly in the evaluation of infertility. It plays an important role in the evaluation of abnormalities related to the uterus and fallopian tubes. Tubal abnormalities seen at HSG can be either congenital or due to spasm, occlusion, or infection. Uterine anomalies can also be due to congenital abnormalities of uterine shape, luminal filling defects, abnormalities of uterine contour. A prospective cross sectional study for a period of 9 months in which 1124 patients who were referred for Hysterosalpingography with infertility were included for the evaluation of pattern of pathologies encountered on hysterosalpingography in primary infertility.

### Musculo Skeletal Imaging P-37

#### Gyon's Canal Syndrome due to Tortuous Ulnar Artery with Dequervain Stenosing Tenosynovitis, A Rare Presentation: A Case Report

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**INTRODUCTION:** The Guyon's canal syndrome is a well known clinical entity and may have significant impact on patient's quality of life.

**CASE REPORT:** We are reporting a case of 43-year-old male who presented with complaints of pain and numbness in right hand and difficulty in writing and. Subsequently, he was diagnosed as having Guyon's canal syndrome on surgical treated for it.

**CONCLUSION:** Although it is a rare syndrome, early diagnosis and treatment prevents permanent neurological deficits and improve patient's quality of life.

### Musculo Skeletal Imaging P-38

#### MDCT Evaluation of Acetabular Fractures: Multiplaner Vs SSD Images

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**OBJECTIVE:** To establish a standard protocol for multiplaner and 3d shaded surface display reconstruction of ct data on acetabular fracture and to assess the usefulness of these reformats.

**MATERIAL AND METHODS :** A prospective study carried out from February 2009 to July 09 at JPMC karachi.20 patients with suspected acetabular fracture on x-ray examination underwent CT examination were examined. Patient's age ranges from 15 to72 years with M:F ratio 16:4. Fractures were classified according to letournel and judet classification. Examinations were performed with multidetector CT (Toshiba aquilion) acquiring 2mm axial slices with multiplaner and three dimensional reconstructions.

**RESULTS :** In 16 patients anterior column fracture were identified and 3 patients found to have with isolated posterior column fracture 1 patient had fracture of both anterior and posterior column fracture. Intraarticular loose bony fragments were more commonly seen with anterior column fracture.18 out of 20 patients had right hip joint fracture, associated diasthesis of symphysis pubis was found in 2 patients with anterior column fracture; while 3 patients with posterior column fracture had diasthesis of sacroiliac joint .contracted pelvic fracture was found in 1 patient who had both anterior and posterior column fracture.

**CONCLUSION :** In the evaluation of acetabular fracture axial and reformatted images provides maximum information. 3D shaded surface display (SSD) does not provide additional information and can only be used as an adjuvant when significant distortion /malalignment of fracture fragments is present.

**Musculo Skeletal Imaging****P-39****Tuberculosis of Cranio-Vertebral Junction (CVJ); An Uncommon Disease**MUNAWAR HUSSAIN  
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**INTRODUCTION:** Tuberculous involvement of Cranio-vertebral junction is quite uncommon. Its clinical manifestations are variable. Early recognition of disease process is of utmost importance. It is associated with extremely serious neurological deficits. We present a case of tuberculous involvement of cranio-vertebral junction (cvj) that was sent to Dow-Rad, Dow University of Health Sciences for MRI of cervical spine for assessment of severe neck pain and spasm.

**CASE SUMMARY:** 40 year old male patient with 6 weeks history of severe neck pain, spasm and stiffness was sent to Dow-Rad, Dow University of Health Sciences. His pain was associated with numbness and tingling sensation of both upper limbs. No previous history of fever or joint pain was given. Previous imaging or laboratory investigations were not available. Contrast enhanced MRI of cervical spine was performed.

His MRI revealed erosion, irregularity and abnormal signal intensity at odontoid process of C2. Large enhancing soft tissue mass was seen around C1 and C2 having pre vertebral as well as post vertebral necrotic components consistent with soft tissue abscess formation. Few multilevel neck lymph nodes were also seen. Diffuse disc bulge at C5-C6 level was also noted causing cord compression and bilateral radicular compression.

Patient was diagnosed as having tuberculosis and was started with Anti-tuberculous treatment.

**Musculo Skeletal Imaging****P-40****Tuberculous Osteomyelitis of Tibia Mimicking Neoplastic Lesion; An Uncommon Presentation**BUSHRA REHAN  
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**INTRODUCTION:** Although, tuberculosis is mainly considered as a disease of lungs, it may involve virtually any organ of the body. Musculoskeletal invasion by tuberculosis is not uncommon. We present an uncommon radiological manifestation of tuberculosis involving left tibia in a patient who was sent to us at Dow- Rad, Dow University of Health sciences for MRI examination for the investigation of pain and mild swelling.

**CASE SUMMARY:** 18 years old young male was sent to us at Dow- Rad, Dow University of Health Sciences with history of pain and mild swelling of left proximal tibia for 6 weeks. Patient related his pain and swelling with history of fall. It was associated with high grade fever and ESR was 100mm per hour.

X-Ray of tibia revealed permeative pattern of bone destruction with loss of cortico-medullary distinction and subtle linear periosteal reaction. No marginal erosions, osteoporosis or cartilaginous destruction was there. Subsequent MRI also demonstrated abnormal signal intensity areas in proximal tibia with a wide zone of transition. No extra osseous component of the lesion or joint effusion

was noted. Neurovascular bundles were preserved. Initial impression was of Sarcomatous lesion. A biopsy was performed and the sample revealed Chronic Glaucomatous disease. i.e. Tuberculosis.

The patient was then started with Anti tuberculous treatment.

**Nuclear Medicine****P-41****Achalasia: A Cause of False Positive Mediastinal I<sup>131</sup> Uptake In a Patient With Thyroid Cancer: Case Report**NOSHEEN FATIMA  
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Unusual features of I<sup>131</sup> uptake during thyroid cancer scintigraphy may lead to a false-positive diagnosis of residual or recurrent malignancy and associated metastasis. A proper understanding of the causes of false positive I<sup>131</sup> scans is essential for accurate interpretation of the images and to obviate diagnostic errors which may lead to administration of unnecessary therapy doses. We are reporting a case of a 55-years old man with history of total thyroidectomy for papillary thyroid cancer, followed by ablation therapy with 100 mCi of I<sup>131</sup> for residual thyroid disease. A follow-up scan obtained after one year showed a large area of I<sup>131</sup> uptake in mediastinum, which was subsequently found to be due to accumulation of radioiodine in a grossly dilated esophagus secondary to achalasia. For the accurate interpretation of I<sup>131</sup> whole-body scans, awareness of potential causes of false positive findings is important to avoid unnecessary radiation burden to the patients.

**Nuclear Medicine****P-42****Declaration of Brain Death: A Diagnostic Dilemma: Role of Radionuclide Imaging**MASEEH UZ ZAMAN  
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The widespread use of mechanical ventilators that prevent respiratory arrest can maintain vital functions artificially after the brain has ceased to function. There has been a general consensus among medical community and members of clergy, and laypeople that a person is dead when his or her brain is dead. But in some part of world including some Islamic countries, cessation of cardiac function is considered the usual criterion for declaration of death. There is clear difference between severe brain damage and brain death. The physician must understand this difference, because brain death means that life support is useless, and brain death is the principal requisite for organ donation.

Confirmatory tests for determination of brain death include cerebral angiography, EEG, Brainstem Auditory Evoke Response (BAER) and Somatosensory Evoke Potential (SSEP), transcranial doppler ultrasound and radionuclide brain perfusion imaging. Radionuclide Brain Perfusion Scan is useful because of its specificity and availability and because it can be performed at patient's bedside by using a bedside gamma camera. Furthermore, injected contrast does not damage the organs which might be harvested.

In brain death, no flow is seen in middle, anterior and posterior cerebral arteries resulting in "Hollow Skull Sign" However, some flow to scalp is present due to patent external carotid arteries and should not be mistaken for brain flow.

## Nuclear Medicine

P-43

### Extrathyroidal Uptake From Thyroid Carcinoma On TC-<sup>99m</sup> Pertechnetate: Case Report

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**OBJECTIVE:** Unusual findings while scan reporting should be digged out to the final diagnosis.

**MATERIAL AND METHODS :** Three female patients were imaged with TC-<sup>99m</sup> pertechnetate for thyroid scan with pinhole collimator.

**RESULTS :** In this limited series of patients, we imaged three cases with TC-<sup>99m</sup> pertechnetate (TC-<sup>99m</sup>O4) and all of the cases had positive lymph node uptake in the neck. Two of the cases were, later on diagnosed to be carcinoma thyroid (well-differentiated thyroid carcinoma, DTC) with nodal metastasis and one case was a confirmed carcinoma thyroid that presented with mass in the neck soon after surgery and was prepared for ablative dose of radioactive iodine (<sup>131</sup>I). Interestingly, all the three, were young females with ages less than 40 years.

**CONCLUSION :** These three cases signify that (1) Extrathyroidal areas of uptake on a routine thyroid scan with TC-<sup>99m</sup>O4 may indicate thyroid carcinoma with regional metastases (2) Foci of metastasis in patients with DTC may be detected with TC-<sup>99m</sup>O4 scan and (3) multinodularity of goiter with palpable lymph node should always be investigated for malignancy. The patients underwent near total thyroidectomy and radical neck dissection and histopathology confirmed the scan findings.

## Nuclear Medicine

P-44

### Role of TC-<sup>99m</sup> Pertechnetate Scintigraphy in the Evaluation of Patients with Thyroiditis

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**INTRODUCTION:** "Thyroiditis" is a general term that refers to inflammation of the thyroid gland. Thyroiditis includes a group of individual disorders that

all cause thyroidal inflammation and, as a result, causes many different clinical presentations. If the thyroiditis causes slow and chronic thyroid cell damage and destruction, leading to a fall in thyroid hormone levels in the blood, the symptoms would be those of hypothyroidism. This would be the case in patients with Hashimoto's thyroiditis. If the thyroiditis causes rapid thyroid cell damage and destruction, the thyroid hormone that is stored in the gland leaks out, increasing thyroid hormone levels in the blood, and produces symptoms of thyrotoxicosis. This is seen in patients with the toxic phase of subacute, painless and post-partum thyroiditis. Hyperthyroidism caused by destructive thyroiditis should be differentiated from Grave's disease as both of these conditions are treated in a different way. Hyperthyroidism due to thyroiditis is self resolving and managed conservatively while hyperthyroidism due to Grave's is treated with either antithyroid drugs or with radioactive <sup>131</sup>I.

Since the 1970's the radionuclide TC-<sup>99m</sup> Pertechnetate has been used in the thyroid uptake studies and imaging. Although thyroid does not organify TC-<sup>99m</sup> Pertechnetate, the uptake and imaging data provides useful diagnostic information. TC-<sup>99m</sup> Pertechnetate imaging and uptake is a useful way to distinguish Grave's disease from destructive thyroiditis along with physical and biochemical inputs (FT3, FT4, TSH).

We are presenting scan findings of five cases of thyroiditis. All patients presented in our thyroid clinic with clinical and biochemical features of hyperthyroidism (Elevated FT3, FT4 and suppressed TSH level). Thyroid scintigraphy performed with 5 mCi of TC-<sup>99m</sup> Pertechnetate revealed reduced tracer uptake in the region of thyroid gland (termed "Blocked gland"). All patients were managed conservatively with β-blockers, anti-inflammatory drugs and pain killers (one patient required steroid as well). Follow up scan performed after the normalization of thyroid hormonal assay revealed good uptake of radiotracer by the thyroid gland.

## Nuclear Medicine

P-45

### Gastroesophageal Reflux Scintigraphy; An Effective Tool to Detect Gerd in Infants/Children with Recurrent Respiratory Tract Infections

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**OBJECTIVE:** Recurrent respiratory tract infections are not only a source of increased morbidity but also lead to failure to thrive in infants and young children. Aim of this study was first to analyze the utility of Nuclear Medicine to screen children with strong clinical suspicious of gastroesophageal reflux and second to evaluate efficacy of conventional treatment in GERD.

**MATERIAL AND METHODS :** Seventy symptomatic patients underwent Gastroesophageal Reflux (GER) Scintigraphy with effective fasting of 1-3 hrs. 4-37 MBq of TC-<sup>99m</sup> labeled Colloid was diluted in milk. Thirty minutes dynamic study was acquired after completion of the meal. Each study was analyzed qualitatively in cine mode, and quantitatively through time activity curve and measuring percentage reflux index (%RI). Patients with high grade reflux were reviewed again after 08 weeks of conventional treatment.

**RESULTS :** Sixty three percent of the patients (44/70) were declared as reflux positive on GER scan. Most of the refluxing subjects (26/44) were in grade I/II category while (13/44) of the patient showed moderate degree reflux and only (2/44) of the patients fell into severe reflux category. Of all the refluxing individuals, (9/44) were having no refluxing spikes on TACs while when reflux

index (%RI) were calculated, (4/44) of the patients showed value below 4%. Eighty percent of selected patients (8/10) showed improvement with conventional antireflux treatment but complete improvement was evident only in (3/10) patients.

**CONCLUSION :** GER scintigraphy is a non-invasive, effective tool of screening symptomatic babies for reflux of gastric contents. Quantitative assessment of improvement after conventional antireflux treatment offers cost-effective follow up of GERD.

### Nuclear Medicine

#### P-46

#### Prediction of Response to Neoadjuvant Chemotherapy In Locally Advanced Breast Cancer Using TC-<sup>99m</sup> MIBI

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**OBJECTIVE:** 1. To measure tumour to background ratio (TBR), retention Index (RI), tumour kinetic rate (TKR) of TC-<sup>99m</sup> MIBI. 2. To compare these parameters with the mammographic measurements of tumor size before and after NACT, taken as gold standard. 3. To correlate the MDR-1 mRNA (multi-drug-resistance) measurements through PCR technique with scintigraphic measurements.

**MATERIAL AND METHODS :** 20 patients with LABC, candidates for NACT with no previous history of mastectomy or chemotherapy were included. All under went mammograms of the diseased breast before and after NACT to measure the size of the lesion according to the RECIST (response evaluation criteria n solid tumors). All the patients under went scintimammography with 740 MBq TC-<sup>99m</sup> MIBI. Four sets of images were acquired at 15 minutes, 120 minutes, 180 minutes, and 240 minutes post injection. Tumor to background ratios (T/B), retention index (RI) and tumour kinetic rates (TKR) were calculated. MDR-1 mRNA levels of all patients were measured with RT-PCR method. The patients with > 30 % reduction in tumor size on final mammographic image were labeled as responders (R) and rest as non responders (NR) after three cycles of NACT.

**RESULTS :** The results showed 11 (55%) responders and 9 (45%) non responders. There was significant difference observed between the RI at 2 & 4 hrs and between 3 & 4 hrs ( $p < 0.05$ ) and there was also a significant difference of TKR between R & NR ( $p < 0.05$ ). The best predictive power of TBR was achieved at 4 hrs with a cut off of 2.5. For RI the best predictive powers were achieved at 2 hrs and for TKR it was achieved at mean +1 SD. There was a mean concordance of 53.3% between the scintimammographic parameters and MDR-1 mRNA expression.

**CONCLUSION :** Response to neo-adjuvant chemotherapy for LABC can be predicted by scintimammography with tumour kinetic rate and RI as the suitable parameters for predicting the response to NACT.

### Pediatric Imaging

#### P-47

#### Radiography for Umbilical Arterial and Venous Lines

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**OBJECTIVE:** To evaluate how many patients have normally placed catheter, how many needed correction and in how many patients correction of malpositioned umbilical lines has been done in subsequent plain abdominal radiograph.

**MATERIAL AND METHODS :** Abdominal radiographs of NICU patients from AKUH were retrieved from radiological record room and interpreted during the audit period. Data was entered in SPSS 14 and analyzed by using Pearson chi square to test the statistical differences at 95% confidence level. P-value less than 0.05 were considered significant.

**RESULTS :** Total of 2500 patients admitted in NICU of AKUH having x-rays were studied. Out of these only 275(11%) having umbilical catheters, therefore remaining were excluded. 34 patients were excluded due to non visualization of upper/lower tip of umbilical catheters and inadequate radiographic technique. Finally 241 patients were included in audit. out of these only 55(23%) patients have normally placed umbilical catheters. Remaining 186 (77%) patients needs correction

**CONCLUSION :** The x-ray is a valuable support in the diagnosis and clinical follow-up of neonates, especially those requiring intensive care. The knowledge of exact positioning and correct location of these umbilical lines avoids misdiagnosis, reduces iatrogenesis and is of help in the diagnosis and clinical follow-up of these patients.

### Pediatric Imaging

#### P-48

#### Adequacy of Technique Of X-ray Soft Tissue Neck for Adenoids: an Audit

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**OBJECTIVE:** To assess the technique used for the x-rays of soft tissue neck assessing adenoid enlargement.

**MATERIAL AND METHODS :** Retrospectively, 175 paediatric patients undergoing nasopharyngeal soft tissue neck x-rays were identified. The x-rays only for the suspected enlarged adenoids were included in the clinical audit. Each of the radiographs was reviewed by Medical Imaging Technologist, under the supervision of Consultant Radiologists, to evaluate whether the correct technique had been used or not. Nasal breathing was set a marker for the adequacy of the technique.

Results were calculated using simple arithmetic calculations.

**RESULTS :** It was found that 38.3% of patients were exposed with open mouth. Radiographs of these patients were inadequate for evaluation and had no diagnostic value. Repeat exposures were performed only in 1.14% of patients.

**CONCLUSION :** To obtain the optimum diagnostic outcome, the nasopharyngeal x-rays should be performed with closed mouth technique and instructions to inhale.



## Pediatric Imaging

P-49

### Are we Missing NAI? (Non-Accidental Injury)

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**OBJECTIVE:** To apprise and sensitize the medical community about this extremely sensitive and critical issue of “Non Accidental Injury (NAI)” or “Battered Baby Syndrome”.

**MATERIAL AND METHODS :** Two infants belonging to separate families presented as diagnostic dilemmas. Both of them had delayed development. 11 months old female had h/o recurrent chest infections and hoarseness of voice. The 10 months old male infant presented with unexplained seizures which were not responding to anti epileptics. Initially the history was unremarkable and the routine investigations revealed nothing significant. Both infants were receiving multiple treatments. A detailed radiological work up including both conventional and modern modalities raised the suspicion of NAI in both cases. There were posterior rib fractures and cerebral atrophy in female baby. CT Scan brain of the male showed subdural hygromas, cerebral encephalomalacia and cortical calcifications.

**RESULTS :** In the light of radiological suspicion, both the cases were reviewed. After taking the parents into confidence, family and social dynamics were studied in detail and NAI was confirmed in both cases.

**CONCLUSION :** NAI has long been considered a social evil of the developed societies, but it is under diagnosed in our set up. Due to special cultural orientation of our society, NAI remains a social taboo. It is high time that myth of non existence of NAI is shattered and the medical community should make concerted efforts for early detection and management of these unfortunate children.

## Pediatric Imaging

P-50

### Juvenile Nasopharyngeal Angiofibroma: Role of Imaging in Diagnosis, Staging and Recurrence

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**OBJECTIVE:** The purpose of this study is to describe the CT features of index and recurrent Juvenile Nasopharyngeal Angiofibroma.

**MATERIAL AND METHODS :** This study was conducted in ENT Department in collaboration with Radiology Department of Civil Hospital and Dow University of Health Sciences Karachi from Nov. 2006 to Nov. 2008. The study included Forty adolescent male patients, admitted through ENT OPD with H/O recurrent epistaxis and progressive nasal obstruction. Inclusion criteria were adolescent male, H/O repeated epistaxis, nasal mass, progressive nasal obstruction and post operative cases with suspected residual diseases during follow up. Exclusion criteria were adolescent females and elderly males. CT exclusion criteria were no enhancement on contrast CT scan. All patients had CT scan examination with and without contrast to determine the origin and extent of tumor. It demonstrates the presence of the residual disease / recurrence on follow up

contrast CT scan. Statistical analysis was done by using MS Excels. Result expressed in Mean, Standard Deviation and Percentage.

**RESULTS :** This study included 40 male patients aged 10–24 years, with an average age of  $17.0 \pm 5$  years. Epistaxis in 40 patients (100%), Nasal obstruction in 35 patients (87.5%). All patients (40 cases) had nasopharyngeal mass (100%). All patients underwent a radiological evaluation by CT. The findings were: Mass limited to nasal cavity / nasopharynx in 2 cases (5%), involvement of maxillary sinus 27 cases (67.5%), ethmoid and sphenoid sinus 15 (37.5%) and 5 (12.5%) cases respectively. Pterygopalatine fossa and infratemporal fossa involved in 25 (62.5%) and 22 (55%) cases respectively. Erosion of skull base out side dura in 3 (7.5%) cases, orbit in 2 (5%) cases and intracranial extension in 1 (2.5%) case noted. Patients had Stage III in 27 cases (67.5%), Stage II in 10 cases (25%) and Stage I in 2 cases (5%). Advanced Stage IV in 1 case (2.5%). Follow-up ranged from 1 month to 24 months, with a mean of 12 months. Recurrence during follow up period was found in 2 cases (5%).

**CONCLUSION :** The CT imaging plays vital role in diagnosis and staging of Juvenile Nasopharyngeal Angiofibroma. The success of surgery depends upon accurate assessment of extent of tumor by CT scan. CT helps in post operative surveillance, to show the presence and extent of any recurrence or residual disease.

## Neuro Imaging

P-51

### Diagnosis of Fungal Abscess in Brain on Conventional MRI Using Diffusion Weighted Images & MR Spectroscopy

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A 62 years old female patient known hypertensive, diabetic and with BOOP was referred for MRI Brain for the complaints of altered sensorium for 1 day. At the time of admission she was drowsy, not oriented, irritable and not following commands. She had decreased power in all the four limbs. MR Imaging revealed a 5.1 x 3.2 cms lesion in the left parieto-occipital region. Unenhanced T1-weighted imaging showed hypointense signal. T2-weighted imaging demonstrated a heterogeneous mass with irregular margins a hyperintense centre with a hypointense rim, as well as a large amount of surrounding vasogenic edema. At T1-weighted imaging performed after the intravenous injection of Gadopentetate dimeglumine, only peripheral enhancement was seen. This area was diffusion positive (DWI) and on Susceptibility weighted images (SWI), wall of this lesion was showing low signals representing hemorrhage. Single and multivoxel MR Spectroscopy (MRS) was also performed of this lesion from its centre and it shows a very low choline, creatine and sodium acetylaspartate and high lactate along with lipid. Another tiny brain abscess was also visualized in left inferior frontal gyrus laterally. Based on these findings, fungal brain abscess was suggested. Biopsy confirmed brain abscess with hyphae. This case report discuss the imaging features of fungal abscess in brain on MRI using conventional as well as DWI, SWI and MRS.

**Neuro Imaging****P-52****A Rare Anomalous Origin of Right Vertebral Artery from Right External Carotid Artery**

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**INTRODUCTION:** The vertebral artery arises from the superior surface of the first part of subclavian artery and provides the main blood supply to the posterior fossa structures. A thorough understanding of anomalous origin of vertebral artery is paramount when performing both diagnostic and interventional angiography. If the vertebral arteries are not identified in their normal position, this can be misinterpreted as the vessel being congenitally absent. The diagnosis of anomalous origin of vertebral artery is important for endovascular or cardiothoracic surgeries in head and neck region. This has become more important in the era of carotid artery stents, vertebral artery stents and new therapeutic options for intracranial interventions.

**CASE SUMMARY :** A 50 year old hypertensive and diabetic male came to the hospital with loss of consciousness for one day. GCS (Glasgow coma scale) at the time of admission was 7/15 (E=4, M=2, V=1).CT scan images showed SAH (subarachnoid hemorrhage). Digital subtraction angiography (DSA) was performed by using uniplaner angiographic equipment. The selective catheterization of right common carotid artery demonstrated the anomalous origin of right vertebral artery from right external carotid artery. The right external carotid artery was selectively catheterized to further confirm the diagnosis of this anomalous origin. The super selective catheterization of right vertebral artery was done which shows reflux of contrast in the occipital artery (branch of external carotid artery). The intracranial study revealed the presence of anterior communicating artery aneurysm on injecting contrast into the right internal carotid artery. Selective left vertebral angiography showed hypoplastic left vertebral artery. The anatomic relationship of rest of the supraaortic arteries was confirmed to be normal.

The patient was operated and clipping of anterior communicating artery aneurysm was done.

**Neuro Imaging****P-53****Amoebic Encephalitis in A 22-Year old Male: A Case Report**

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**INTRODUCTION :** Amoebic meningoencephalitis is a rare however fatal disease. Clinical points of relevance regarding primary amoebic meningoencephalitis include a short incubation period of usually 2 to 5 days(maybe up to 14 days). Death, which is almost invariable, occurs rapidly within 6 days and without focal neurological abnormality. We present a case of amoebic encephalitis in a young adult male.

**CASE SUMMARY :** 22 year old male presented with complaints of high grade fever, vomiting and generalized weakness for 2days. In the 10 days prior to the onset of his symptoms, the boy had swum in Kalri Lake. On clinical examination the patient was febrile, semiconscious, moving all four limbs. Rest

of the general physical examination & systemic examinations were unremarkable.

His initial CT Scan showed mildly dilated ventricles but was otherwise unremarkable. Lumbar puncture was also done .The CSF looked purulent (WBC 1590 x 106/l, 90% neutrophils, protein 2.4 g/l, glucose 4.3 mmol/l). Examination of the wet mount from the CSF revealed a small number of amoeboid trophozoites. Patient's level of consciousness deteriorated and follow-up CT Scan brain done after 24 hours showed patchy low attenuation areas throughout brain parenchyma. Generalized cerebral edema was seen with effacement of ventricles, sulci and basal cisterns. Midbrain was compressed and showed abnormal attenuation. The final diagnosis was Amoebic encephalitis. However the patient's condition further deteriorated leading to death.

**Neuro Imaging****P-54****Spinal Cord Tethering in Upper Dorsal Region, A Rare Finding**

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**OBJECTIVE:** Spinal cord tethering in upper dorsal region, a rare finding.

**CASE REPORT:** We present a case of young male patient who presented with the history of scar over the back of upper chest with recurrent discharge from the scar. We performed the MRI dorsal spine of the patient revealing posterior cord tethering at the level of upper dorsal region with focal contour abnormality of the spinal cord at this level.

The cord termination was also higher p in position in this patient ending in lower dorsal region. There was also associated syringomyelia in the upper dorsal spinal cord in this patient.

**Neuro Imaging****P-55****MRI Findings in Acute Methanol Intoxication: A Report of Two Cases**

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**INTRODUCTION:** Methanol is a clear, colorless, highly toxic substance. Acute methanol poisoning produces severe metabolic acidosis and serious neurological symptoms, including severe visual impairment, extrapyramidal signs and coma. C T and MRI imaging are able to demonstrate toxic effects of methanol in the central nervous system. Putaminal necrosis, with or without hemorrhage, and subcortical white matter lesions are the most frequent reported findings. We present two cases of methanol intoxication following ingestion of locally brewed alcohol and discuss the MRI findings.

**CASE SUMMARY:**

Patient 1:

A 30-year old man presented to the emergency department after ingestion of locally brewed alcohol. 12 hours after ingestion he had nausea with vomiting, irritability and restlessness. He was referred for an MRI scan which demonstrated

bilaterally symmetrical lesions involving frontoparietal, occipital and medial temporal regions, basal ganglia, external capsules and cerebellar hemispheres. These appeared hyperintense on T2 weighted (T2W) images and hypointense on T1 weighted (T1W) images suggestive of non-haemorrhagic necrosis. High signal was noted in bilateral basal ganglia on T1 weighted (T1W) images representing hemorrhage.

**Patient 2:**

A 60-year old man presented to the emergency department with drowsiness, nausea and vomiting 24 hours after ingestion of locally brewed alcohol. MRI was performed which demonstrated bilateral, symmetrical hyperintensities with central hypointensities on T2W images in the basal ganglia region, appearing hypointense and hyperintense on T1W images. High signal intensity on T2W images suggested oedema which extended into the adjacent insular cortex causing pressure over both lateral ventricles.

### Neuro Imaging P-56

#### MR Spectroscopy; Role in Characterising Focal Brain Lesions

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**OBJECTIVE:** Objective of this study was to determine the role of magnetic resonance spectroscopy (MRS) in characterizing various intracranial mass lesions

**MATERIAL AND METHODS :** Fifty patients of all age groups and either gender with intracranial lesions underwent MRI along with MRS over a period of one month. Patients with newly diagnosed SOL, and patients undergoing imaging for treatment response evaluation, suspicion of residual or recurrent disease after surgery or radiotherapy were included in the study. Single voxel spectroscopy in conjunction with morphological features used to characterize various intra and extra axial lesions and results compared with histopathology where available..

**RESULTS :** MR Spectroscopy together with morphological features correctly diagnosed glial cell tumor in 25 patients, metastasis in 4 patients, radiation induced or post operative changes in 4 patients, residual or recurrent disease in 2 patients, Infarction in 3 patients, tuberculosis in 2 patients with 1 of them having meningeal disease and 1 having tuberculomas, abscess in 3 patients, meningioma in 2 patients and mesial temporal sclerosis in one patient. In four patients, spectroscopy was non-diagnostic.

**CONCLUSION :** An increasing availability and use of MR Spectroscopy has enabled to distinguish between various benign and malignant intracranial lesions as well as solved some diagnostic delimas such as residual or recurrent disease in presence of post operative and post radiation changes, as it works at molecular level. This however, has to be used as an adjunct rather than a replacement for histopathology.

### Neuro Imaging P-57

#### Case Series: Intracranial CT Angiography For Confirmation of Brain Death

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**INTRODUCTION:** Brain death confirmation usually only requires through detailed neurological examination, however, in a few cases radiological confirmation is necessary when patients have been under heavy sedation or for certain medico legal concerns. Traditionally an invasive 4-vessel cerebral angiography was utilized for this purpose.

**CASE SUMMARY:** We report 4 cases where a 64-channel CT scanner (Toshiba Aquillion) was used to perform CT angiography of the intracranial arterial circulation with 3D and slab MIP reconstructions to document brain death with great accuracy, with cessation of the anterior and middle cerebral arterial blood flow and non-opacification of the central cerebral venous drainage, while good flow was maintained within the external carotid arterial tree.

**CONCLUSION :** Intracranial CT angiography is an accurate non-invasive investigation for determining brain death and has replaced conventional DSA 4-vessel cerebral angiography for this purpose, until specific need arises.

### Neuro Imaging P-58

#### Spinal Cord Compression in Thalassemia Intermedia: Case Report and Review of the Literature

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**INTRODUCTION:** Thalassemia intermedia is a hematological disorder secondary to defective synthesis of globin moiety of hemoglobin. Compensatory extra-medullary hematopoiesis phenomenon involves liver, spleen, lymph nodes, kidneys, adrenals and adipose tissue. In the neural canal extra-medullary hematopoiesis causes compression secondary to bone expansion and accumulation of the hemopoietic tissue along the dura. Extra-medullary hematopoiesis with spinal cord compression is an extremely rare complication and presents with paraparesis and sensory impairment. We present a case of a patient of Thalassemia intermedia with thoracic cord compression, progressive myelopathy, treated with repeated sessions of radiotherapy along with interval follow up.

**CASE SUMMARY:** A 33years old male, with Thalassemia intermedia presented to our clinic with paresthesia of the feet since 6 months and a midthoracic sensory level. He was diagnosed as a case of Thalassemia intermedia at the age of 20 years at a hematology clinic with repeated episodes of jaundice and ulcers of the lower limb. CBC shows low Hb and generalized osteoporosis was seen on x-ray of the lower limbs with a "hair-on-end" appearance on x-ray skull. He has a positive family history of Thalassemia. He developed paresthesia of the lower limbs 12 years back. Radiotherapy was given and the patient remained asymptomatic for 7 years. 2nd session of radiotherapy was instituted in 2004 for numbness of lower limbs and the patient was asymptomatic for another 4 years. His symptoms re-appeared in January 2008. He was referred for a follow up MRI on account of persistent numbness of the legs and the lower thorax.

MRI of the neuroaxis demonstrated diffuse hypointensity in sternum, dorsal, lumbar and sacral vertebral bodies. Expansion of sacral alae and iliac wings, suggestive of marrow reconversion. Spinal cord compression from extra-dural and paraspinal masses were seen at lower dorsal levels. Ventral epidural, prevertebral and presacral masses were also seen within the pelvis.

### Neuro Imaging P-59

#### Vein of Galen Aneurysmal Malformation with Persistent Falcine Sinus: A Case Report

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**INTRODUCTION:** Vein of Galen aneurysmal malformation is a rare congenital anomaly of intracranial circulation that constitutes less than 1% of all intracranial vascular malformations. We report a case of Vein of Galen aneurysm with associated persistent falcine sinus in an infant. This association, to the best of our knowledge, has not been described previously in our population owing to the rarity of this unique entity.

**CASE SUMMARY :** A 9-month old infant had presented in the paediatric clinic with complaints of a progressively enlarging head and delayed milestones. MRI of the cranium demonstrated a midline signal void saccular structure along the course of the deep cerebral vein (of Galen) causing compression of the aqueduct of Sylvius and posterior part of the third ventricle resulting in supratentorial hydrocephalus. A linear signal void structure was also noted in the posterior falx extending from the above-described Vein of Galen aneurysm to the superior sagittal sinus. This represented a persistent falcine sinus. The falcine sinus is a normal structure located in the falx cerebri, normally involuting after birth. It is argued that the persistent falcine sinus represents persistence of one of the caudal anastomotic loops of the sagittal plexus. MRA and MRV images further outlined the arterial feeders to the aneurysmal malformation. The communication between the aneurysmal sac and the superior sagittal sinus through the persistent falcine sinus was confirmed, as was the absence of the straight sinus.

### Neuro Imaging P-60

#### Neuroradiological Findings of Marinesco Sjögren's Syndrome

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**OBJECTIVE:** Purpose of our study was to determine the neuroradiological findings of Marinesco Sjögren's Syndrome on plain x-ray, CT and MRI

**METHODS:** Six patients (4 females and 2 males) of age ranging 3 to 12 years with proved Marinesco Sjögren's Syndrome had a total 6 CT, plain x-ray skull lateral views and 4 MRI brain. The findings were reviewed with particular attention to size of posterior fossa and cerebellum.

**RESULT :** All patients had hypoplasia of cerebellar hemispheres and vermis with small posterior fossa. One patient had midline posterior fossa CSF cyst

and agenesis of corpus callosum.

**CONCLUSION:** Small posterior fossa with hypoplasia of cerebellar hemispheres and vermis are most important neuro-radiological findings in MSS.

### Neuro Imaging P-61

#### Determination and Comparison of Patient Effective doses for Head CT

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**PURPOSE:** The aim of this paper is to determine the effective radiation doses for the head CT and comparison of these doses with published values.

**MATERIALS AND METHOD:** The data is collected by using a 64 slice Toshiba Scanner Aquilion TSX-101A at the department of Radiology, Aga Khan University & Hospital Karachi, Pakistan. The effective doses are calculated by three methods. First by using tissue or organ weighting factor 0.0021 mSv. (mGycm)-11, secondly using tissue or organ weighting factor 0.0052 and third from calculator<sup>3</sup>. The average and standard deviation of these doses are also calculated. Graphs are drawn to show the dose distribution against the patient weight and the scan time.

**RESULTS:** The calculated effective doses are 1.8 mSv from Dose1, 4.4 mSv from Dose2 and 5.4 mSv from calculator. From the Comparison of effective doses of this study with the internationally published data, it is observed that some of the calculated effective dose values for Brain CT are in line with or lower while some are greater than the internationally published data.

**CONCLUSION:** Variations are observed among the calculated effective dose values due to the different organ or tissue weighting factors used to calculate the doses. It may be due to variation of parameters i.e. kV, mAs, scan time, scan length etc. The discrepancy in the doses values from different sources can be resolved by further investigations.

### Neuro Imaging P-62

#### Posterior Reversible Encephalopathy Syndrome

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**OBJECTIVE:** To retrospectively evaluate the MRI features of Posterior Reversible Encephalopathy Syndrome.

**MATERIAL AND METHODS:** This is a retrospective study from 8th June 2005 to 26th July 2008. Twelve patients were included as having confirmed PRES, per imaging and clinical follow-up. Two neuroradiologists retrospectively reviewed each MR image. Standard sequences were unenhanced FLAIR, T1-weighted, T2-weighted images in all patients, with diffusion weighted imaging and contrast-enhanced T1-weighted imaging. The regions involved were recorded

on the basis of these sequences. All MRI scans were performed on a SIEMENS AVANTO (1.5 Tesla) MRI scanner.

**RESULTS:** We identified 12 patients of PRES. All patients were females, age range of 20-39 years. PRES occurred in association with eclampsia in 10, SLE in 1 and in post renal transplant in 1 patient. Neuroimaging features included abnormal signals in white matter involving frontal, parietal, occipital, temporal lobes, thalamus and cerebellar hemispheres. Out of 12 patients, 3 had follow up MRI after 4-6 weeks which showed complete resolution of abnormal signals. In 9 patients clinical symptoms resolved after 2-3 weeks.

**CONCLUSION:** Acute cases of PRES have highly characteristic MRI features. This study highlights the need to expect neurological events in patients with PRES. Awareness of diverse clinical and radiographic presentation of acute PRES is essential to avoid misdiagnosis and treatment delay. It is imperative that the syndrome of PRES is correctly recognized on neuroimaging, as the condition is reversible and potential complications can be avoided with appropriate therapy.

## Head & Neck Imaging

P-63

### Faces of Facial Lymphoma

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**OBJECTIVE:** To highlight the imaging features, patterns of involvement, distribution of disease and common complications of extra nodal facial lymphoma.

**MATERIAL AND METHODS :** Record of all lymphoma patients registered in our hospital during Jan 2005 till Jan 2009 was reviewed. The patients with extra nodal facial lymphoma were included in the study. Incidence, pattern of distribution, imaging features and complications were retrospectively noted.

**RESULTS :** Primary extranodal NHL of the head and neck (HN-NHL) accounts for 10-20% of all cases of NHL. The distribution among different anatomical sites was: Tonsils (52.3%), Nasopharynx (18.2%), Mandible/gingiva (5.6%), Hard palate (4.8%), Paranasal sinuses (4.8%), Parotids (4.2%), Nasal cavity (4.0%), Hypopharynx/larynx (3.3%), Thyroid (1.6%), Ocular (1.2%). Complications including bony destruction and intra cranial extension were seen in 14.8 % cases.

**CONCLUSION :** Facial lymphoma can have diverse imaging appearances. Early recognition and detection of local aggressiveness helps to tailor the management of patient.

## Miscellaneous

P-64

### Clinical Radiology Research in Pakistan: From Evidence to Practice

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**OBJECTIVE:** To assess the clinical radiology research productivity in Pakistan by type of publication, sources of funding and name of journals.

**MATERIAL AND METHODS :** A systematic search strategy using key words related to techniques and type of clinical radiology was carried out to identify

various studies published in Indexed (Medline) and non-indexed (Pakmedinet) medical journals.

**RESULTS :** Total of 395 studies were identified out of which 173(43%) from Medline (indexed database) and 222 (57%) from pakmedinet (Indexed and non-indexed database of Pakistan Medical journals). Original articles were 294 (74%) but most of them (68%) were published in non-indexed journals and significantly different from other articles types (case reports, short reports, review articles and letter to editors) (p-value <0.001). No Randomized Controlled Trial was identified. No research was funded by any formal financial agency. As high as 78% of indexed studies were published by radiology centers of Sind province. Private hospitals having radiology department contributed significantly in indexed journals compared to government hospitals (p-value <0.001). Majority (74%) of the studies were done by radiologist as compared to other non-radiology clinical colleagues (p-value <0.001).

**CONCLUSION :** Clinical radiology research production from Pakistan is low in terms of quality and number. There is an urgent need of building the foundation of research programs in radiology and strengthen research capacity building at facility and health policy level.

## Miscellaneous

P-65

### Aliasing Artifact in Digital Imaging: A Blessing or A Plight?

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**PURPOSE:** To illustrate imaging appearance of aliasing artifact, how to avoid it and how to use it to advantage.

**OUTLINE:** Aliasing is an artifact resulting from insufficient sampling frequency of the analog signal, be it returning sound pulses in Doppler imaging, or Radio frequency signal in MR imaging or be it projection data in CT scanning. It is governed by a common principle – the Nyquist theorem, though imaging findings are varied in different modalities. In this poster I will present the basis of aliasing, imaging findings in CT, MR, and US and how it can be used to the radiologist's advantage, e.g. in diagnosing calcification with Doppler US.

## Miscellaneous

P-66

### Misuse of Digital Imaging: Is Digital Imaging Superior to Conventional Imaging in Terms of Radiation Protection?

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**OBJECTIVE:** It is known that radiation doses to patients undergoing standard radiographic examinations by using computed/digital radiography (CR/DR) are lower than screen-film radiography (SFR). The aim of this study is to highlight the malpractices in which digital imaging can increase radiation dose to the patients.

**MATERIAL AND METHODS :** Prospectively, from 1ST August 2009 to 15th August 2009, 306 patients undergoing radiographic examinations at a local hospital using CR/DR were observed and their post processing was evaluated. The examinations of patients irrespective of age and sex were randomly observed. According to ICRP guidelines four main practices using CR/DR which can increase radiation dose to the patients are repeating exposure,

unnecessarily irradiating the patients using fluoroscopy, not using collimation and cropping it afterwards, giving a high exposure and then adjusting the contrast by post processing techniques. All the images were evaluated according to these criteria and results were analyzed using spreadsheet.

**RESULTS :** Out of the 306 patients, misuse of digital imaging was observed in 136 (44.4%) of these examinations; repeat exposure 52 (17%), obtaining more images than necessary in fluoroscopy 10 (3.3%), masking the use of full collimation by cropping 49 (16%), setting contrast 25 (8.2%).

**CONCLUSION :** The study demonstrates that where digital imaging has potential to decrease radiation dose, it also has the tendency to increase it if not utilised properly. Digital imaging has many technical advantages as compared to screen-film radiography. The use of digital systems should be carefully monitored and attention should be given to the radiation protection issues.

### Head & Neck Imaging P-67

#### Portable Chest X-rays: Evaluation of Image Quality and Pitfalls in Current Radiographic Practice.

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**OBJECTIVE:** The objective of this study is to assess the image quality of bedside and I.C.U portable chest x-rays and to identify the lacking in our current radiographers' practice and the ways to improve them.

**MATERIAL AND METHODS :** 100 consecutive portable chest x-rays of 59 patients performed in in-patient and I.CU were retrospectively evaluated. The criteria used to critique mobile chest radiographs were adapted from Kathy McQuillen Martensen's criteria of radiographic image analysis. The 5 areas critiqued were: positioning, tube angulation, technique, artifacts and radiation protection. All the x rays were evaluated by the imaging technologist under the supervision of radiologist according to the defined criteria. The data was tabulated and analyzed using SPSS.

**RESULTS :** Of the total radiographs critiqued (n = 100), 341 errors were identified, an average of 2.9 errors per radiograph. Only three radiographs did not have any error according to criteria. Positioning error accounts for 57% of all the errors with rotation error 61(62.7%) and not centered to the film 51(52.5%). Tube angulation error was found in 29.8% radiographs with cephalic angulation in 53(54.6%) and caudal angulation in 5(5.1%) radiographs. Errors related to technique were 33.5% of the total with excessive technique error in 34(35%) images and insufficient technique in 31(31.9%). 21(21.6%) radiographs showed artifacts which could be removed while performing x ray and 31(31.9%) x-rays didn't show any evidence of collimation.

**CONCLUSION :** Among the errors evaluated in our study, positioning error contributes the most in degrading the image quality of portable chest x-rays. These errors can affect the diagnostic value of the radiographs and subsequently can alter the patient's management. Standard techniques should be employed to increase the quality of portable x-rays and standard protocols should be devised in radiology department to reduce the incidence of all the errors regarding portable radiography.

### Miscellaneous P-68

#### Film Retake in Computed Radiography; Initial Experience at Patel Hospital, Karachi, Pakistan

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**OBJECTIVE:** To determine the various factors associated with film retake in Computed Radiography

**MATERIAL AND METHODS :** This is a descriptive study conducted in Radiology department of Patel hospital, Karachi, Pakistan from 20th Jan, 2009 till 20th May, 2009, for about Four months.

Patient's undergone X-Rays of different body parts during this period with Computed Radiography (n = 197) were included in this study. Measurements were done for number of X-Rays re-exposure due to different quality control reasons and needed to repeat in Computed Radiography. The quality control reasons due to which X-Ray quality was questionable, include Positioning errors, Exposure factors, Patient movement, Artifacts and Technical faults.

**RESULTS :** A total of 197 X-rays (2.62%) were repeated in computed Radiography (n = 7510) due to Positioning errors (63.95%), Exposure factors (15.22%), Artifacts (11.67%), Patient movement (6.09%) and Technical fault (3.04%).

Positioning error was the most significant factor for X-Ray retake in Computed Radiography

**CONCLUSION :** In our study, the dilemma for repeat X-Ray's in Computed Radiography lie with Positioning errors. By emphasizing the training needs for technologist involved in film retake, we can utilize the benefits of Computed Radiography to a greater extent, hence, decrease in radiation exposure to patients.

### Miscellaneous P-69

#### Multi Focal Extranodal Lymphoma: Radiological Appearances

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**OBJECTIVE:** The objective of study is to illustrate the pictorial spectrum of appearances of Multifocal Extranodal Lymphoma using imaging modalities.

**MATERIAL AND METHODS :** This study is conducted in diagnostic radiology department of KIRAN. We retrospectively reviewed 20 cases with histopathology proven cases of Extranodal lymphoma between years 2007 to 2008.

**RESULTS :** The study includes 11 males and 9 females. About 23% of lymphoma cases occur at Extranodal sites, but only 3% presents involvement of multiple noncontiguous extra nodal sites at presentation without lymph node involvement. Common location found in multi focal cases were in Gastro intestinal tract, and Head and neck region. Rare lesions seen in Genitourinary Tract, Lung, Musculoskeletal, CNS.

**CONCLUSION :** In any case of primary extra nodal lymphoma, the patient should be fully investigated to look for other unusual sites. Imaging of the brain, face neck, chest, abdomen, and pelvis should be done in all cases of extra nodal lymphoma. Imaging remains important in diagnosis, staging and treatment.

### **Miscellaneous**

#### **P-70**

#### **Additional Views of Mammogram and its Effects on Management.**

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**OBJECTIVE:** To evaluate the additional view of mammogram and its effects on management requested by clinicians and radiologist.

**STUDY DESIGN:** Descriptive Study

**MATERIALS AND METHODS:** It was a descriptive study conducted at The Aga Khan University Hospital from September 2007 to Jan 2009. A total of 100, mammograms with additional views were evaluated. Out of total of 100, 59 patients of additional view were requested by the radiologist and 41 were requested by the clinician. All 100 cases were reviewed by experienced radiographer and certified radiologist. Data was collected recorded on preset Performa and was subsequently entered and analyzed using SPSS version 16.

**RESULTS:** 100 additional views of mammogram were done. (Cone compression 74, magnified 21 and magnified cone compression 5 cases).89% of cases were reported as negative and 9% were reported as positive.

12 patients underwent biopsy out of which 7 were benign and 5 were malignant. The effect on management of additional views of mammogram was 3%.

**CONCLUSION:** Additional views of mammograms had significant effect on final patient management.