

**Abstracts presented at the 27th Annual Conference of
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27th Annual Conference 2011
Radiological Society of Pakistan
Abstracts

DAY 1:**SESSION-I : - CNS AND INTERVENTIONAL NEURORADIOLOGY****FREE PAPERS****Tuberculous spine: Our experience in Pakistan**

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Tuberculosis involving the musculoskeletal system is common in the developing countries. The spine is the most commonly affected site in 50-60% of cases. Majority of patients present with backache and various neurological symptoms depending upon level of cord compression.

MATERIAL AND METHODS: 1000 patients were selected by convenience sampling from January 2006 to December 2010. Study design was descriptive and among one thousand known cases of tuberculosis (570 males & 430 females). MRI was done on 1.5 tesla Philips MRI in Lahore General Hospital, Lahore. Patients were diagnosed as tuberculous on the basis of clinical and MRI criteria. Gold standard of the diagnosis of inflammatory lesion of spine being histopathological biopsies, which were available in eighty cases.

In selected cases T2 coronal and post contrast images in T1 sagittal and axial planes using Gd- DPTA in a dose of 0.1 mmol/kg body weight.

RESULTS: Out of 1000 cases of tuberculous spine 570 (57%) were male and 430 (43%) were female. Their ages ranges from 8-83 years. The majority 35% belong to the age group of 20-39 years. Peak age among the males and females were 20-29 (13%) and 8-19 (12%) respectively. The most common site of involvement was dorsal spine (45%) followed by lumbosacral (33%), cervical spine (12%) and at multiple levels 10 (10%). Biopsies were done in eighty cases. On MRI vertebral end plate destruction and reduced disc space (100%) are the commonest in all the eighty biopsied cases (100%). Among those at multiple levels, all the 100 cases (100%) showed the involvement of dorsal spine.

CONCLUSION: Young males 57% belonging to age group 20-29 years are more effected and the most common site is dorsal spine (45%). MRI is an excellent tool to investigate the diseases of spine particularly tuberculous spine. Awareness and prompt management of TB spine will help in reducing the continuing morbidity of this disease.

Neurointervention in stroke: Latest trends

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Stroke ranks third among all causes of death, behind diseases of the heart and cancer, and is the leading cause of serious long-term disability in our country. Cerebral strokes are of two types hemorrhagic 13 % and ischemic 87%. On average, every 40 seconds someone develops a stroke. Intracranial endovascular cerebro vascular interventions treat cerebro vascular disease by use of minimally invasive intra vascular technique. Intravenous thrombolysis has become generally accepted as medical therapy for treatment of patients with acute ischemic stroke within 3 hours of stroke on set. Intra arterial thrombolysis can be effective with in 6 hrs after the onset of symptoms of stroke. With the evolving concept of interventional management of stroke, several options of multimodal reperfusion therapy are being evaluated. Such mechanical interventions are usually performed in combination with either intravenous or intra-arterial thrombolysis. Largely

because of advances in CT perfusion imaging and high resolution DSA with reconstruction techniques easier access to cerebral vasculature through improved micro catheter designs, navigation with in the brain is very encouraging. The purpose of present document is to review the current information and data for the efficacy and safety of procedures used for intra cranial endovascular interventional treatment of cerebral vascular disease.

Carotid Cavernous fistula, Experience in Pakistani population

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INTRODUCTION: Carotid cavernous fistula is abnormal communication with carotid system and cavernous sinus. They can be direct (high flow) due to communication between ICA and CS mostly post traumatic. Other variety is indirect (low flow) due to communication between branches of ICA or ECA with CS and mostly occur spontaneously in post menopausal women. Diagnosis is made by CT or MRI. The most definitive diagnosis is by digital subtraction angiography (DSA) which helps not only to diagnose but also to treat the fistula by embolization. We will discuss our experience in diagnosis and treatment of CCF by embolization.

MATERIAL AND METHODS: Out of 50 pts having CCF , 40 pts were treated with detachable balloons mainly through transarterial route from March 2007 to March 2011. Diagnosis was confirmed with diagnostic 4 vessel angiography and their vascular architecture was identified. Goldball balloons of variable sizes were used for embolization occluding the fistula. 3D reconstruction was done pre embolization and most of them were checked by dyna CT immediately just after embolization.

RESULTS: Complete angiographic obliteration was seen in 35 pts immediately after embolization. Marked improvement in 3 cases and failure in 2 cases due to abnormal tortuicity of vessels. Residual shunting in 7 patients improved in one month to 1 year. Headache and vomiting were most common symptoms after procedure. One case had ischemia of distal branches of M2 segment of Rt MCA, which improved later. No mortality. No recurrence during follow up.

CONCLUSION: Transarterial embolization is the treatment of choice for CCF particularly in post traumatic. It is efficient, safe and economical method.

Atypical presentations-TB brain

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The purpose of the study is to highlight the varied presentation of Tuberculosis brain simulating tumour. Headache and Seizures are becoming the frequent presenting complaints without any history of tuberculosis.

MATERIAL AND METHODS: The study comprises of twelve hundred (1200) patients of either sex with age ranged from ten years to sixty years. Electroencephalography (EEG), MRI and CT Scan Brain control and with contrast were the investigations performed on these cases. In some patients cerebral angiography (DSA) and spectroscopy were also performed.

RESULTS: The final diagnosis of tuberculosis was made on the basis of caraniotomy, stereotactic and burrhole biopsies with histopathology in most of the cases. 40% of the patients were followed up for eight months. They were put on anti-tuberculosis treatment with symptomatic and anti-epileptic drugs.

The incidence is 544 and 757 per 100,000 in Africa and Indo Pakistan respectively. Male to female ratio is 1:1. Tuberculosis especially with CNS involvement is not only common in immunosuppressed individuals patients in our set up. T.B. has been and still remains an important public health problem in our setup. TB may involve central nervous system either as meningitis or as parenchymal granulomas or abscesses. Patients with TB brain usually present with fever, multiple cranial nerve involvement and occasional behavioural changes. CSF findings remain non specific in most of the cases. Most common sites are the cerebral hemisphere and basal ganglion in adults and the cerebellum in children. Tuberculosis has unique findings on CT & MRI brain. Cortical and subcortical location are typical whereas brain stem is less common site. Tuberculosis lesions are usually solitary but multiple in 10% to 35% of cases. In spite of all these facts still some cases of Tuberculosis brain needs aggressive neurointervention to reach the final diagnosis of TB brain.

CONCLUSION: The tuberculosis in CNS may manifest in many different ways. So one should always include tuberculosis in differential diagnosis in etiology of delayed onset epilepsy and acute on chronic headache. In case of discrepancy between clinical manifestation and CT/MRI findings, one can always anticipate tuberculous lesion in the brain.

Role of fast fluid-attenuated inversion recovery (fast-FLAIR) and echo-planar diffusion weighted (DW) MR imaging in the examination of intracranial epidermoid tumors.

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OBJECTIVE: To compare the conventional MR sequences with fast fluid-attenuated inversion recovery (fast-FLAIR) and echo-planar diffusion weighted (DW) MR imaging in the examination of intracranial epidermoid tumors.

MATERIAL & METHODS: 15 patients with surgically confirmed intracranial epidermoid tumors were examined with T1-weighted MR sequences, fast T2 and proton density-weighted dual-echo sequences, fast-FLAIR sequences, and DW echo-planar sequences. MR signal intensity and apparent diffusion coefficient (ADC) of epidermoid tumors, normal brain tissue, and CSF measured and also calculated the tumor-to-brain and tumor-to-CSF contrast ratios and contrast to noise ratios (CNR). Results were compared among the five MR methods.

RESULTS: On fast-FLAIR imaging, the mean signal intensity of epidermoid tumors was significantly higher than that of CSF but significantly lower than that of the brain; the contrast ratio and CNR of tumor-to-CSF were 4.71 and 9.17, respectively, significantly greater than the values with conventional MR imaging. On echo-planar DW imaging, epidermoid tumors showed a remarkably hyperintense signal relative to those of the brain and CSF; the mean contrast ratio and CNR of tumor-to-CSF were 13.25 and 19.34, respectively, significantly greater than those on fast-FLAIR or conventional MR imaging. The mean ADC of epidermoid tumors was $1.1973 \pm 3.1023 \text{ mm}^2/\text{s}$, significantly lower than that of CSF but higher than that of brain tissues.

CONCLUSION: Fast-FLAIR imaging is superior to conventional MR imaging in depicting intracranial epidermoid tumors. Echo-planar DW imaging provides the best lesion conspicuity among the five MR methods. The hyperintensity of epidermoid tumors on echo-planar DW imaging is not caused by the diffusion restriction but by the T2 shine-through effect.

Advanced MRI imaging techniques in diagnosis of intraaxial brain tumors in adults

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INTRODUCTION : Intraaxial brain tumors present several imaging challenges. These lesions include primary neoplasms (high and low grade), secondary (metastatic) neoplasms, lymphoma, demyelinating lesions, abscesses, and encephalitis.

Imaging plays an integral role in intracranial tumor management. Magnetic resonance (MR) imaging in particular has emerged as the imaging modality most frequently used to evaluate intracranial tumors. In addition to conventional MR imaging techniques, a variety of advanced techniques have found their place in clinical. These advanced techniques offer more than the anatomic information provided by the conventional MR imaging sequences. They generate physiologic data and information on chemical composition.

MR imaging techniques allow insight into such processes as the freedom of water molecule movement, the microvascular integrity and hemodynamic characteristics, and the chemical makeup of certain compounds of masses. The role of the most commonly used advanced MR imaging techniques: perfusion imaging, diffusion-weighted imaging, and MR spectroscopy, in the diagnosis and classification of the most common intraaxial brain tumors in adults may help in making a more specific diagnosis for an intraaxial tumor. The role of MR imaging in the workup of intraaxial tumors can be broadly divided into tumor diagnosis and classification, treatment planning, and post treatment surveillance.

SUMMARY: Discrimination of extraaxial and intraaxial brain tumors is relatively easy with only anatomic imaging; however, the major diagnostic challenge is to reliably, noninvasively, and promptly differentiate intraaxial tumors to avoid biopsy and follow-up imaging studies.

Clinico-radiological correlation of infarct patterns on diffusion-weighted magnetic resonance imaging in stroke

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PURPOSE: To determine the frequency of various infarct patterns of stroke and their relationship with good functional outcome of the patient according to the Barthel index.

MATERIALS AND METHODS: 108 patients with acute stroke were enrolled. MRI was obtained with departmental protocol and diffusion weighted sequences. The clinical data was collected from files and functional outcome was assessed at the time of admission using Barthel Index which was dichotomized in poor and favorable outcomes. Types of infarct patterns cortical, subcortical and territorial infarcts were recorded from Diffusion weighted images.

RESULT: Amongst the 3 infarct patterns subcortical infarcts were noted with the highest proportion 62% (67/108). Highest proportion of territorial infarcts (78.6%) were significantly associated with a poor outcome in comparison to cortical and subcortical infarcts while highest proportion of cortical infarcts (61.5%) were significantly associated with good outcomes followed by subcortical and then territorial pattern (p-value 0.002). Amongst the risk factors, hypertension was found to be in highest proportion followed by diabetes and showed association with poor outcome which was clinically significant.

CONCLUSION: Infarct patterns can be reliably used to predict functional outcomes in patients. The highest proportion of infarct pattern with good outcomes was seen with cortical infarcts followed by subcortical and then territorial infarct pattern. Hypertension and coronary artery disease were the effect modifiers showing significant association with poor outcomes.

Role of MRI in characterizing intra cranial fat containing lesions

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CASE SERIES: During the last eight months period a total of 6 patients were reported with high suspicion of intracranial fat containing lesion on CT scan brain. These patients underwent MRI for further characterization and all the cases were re assessed by MRI brain; the sequence for which included MRI T1, T2, flair and fat suppression. These patients were presented with mild clinical CNS symptoms like headache and dizziness. Out of six, five patients on MRI showed hyperintense lesions on T1W, T2W and on fat suppression didn't show any signal suppression confirming intracranial dermoid. In one of these patients there were widely spread hyperintensities in frontal horns and subarachnoid spaces. On the basis of radiological images, diagnosis of ruptured intracranial dermoid was made in this patient. At surgery typical dermoid cyst containing whorls of hair was removed in this patient.

DISCUSSION/RESULTS: Intracranial dermoids account for less than 1% of all intracranial tumours, and are most frequently localized in the parasellar, frontobasal region, or posterior fossa. They are composed of an outer dense fibrous capsule, lined with stratified squamous epithelium and contain constituents of the dermis most frequently hair.

After rupture the fatty content can spread into ventricles or the subarachnoid spaces.

MRI is useful in characterizing intracranial fat containing lesions (dermoid) and their intraventricular and subarachnoid extension.

6-Year review of endovascular coil embolization for intracranial aneurysms. A single centre experience in Pakistan

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Endovascular coil embolization is recognized and accepted globally as the treatment modality of choice for intracranial aneurysms. A total of 86 patients underwent coiling of intracranial aneurysms at our institution during this interval. We present our experience as one of the very few institutions of a third world country carrying out such an expensive and specialized procedure. Patient spectrum, clinical complaints, patient expectations, patient referral, in-house management facilities, neurosurgery backup support, financial shortcomings, clinical outcomes, successes, complications and disasters and follow up profiles will be highlighted. In essence this review paper will point out the difficulties and technicalities faced by a single centre belonging to a third world country with limited resources, but still managing to deliver such a vital service for patients with intracranial aneurysms.

SESSION-II : - PAEDIATRIC RADIOLOGY

REVIEW TALK

Stroke in children: Imaging guidelines

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Stroke is far less common in children as compared to adults. Conversely it is the major cause of morbidity due to its long-term neurological deficits. It is slightly more common in infants less than two years of age and risk is greatest in the first two months of life. The common causes of stroke in children are sickle cell disease, congenital or acquired heart diseases, chronic anemia and head and neck infections. Head trauma appears to be a trigger for arterial stroke and dehydration for venous stroke.

According to Scientific Statement From a Special Writing Group of the American Heart Association Stroke Council and the Council on Cardiovascular Disease in the Young ultrasound is the imaging modality in neonates due to its easy availability and easy to perform. However it may miss superficial and ischemic lesions. CT on the other hand readily detects hemorrhagic and superficial stroke but easily misses venous infarcts. MRI with diffusion-weighted imaging picks both arterial and venous infarcts before any other imaging modality. In addition it shows other parenchymal abnormalities which may mimic clinically stroke. With susceptibility-weighted imaging technique acute hemorrhage is also readily picked.

CT angiography is recommended in an explained hemorrhage to show arterial-venous malformations. Catheter angiography has its role only if therapeutic options are available as its technically difficult in pediatric population. Child's clinical condition will dictate the imaging modality as CT is quick to perform in an unstable child. However MRI is the Gold-Standard for early detection of arterial and venous infarcts.

Imaging in neonatal respiratory distress

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Respiratory distress is common neonatal emergency. It is the most common cause of admission in neonatal surgical intensive care. The distress can be due to variety of clinical conditions; the common conditions treated in medical intensive care units are transient tachypnea of new born, respiratory distress syndrome, pneumothorax and congenital cardiac anomalies. The common surgical causes are congenital diaphragmatic hernia, congenital lobar emphysema, cystic adenomatoid malformation, oesophageal atresia with or without tracheo-oesophageal fistula. Obstructive lesions are choanal atresia, Pierre-Robin syndrome, Lymphangioma, teratoma, cysts, subglottic stenosis and laryngo tracheomalacia, cerebral haemorrhage, brain oedema, metabolic disorders and abdominal distention can also be the etiology. Imaging plays very important role in medical as well as surgical causes to diagnose as well as pre-operative evaluation.

FREE PAPERS

Sonographic evaluation of intracranial hemorrhages in premature and low birth weight infants as primary imaging modality

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INTRODUCTION: Neurosonography with real time high resolution has gained increasing popularity as primary diagnostic imaging modality due to its portability and wide application in the evaluation of almost every form of intracranial pathology in neonates. Periventricular-intraventricular hemorrhages (PVH-IVH) can be identified, delineated accurately that improves diagnostic accuracy as well as examiner confidence with sensitivity of 96%, specificity 91% in its early diagnosis and its complications in high risk preterm and low birth weight as compared with other diagnostic imaging modalities. 50% PVH-IVH occurred in first 24 hours in subependymal germinal matrix at caudothalamic notch while 70% intracranial hemorrhages occurred in first 72 hours after birth and it remains a significant cause of both morbidity and mortality in premature infants.

OBJECTIVE: To evaluate usefulness of neurosonography in excluding or confirming the diagnosis of ICH and its complications in premature and low birth weight infants.

STUDY DESIGN AND SETTING: It is a cross sectional study on prospective data conducted at Ultrasound section of Radiology Department including intensive care nursery unit of pediatrics department at Children Hospital Lahore.

DURATION OF STUDY: The study was conducted for one year from March, 2010 to February, 2011.

SUBJECT AND METHODS: In this prospective study premature and low birth weight infants were 50 in number including 30 male and 20 female whose gestational age was less than 32 weeks with birth weight < 1 kg. Every infant had at least three serial cranial ultrasound by Toshiba "B" scanner with high multi frequency 3.5 to 5 MHz convex, linear probes, on the day first, 3rd, 5th and 7th day of admission and later on as pre-discharge & follow up to monitor its complications. All scanning was done at the request of the neonatologists fulfilling the inclusive criteria, high frequency transducer was placed at anterior fontanelle which provides excellent acoustic window by alternating its angulations gives maximum detail of infant-brain parenchyma and accurate diagnosis as well as precise localization of the intracranial hemorrhages in infants brain images were studied and analyzed in both coronal & sagittal planes.

RESULTS: In this study the overall prevalence of PVH-IVH was in 35 cases (70%) including 15 male (30%) and female 20 (40%) while 15 cases (30%) had normal cranial ultrasound. Isolated GMH (Grade I) was in 10 cases (28.5%), IVH (Grade II) with normal size ventricles 5 cases (14.5%), IVH with dilated ventricular system 12 cases (34%) and intraparenchymal hemorrhage (IPH) Grade IV in 8 cases (23%). Our study shows safe and excellent success with diagnostic accuracy 86%, sensitivity 88.5% specificity 80% and positive predictive value 91% as compared with other diagnostic modality in the diagnosis of PVH-IVH in premature and low birth weight infants. In follow up cases of NSG monitoring complications were hydrocephalus 8 cases (22.8%), 5 cases subependymal cyst (14.5%), Porencephalic cyst 4 cases (11.5%) and Periventricular Leukomalacia (PVL) in 3 cases (8.5%).

CONCLUSION:

1. Neurosonography is preferred primary imaging diagnostic screening modality and is classically performed through the anterior fontanelle, popular due to portability, cost effective, no radiation hazards, bedside quick scanning with minimal disturbance of the infant as compared with other imaging modalities like CT scan and MRI of brain.
2. The prevalence of PVH-IVH increases with both decreasing gestational age and birth weight of preterm infants. 70% intracranial hemorrhages occurred in first 72 hours after birth in premature infants.
3. The survival of premature infant decreases with increasing the grade of intracranial hemorrhage, poor prognosis occurs with grade III and IV- ICH with neurological sequelae.
4. Pre-discharge and follow up ultrasound scan monitoring should be performed for detection of any late onset significant complication including porencephaly as well as hydrocephalus.
5. All premature and low birth weight (i.e. < 1000 g) infants should be subjected routinely to NSG for screening & early diagnosis of PVH-IVH and search for alternative diagnosis can be ended confidently.

Comparative study of Cystosonography & Micturating cystourethrography (MCUG) in the evaluation of vesicoureteric reflux in children

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INTRODUCTION: Vesicoureteric reflux (VUR) is very common in children seen more in girls than boys & must be investigated even after a single episode of infection in order to prevent progressive renal complications. VUR is defined as retrograde flow of urine from the bladder into the ureter & sometimes in to the kidneys that provides route for ascent of bacteria in the presence of urinary tract infection. The persistent VUR will result in proteinuria, hypertension, renal scarring and even renal failure. Real time cystosonography (CSG) including

renal examination continuously play an important role as non invasive screening primary imaging modality & has allowed identification of children with urinary tract abnormalities which can result in diagnosis of VUR prior to the development of UTIs. The study concluded that unnecessary MCUG performed under Huoroscopy as part of screening tool is significantly reduced (by almost 53%) having ionizing radiation hazards to gonads in children. The overall prevalence of VUR in asymptomatic normal children ranges from 0.4% to 1.8% and in children with UTIs is 13%. Early diagnosis and treatment of this problem will reduce the above risks and ensure the quality of life of children with VUR.

OBJECTIVE: To evaluate diagnostic usefulness of Cystosonography by comparing with MCUG in the detection and grading of VUR in clinical suspected recurrent urinary tract infections in children.

STUDY DESIGN AND SETTING: It is a cross sectional study on prospective data conducted at Radiology Department of the Children Hospital Lahore.

DURATION OF STUDY: The study was conducted for six months from August, 2010 to January, 2011.

MATERIALS AND METHODS: It was a cross sectional study on prospective data of 40 children with clinical suspicion of VUR, majority of them were presented as lethargy, crying with pain abdomen, fever off & on, dysuria, poor urinary stream, foul smelling & dribbling urine. All the children underwent for prevoid and post void CSG, its imaging findings in transverse & longitudinal planes were documented, analyzed & later on compared with MCUG performed under Huoroscopy as the gold standard. Detection of VUR was based on two Sonographic criteria (1) Presence of anechoic fluid in the distal ureter unilateral or bilateral and (2) Retrograde hydroureteronephrosis that may progressive increase in dilatation of the PCS with fluid in kidneys. The grading of VUR was based similar on USG and MCUG study as (1) Grade I: Dilatation of ureter with fluid only; (2) Grade II: Retrograde hydroureter up to minimal dilated PC and (3) Grade III-V: Retrograde hydroureteronephrosis with mild to marked increased tortuosity of ureters.

RESULTS: The study include 40 children with clinical suspicion of VUR including 25 (62.5%) female & 15 male (37.5%) with 10 infants of age up to 6 months & 30 children of age between 7 months to 3 years, who underwent preliminary prevoid & post void cystosonography including simultaneously Ultrasonography of kidneys, later on to confirm and comparing its findings with MCUG under fluoroscopic control was performed as gold standard in the grading of VUR and detection of associated any abnormalities. The data was analyzed which revealed 30 cases (75%) were abnormal having primary VUR in 12 cases (40%) secondary VUR in 18 cases (60%) while 10 cases (25%) were normal in the study. The overall unilateral VUR seen in 8 cases (26.7%) & bilateral VUR seen in 22 cases (73.3%) while on the basis of MUCG study grading of VUR was seen as grade-I in 2 cases (6.7%), Grade-II in 3 cases (10%), Grade-III in 5 cases (16.7%), Grade-IV in 10 cases (33.3%) Grade-V in 6 cases (20%) & VUR seen in more than one grade in 4 cases (13.3%). The CSG study shows false positive in 3 cases & true negative result were in 4 cases in our study. The diagnostic accuracy 82.5%, sensitivity 85%, specificity 77%, and positive predictive value 88.4% & negative predictive value 71.4% in our study. The CSG is well tolerable, non invasive primary imaging modality useful in the early diagnosis & grading of VUR & is used for screening of siblings in families of affected children as compared to MCUG which was 100% sensitive as gold standard, should be reserved, justified due to invasiveness & ionizing radiation effect to gonads in children.

CONCLUSION: The cystosonography is noninvasive & simple primary sensitive imaging modality with diagnostic accuracy proved to be comparable with MCUG study for the detection and grading of VUR in clinical suspected urinary tract infections in children. It also provides simultaneous evaluation of renal size, contour, parenchymal thickness, any scarring & its corticomedullary echogenicity in addition to real time visualization for any bladder abnormalities. Both Sonographic criteria's are sensitive with definitive signs of VU reflux indicating obviously non obstructive hydroureteronephrosis & increased tortuosity of ureters thus reducing the unnecessary MCUG studies without justification due to invasiveness & radiation hazards especially to gonads in children. Isotope MCUG is the alternative investigation of choice of in the follow up cases of

VUR in children. Mild grade of VUR usually resolve as child grows & intramural part of distal ureter lengthen. Surgical treatment is recommended for higher grades of VUR (IV-V) with any associated abnormalities. Long term antibiotics therapy is given to maintain the sterile urine & therefore prevent reflex nephropathy. The significance of UTIs in medical profession needs to be improved at primary health care level in early detection & management of VUR to prevent risks of progressive renal damage in children.

Evaluation of cardiac iron load in thalassemia major patients with MRI T2*

Abdul Raouf

PURPOSE: To compare cardiac iron load in patients of Beta thalassemia with their controls by using MRI T2* technique.

MATERIALS AND METHODS: A total of 28 subjects were taken out of which 14 were diagnosed cases of beta thalassemia on regular transfusion therapy, and 14 were their age matched controls with no history of iron load dependent heart disease. T2* for cardiac iron was performed using 1.5 Tesla MRI machine and all the subjects were scanned using a single, short axis, trans septum slice acquired at two different echo times.

RESULTS: Of 13 patients 50% had no cardiac siderosis, 28.5% had mild to moderate and 21.5% had severe siderosis. There was a statistically significant difference in the mean cardiac T2* of patients as compared to their controls.

CONCLUSION: Thalassemia patients had significantly higher cardiac iron stores as compared to their controls.

PARALLEL SESSION-II:- PACS/MIT

FREE PAPERS

Implementation of RIS/PACS in Mayo Hospital Lahore

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OBJECTIVE: Radiology Information System (RIS) is software made especially for Radiology Departments of Hospitals. It provides access to images and reports results through Picture archiving Communication System (PACS) via LAN/WAN. Physicians and Radiologists can view the images and reports sitting in their offices. All patients record in stored in RIS and there is no need for film printing as images are directly seen on the monitor. This paper will discuss the issues of not having RIS/PACS in radiology department of Mayo Hospital and provide the solution.

METHOD: Radiology Department is a vital and revenue generating part of any Hospital. PACS/RIS is essential for making radiology department very productive and efficient; providing radiologists with best and immediate access to imaging and clinical information so that their interpretation of Radiological images is improved. Radiology Department of Mayo Hospital is serving a large number of people, which are mostly poor patients. Disadvantages of not having RIS/PACS at Radiology department of Mayo Hospital include inefficient time management, poor coordination among consultants, cost of films, and wastage of valuable clinical data. Problems related with artifacts decreasing the diagnostic outcomes.

Mayo Hospital is on the way of installing RIS/PACS system. Vendors are visiting in this regard. Advantages of RIS/PACS at Mayo Hospital would be comfort of patients, time saving, improvements in coordination among consultants, saving of lot of revenue that is been used in terms of films costs, effective clinical data management, which is an asset for future medical research. Free from artifacts hence improved diagnostic value, decreased mobility on the part of doctors and patients.

CONCLUSION: Considering the advantages of this software, it is recommended that RIS/PACS should be installed in Mayo Hospital Lahore as it is been used in other Well reputed big hospitals worldwide.

DAY 2:

SESSION-I : - MUSCULOSKELETAL RADIOLOGY

REVIEW TALK

Approach to imaging in low back pain

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Low back pain (LBP) is the commonest reason for missed work. It is the second most common reason for visits to the doctor's office, outnumbered only by upper-respiratory infections.

Most patients have self-limiting episodes of pain without disability. However one third of patients report persistent pain of moderate severity one year after an acute episode. One out of five report significant disability.

With the help of good clinical history and examination patients may be categorized as having non-specific low back pain, low back pain with radiculopathy and back pain potentially associated with specific spinal cause.

Imaging is discouraged early on as majority of LBP patients improve with conservative therapy. The most common abnormalities seen on imaging are degenerative changes, pars fractures, disc calcification, facet joint arthrosis and spondylolisthesis. Their incidence is similar in patients with back pain and in asymptomatic controls.

Good correlation has been found between back pain and the radiological findings of compression fractures. A strong association between chronic low back pain and fissures in the posterior annulus of the disc is demonstrated on magnetic resonance imaging.

Judicious inquiry is recommended and imaging should be undertaken if only it will change the outcome or will be able to find the cause of pain. X-rays and CT scans have limited ability to exclude serious causes of back pain, the 'red flag conditions' like malignancy, osteomyelitis and spondylitis. CT discography is used to provoke pain so as to find the cause of pain.

In bone scan IV radionuclide adheres to metabolically active bone and is useful in detection of metastasis, infection and radiographically occult fractures.

MRI can detect infections, tumors that bone scan cannot. MRI has superb soft tissue resolution show better visualization of canal and marrow. Diffusion weighted imaging is helpful in differentiating benign versus malignant compression fractures.

Educating the patients about imaging findings care must be taken to emphasize on positive findings as most common positive findings may not be the cause of pain. However, sensible use of imaging diagnose the 'red flag conditions' effectively.

Knee pain: MRI of sports injuries

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Although plain radiographic films have traditionally been the first diagnostic imaging study performed in the evaluation of the painful knee, today they are useful only for evaluating joint space narrowing, alignment, and major trauma. Over the past 5-6 years, magnetic resonance imaging (MRI) has become the premier, first-line imaging study in Pakistan that should be performed in the evaluation of the painful knee. This article describes the MR evaluation of internal derangement of the knee (tears of the menisci and the cruciate and

collateral ligaments), osteochondral abnormalities (chondromalacia, osteoarthritis, and osteochondral defects), synovial cysts, and bone bruises.

FREE PAPERS

The reliability of classification systems for proximal humerus fractures with three-dimensional computed tomography imaging

S. Yousaf, D. Mok

OBJECTIVE: The purpose of this study was to determine whether three-dimensional reconstructed computed tomography (CT) images can improve intra-observer and inter-observer reliability for classification systems of proximal humerus fractures compared to plain radiographs and two-dimensional CT images.

METHODS: Twenty proximal humerus fractures were classified independently by six orthopaedic trauma surgeons in training using the Neer classification systems. Inter-observer agreement was measured for classification and treatment by plain X-ray (scapular AP and lateral), CT scans and 3D CT reconstruction. The intra-observer and inter-observer reliability were assessed using kappa statistics.

RESULTS: For overall classification 3D reconstruction and 2D CT scan both had significantly higher agreement on classification than X-ray; however the agreement on treatment was best with 3D CT reconstruction scans

CONCLUSION: Three-dimensional CT reconstruction is a more reliable radiographic modality than 2D CT in evaluation of proximal humeral fracture patterns. Our findings support the use of modern imaging modalities for the diagnosis of complex intra and periarticular fracture patterns for more reliable classification.

The correlation between lumbar facet fluid detected on MRI with degenerative spondylolisthesis - a prospective study

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INTRODUCTION: Magnetic resonance imaging (MRI) is used to evaluate low back pain; however, MRI in the supine position does not always reveal degenerative spondylolisthesis. The objective of this prospective study was to evaluate increased fluid in the lumbar facet joints seen on the supine axial T2 MRI, and the correlation of this finding with radiographic evidence of lumbar instability using lumbar flexion extension views as gold standard.

METHODOLOGY: We prospectively analyzed weight-bearing flexion-extension lumbosacral radiographs and lumbosacral MRI in the supine position in patients with low back pain and/or radiculopathy. The study was done at Liaquat National Hospital from January 2010 to August 2011. Total 61 patients met the inclusion criteria. Variables including age, gender, presence and amount of facet fluid and its level and the presence and grade of degenerative spondylolisthesis on MRI and flexion extension radiographs. The correlation between lumbar facet fluid detected on MRI with radiographic instability was assessed.

RESULTS: Out of 61 patients included in the study all had degenerative disc disease and facet joint degeneration on MRI. 24 (39.34%) of 61 had no exaggerated fluid while 37 (60.65%) of 61 patients had exaggerated fluid on MRI. 4 (16.67%) of 24 patients had instability on flexion extension radiograph and 20 (83.33%) of 24 had no instability. Of those patients who did have exaggerated facet fluid on MRI 32 (86.49%) of 37 had instability on flexion extension lumbar radiograph and 5 (13.51%) of 37 patients had no instability.

CONCLUSION: In our study we observed a linear correlation between facet fluid detected on MRI and lumbar instability on dynamic X-rays especially in which the amount of fluid was > 2mm.

Malignant peripheral nerve sheath tumor, innumerable neurofibromas and plexiform neurofibroma in a patient with neurofibromatosis I

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Neurofibromatosis type I is a genetic disorder characterized by neurocutaneous manifestations including skin pigmentation and tumor development along nerves. The incidence of developing malignant peripheral nerve sheath tumor (MPNST) is 8 - 12 % in lifetime of patients with NF I. We present a young 28 year old male with stigmata of NF I having a large plexiform neurofibroma involving right arm and multiple cafe au lait spots. His imaging workup included radiographs, IVP, color Doppler ultrasound, nuclear scan, CT scan and MRI. A large right paraspinal mass was revealed with involvement of adjacent vertebrae and ribs which on biopsy was diagnosed as malignant peripheral sheath tumor (MPNST). Multiple neurofibromas along the course of nerves were also found within the lower limbs as well as lumbosacral plexus. They had typical target appearance. His bilateral lower limbs had approx. 100 neurofibromas. Presence of MPNST and multiple innumerable neurofibromas and extensive imaging work up made it a unique case which has never been reported from this part of the world.

The diagnostic value of MRI in foot and ankle pathology

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MRI is being used with increasing frequency and seems to have become more popular as a screening tool rather than as an adjunct to narrow specific diagnoses or plan operative interventions. We retrospectively reviewed 129 consecutive patients referred over a 6-month period for MRI of ankle and foot at our department. Our experience at Shifa international hospital regarding ankle and foot MRI will be shared. We categorized our findings into AVN of talus, Morton's neuroma, diabetic foot, tibiofibular syndesmotic disruption, giant cell tumors of the tendons around ankle, tenosynovitis, edema and edema related conditions, Deltoid and spring ligament injuries, tarsal tunnel and tarsal sinus syndromes, os trigonum syndrome, extensor, flexor and peroneal tendon tears and tendinopathy that helped our surgeons to carry out appropriate treatment.

CONCLUSIONS: We conclude that Ankle injuries and sprains and other pathologies of foot ankle are a frequently encountered problem in clinical practice. Due to the complications of prolonged ankle pain, high recurrence rate, and chronic ankle instability, an MRI study of the ankle / foot should be utilized due to its high accuracy in the diagnosis of pathology and subsequent diagnosis related management.

Comparison of electromyography / nerve conduction studies and Magnetic resonance imaging in diagnosis of lumbosacral radiculopathy

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OBJECTIVE: To compare EMG/NCS with MRI in diagnosis of lumbosacral radiculopathy.

DESIGN: Cross-sectional comparative.

PLACE AND DURATION OF STUDY: The study was carried out at Armed forces institute of rehabilitation medicine, for a period of six months, from January 2007 to June 2007.

MATERIAL AND METHODS: Fifty consenting patients with clinical lumbosacral radiculopathy were included, they underwent MRI and NCS/EMG, and then both procedures were compared for diagnosis of radiculopathy.

RESULTS: MRI and NCS/EMG had comparable sensitivity but MRI was less accurately correlated with clinical estimated level of radiculopathy.

CONCLUSION: Both NCS/EMG and MRI are time sensitive investigations which provide different information regarding the pathology. NCS/EMG reveal physiological etiology of radiculopathy, compared to MRI, which gives the anatomical information. Every patient with clinical lumbosacral radiculopathy should undergo NCS/EMG for confirmation of diagnosis. However, when anatomical lesion is suspected, or surgical intervention is planned, MRI should complement it.

Percutaneous embolisation for vascular complication in total hip arthroplasty

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Vascular damage during hip arthroplasty is a rare complication but has significant morbidity and mortality.

We describe a cohort of patients who underwent total hip replacements with post operative haemorrhage. Each patient required large transfusion of blood products; one underwent two further operations with no cessation of the haemorrhage and in one case a CT scan was performed.

All the patients in this case series required a multidisciplinary approach to management and treatment by percutaneous transcatheter embolisation by interventional radiologists for the post operative haemorrhage.

We conclude that prompt percutaneous embolisation as treatment for significant vascular injuries following hip arthroplasty is safe and effective. It is a minimally invasive procedure, can negate the need for significant blood transfusion and is potentially a life/limb saving procedure.

Usefulness of transthoracic high-resolution ultrasound for radiographically undetected rib fractures.

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BACKGROUND: Blunt thoracic trauma comprises more than half of the rib fractures along with soft tissue injury. The sensitivity of conventional chest X-rays has been shown to be limited in showing rib fractures.

AIMS/ OBJECTIVES: To determine the usefulness of transthoracic high resolution ultrasound in investigating the possible acute rib fractures which are overlooked on chest X-rays in minor blunt chest trauma.

MATERIAL AND METHODS: This cross-sectional study was conducted in Department of Radiology, Omer Hospital, Lahore, between January and December 2010. A total of 28 adult subjects of either gender (25 male, 3 females; age range 18-65 years) were enrolled with minor blunt chest trauma, divided in two age groups; less than 40 years and above 40 years. The etiologies of trauma were: road traffic accident (n=13, 46.5%), direct trauma (n=7, 25%), fall (n=6, 21.4%) and sports injury (n=2, 7.1%). The site of the trauma was the right hemithorax in 11 (39.2%), left hemithorax in 8 (28.7%) and bilateral in 9 (32.1%) cases. Ecchymosis on the traumatized site was found in 5 (17.85%) patients only; although variable degree of tenderness was more frequently observed on the affected site of the chest wall. Preliminary chest radiograph showed no evidence of rib fracture. On follow up after 5 days, transthoracic ultrasound examination of most painful area with focal rib tenderness was examined.

RESULTS: A total of 23 (82.1%) patients demonstrated rib and chondral fractures on transthoracic ultrasound examination. There were 15 cases rib fracture (65.3%), 6 cases of chondral fracture (26%) and 2 cases of costochondral disruption (8.7%). An associated subperiosteal hematoma was found in 4 (17.4%) patients. The intensity and duration of pain in patients with bony rib fractures was significantly higher than that of patients with chondral rib fractures.

CONCLUSION: Targeted high resolution ultrasound examination of chest wall should be performed as a more rewarding modality for the detection of occult rib and chondral fractures in the subjects having long standing chest wall pain after minor blunt trauma besides normal chest radiograph.

Weight bearing MRI-evaluation of low back pain in spondylolisthesis

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PURPOSE: To evaluate the utility of weight bearing MRI in patients with low back pain due to spondylolisthesis resulting in spinal canal and / or neural foramen stenosis.

MATERIALS AND METHODS: 50 patients were imaged on a low field (0.25T) dedicated musculoskeletal MRI (Esaote G-scan). All the patients had grade I or II spondylolisthesis with spondylolysis suffering from low back pain of 6 months or more duration which was refractory to conventional treatment. Supine T2WI axial (parallel to the intervertebral disc) and sagittal images were acquired. The bed was tilted to 90 degree upright position with patient standing on the platform on both his feet (weight bearing position) and another set of T2 WI axial and sagittal images were taken. They were compared for the degree of spondylolisthesis, area of the spinal canal and area of the bilateral neural foramina at that level.

RESULTS: 38 of 50 patients showed a significant increase in the degree of spondylolisthesis (average 4.3mm, p<0.05), decrease in the cross sectional spinal canal area and area of the neural foramina on both sides. 10 patients showed no significant change while 2 patients showed reduction in the degree of spondylolisthesis.

CONCLUSIONS: Low back pain is a significant clinical problem and account for great morbidity, health care costs and lost working hours. Most backaches remain intractable even on extensive imaging. Our study indicates a definite advantage in diagnosing the cause for postural chronic backache when the supine non-loaded spinal MRI may be normal. Weight bearing exaggerates the degree of spondylolisthesis on spine loading and can only be picked on weight bearing MRI imaging.

DAY 2:**SESSION-II : - INTERVENTIONAL RADIOLOGY****REVIEW TALK****Liver DC Bead embolisation**

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ABSTRACT: In many RCS in the past 6-7 years, the drug-eluting bead groups have shown higher rates of complete response, objective response, and disease control compared with the cTACE group (27% vs. 22%, 52% vs. 44%, and 63% vs. 52%, respectively). The hypothesis of superiority was not met (one sided $P=0.11$). However, patients with Child-Pugh B, ECOG 1, bilobar disease, and recurrent disease showed a significant increase in objective response ($P=0.038$) compared to cTACE. DC Bead was associated with improved tolerability, with a significant reduction in group showed higher rates of complete response, objective response, and disease contraserosus liver toxicity ($P < 0.001$) and a significantly lower rate of doxorubicin-related side effects ($P = 0.0001$).

CONCLUSION: TACE with DC Bead and doxorubicin is safe and effective in the treatment of HCC and offers a benefit to patients with more advanced disease.

FREE PAPERS**Two years experience with tunneled catheters in dialysis dependent patients**

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OBJECTIVES: To assess mean effective duration of a tunneled catheter in dialysis dependent patients and reasons of its failure.

METHODS: A retrospective cross sectional was conducted enrolling 108 patients who needed vascular access for dialysis. Each patient underwent tunneled catheter insertion under aseptic conditions and was followed till its removal. Data was collected from hospital data base system and patients medical record and analysed using SPSS.

RESULTS: Mean age of patients was 56.36 yrs with female comprising 60.18% (n=65) of study group. Right internal jugular vein was preferred (92%). Mean effective duration of a catheter was 132.76 days (range 0-437). 39.8% (n=43) of catheters were prematurely removed as patients had either functional fistulae / bridge grafts formed or their transplant done. Infection rate was 27.8% (n=30) and Staph aureus was the most common organism 33.33% (n=10).

CONCLUSION: Tunneled catheter is an effective mean of hemodialysis in patients who are waiting for renal transplant or fistula / bridge grafts formation.

Endovascular treatment of traumatic carotid cavernous fistula

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OBJECTIVE: To evaluate the technical success, complications and outcome of treatment in patients with carotid cavernous fistula (CCF) managed by endovascular techniques.

MATERIALS AND METHODS: Medical records and radiology reports of those 26 patients were retrospectively reviewed who were treated for carotid cavernous fistula by endovascular techniques at Aga Khan University hospital from November 2000 to December 2009. 20 patients were male and 6 were female, age range of 14 to 62 years, mean age 30.25 years. Prior to treatment, clinical diagnosis was confirmed in all patients with cross sectional imaging. Endovascular procedures were performed under general anesthesia by interventional neuroradiologist through arterial or venous approach. For fistula closure, detachable balloons, coils and / or glue was used. Follow up was done via patient's files and on phone.

RESULTS: Technical success rate of endovascular treatment was 92.3% Single session of embolization was performed in 20 patients while 2 sessions were required in 4 patients due to recurrence. Complication rate was 15.3% (n=4) 1 patient had infarction. There was no procedure related mortality. 5 patients lost to follow up. In rest of the 19 patients follow up ranged from 1 to 14 months (Mean 11.0 months) 8 out of 19 patients (42.1%) showed complete resolution of symptoms and 9 (47.3%) reported improvement.

CONCLUSION: Endovascular treatment with detachable balloons or coil embolization is a safe and useful therapeutic option in cases of carotid cavernous fistulas.

Percutaneous cholecystostomy: Is predicting clinical outcome from radiological feature possible?

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OBJECTIVE: To evaluate if clinical outcome can be predicted from radiologic features in whom cholecystostomy was performed for the treatment of acute cholecystitis.

MATERIALS AND METHODS: The clinical records and radiologic reports of patients who underwent percutaneous cholecystostomy for suspected acute cholecystitis between Jan 2008 to May 2010 were retrospectively reviewed. A response to percutaneous cholecystostomy was defined as an improvement in clinical symptoms and signs or reduction WBC within 72 hr of percutaneous cholecystostomy. The patient's clinical presentation, presence of gallstones, gallbladder wall thickening, sludge, distention, pericholecystic fluid and perforation was recorded. The clinical and radiologic findings were analyzed for their relationship to response to percutaneous cholecystostomy.

RESULTS: Sixty-four percutaneous cholecystostomies were performed in 33 male and 31 female patients and were technically successful in all. 55 patients had gallstones, 9 did not. 15 were in the intensive care unit or from ER. Catheter placement was successful in all however one patient went into shock in immediate post procedure period but was managed successfully. 54 patients responded to percutaneous cholecystostomy. 6 patients condition remained unstable and they expired during the same admission. In 3 patients deteriorated initially and WBC also raised but later during the admission period they stabilized. 5 patients the patient's general condition became stable however WBC continued to remain slightly high during the 3 day period of data collection. Patients clinical symptoms and signs and other features as gallstones, pencholecystic fluid, drop in WBC, bile culture are correlated to see their association with patients positive or negative response. Data processing is still in process.

CONCLUSION: Localized symptoms and signs, presence of calculi and pericholecystic collection are predictive of a positive response to percutaneous cholecystostomy however other co morbid conditions and age make it difficult to classically identify the sole indicators for the predictors of the outcome.

Endovascular stent placement versus balloon angioplasty for central venous stenosis in hemodialysis patients

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INTRODUCTION: Central venous stenosis is a major hindrance to the long-term arteriovenous access in the hemodialysis patients. The goal of treatment is to relieve the patient's symptoms while maintaining the function of AVF. The optimal management for central venous stenosis is still undecided and incorporates surgical and endovascular interventions.

OBJECTIVE: The purpose of this study was to determine the outcomes of primary angioplasty (PTA) vs primary stenting (PTS) for the treatment of central venous obstruction in hemodialysis patients.

MATERIALS AND METHODS: Between January 2002 and March 2010 forty three patients with central venous stenosis on venogram were managed by endovascular intervention. Stenotic lesions greater than 50% or inducing extremity swelling and inadequate dialysis were treated. The primary treatment was balloon angioplasty, and stent placement was done in angioplasty-resistant obstructions. Patients presenting with recurrence after stent placement were further treated by angioplasty. Supplementary stenting was performed in patients who had angioplasty-resistant recurrences.

RESULTS: Among 43 patients 28 had stenosis and 15 had occlusion in the central veins. For the initial treatment, 25 patients underwent percutaneous transluminal angioplasty (PTA) and 18 patients underwent stent placements. The mean age was 56.7 yrs. There were 19 male and 24 female patients. The follow-up duration was 18-36 months. 10 patients underwent second intervention while 3 patients underwent third intervention. Veins treated were brachiocephalic vein (n=17), subclavian vein (n=13), SVC (n=5) and axillary vein (n=8). Patency of PTA at 6, 12 and 18 months were 80%, 60% and 48%; whereas for stenting it was 77%, 61% and 44% respectively. There were no significant differences in patency with regard to patient sex, the type of stent used and the vein or veins treated.

CONCLUSION: Endovascular treatment is an appropriate primary intervention in hemodialysis patients with central venous obstruction. Balloon angioplasty has a slightly higher patency than endovascular stenting however stenting should be considered in angioplasty-resistant lesions.

Pictorial presentation of management of intracranial aneurysm with detachable coil

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Intracranial aneurysm are not an uncommon entity with a prevalence of 0.5-6% in adult general population. Patient with ruptured aneurysm present with headache, coma or severe neurological disorder. Ruptured aneurysm may bleed again within 24 hour after initial presentation. Intracranial aneurysms are now increasingly treated with endovascular coiling. A microcatheter is positioned into the aneurysm, and detachable coils are deployed to decrease the amount of blood or to stop blood from filling the aneurysm. We performed aneurysmal coiling in 43 patients (23 males and 20 females), age range 11 to 70 years, at Radiology Department of Aga Khan University Hospital. Aneurysm size ranged from 3mm-22mm (mean size 8±4 mm). 32 aneurysms had narrow necks while 11 aneurysms had wide necks. Most common aneurysm site was anterior communicating artery (30.2%). Technical success rate for endovascular intracranial.

Aneurysm coiling was 95.3 % (41 out of 43 patients). In 2 patients he procedure was unsuccessful due to anatomically difficult catheterization of aneurysm or supplying artery. We intend to present the procedure involving the coiling of different vessels and the difficulties encountered in a pictorial fashion.

Treatment of intracranial arteriovenous malformation (AVM) with gamma knife stereotactic radiosurgery (GKSRS): A case report

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ABSTRACT: Intracranial arteriovenous malformations (AVMs) are relatively uncommon etiology of intracranial hemorrhage that can cause grave neurological symptoms and even death in the younger population. Gamma knife radiosurgery is a relatively new and effective non-invasive alternative for treatment of complex deep seated intracranial AVM, for which traditional brain surgery is not an option. The goal of the treatment is to reduce the size and flow of blood through the AVM.

We present a case of 27 years old male patient who had an episode of intracranial bleed with sudden loss of consciousness, right sided weakness and aphasia. CT angiography revealed deep left parietal AVM supplied by left choroidal artery from posterior cerebral artery (PCA) and another feeder from bifurcation of the left internal carotid artery (ICA). He was treated with Gamma knife radiosurgery and the follow up CT angiogram done a year later showed almost complete resolution of AVM with excellent symptomatic recovery.

Comparison between bone marrow biopsy needle and bone biopsy needle in bone biopsies

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PURPOSE: To compare the bone marrow biopsy needle and bone biopsy needle in bone biopsy considering cost effectiveness, core of sample and technical issues.

MATERIALS AND METHODS: Retrospective study was performed. 30 randomly selected patients who were referred to Radiology department, Shifa International Hospital, Islamabad for bone core biopsy were studied. A bone biopsy needle has been compared with a bone marrow biopsy needle used for bone core biopsy in these patients. Both needles were compared in cost, core of sample and technical issues.

RESULTS: The bone marrow biopsy needle technique was found to be superior to the bone biopsy needle considering all the parameters.

Experience with Permcath, a tunneled double lumen dialysis catheter-An institutional review

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PURPOSE: Tunneled dialysis catheters are widely used as an alternate mean of vascular access in patients requiring dialysis. The study is performed to access the outcome of Permcath placed in Radiology Department of Aga Khan University Hospital.

MATERIALS AND METHODS: The outcomes were retrospectively analyzed of 75 hemodialysis catheters placed in 74 patients from June 2010 through May 2011. Insertion related complications, patency rate and freedom from infection were analyzed

RESULTS: Seventy-five Permcaths were placed in 74 patients. Immediate technical success was 100% (75 of 75 catheters). The procedural complication rate was 6.6% (5 catheters). Procedural complications included air embolism

with no clinical sequelae (three procedures), prolonged oozing from the tunnel (one procedure) and inadvertent puncture of Carotid artery not requiring any intervention (one procedure). 11 patients were lost to follow up. 7 expired during the study period due to other co-morbid conditions. One developed septicemia secondary to Permcath infection and later expired. Of the remaining 56 patients, 33(62.5%) predominantly had uneventful course during the desired period. 2 developed infection however were treated with antibiotic and remained functioning while their fistula started working and were then removed. Infection occurred in 8 patients (13.8%) resulting in removal of catheters. 13 catheters (23.2%) failed due to mechanical problems, of these 10 were removed within 10 days. Amongst these in 3 patients the internal jugular veins were blocked due to thrombosis, Catheter had to be introduced through Subclavian veins in two and through the thrombus in one however they developed early thrombosis and blockage.

CONCLUSION: Radiological guided Permcath are a reasonable means of vascular access for patients who undergo dialysis. Blockage and infection do limit it from being an ideal choice in chronic renal failure patients undergoing dialysis.

Audit on radiofrequency ablation for hepatocellular carcinoma

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PURPOSE: To conduct an audit on RFA as a curative treatment modality for hepatocellular carcinoma.

MATERIAL & METHODS: We present a clinical audit on Radiofrequency ablation for hepatocellular carcinoma performed at our centre over the last 3 years. A total of 34 cases were selected for this study and were compared against the standard guidelines laid out by the American Association for Study of Liver Diseases (AASLD). Patient selection, indications, tumor characteristics, procedure techniques, complications and patient outcome were compared and analyzed.

RESULTS: All criteria under critique successfully matched with recommendations in the selected guidelines. Selected tumors ranged in size from 1.8cm to 3.6cm. 21% cases had multifocal disease. 87.5% of patients were classified with Childs Pugh A liver disease. Early complication rate including pain was up to 90% (well within expected range): these were well controlled with IV analgesics and only a single patient had a late complication of needle track superficial burn caused by malfunctioning Levine Needle. Procedure failure rate was zero and only 2% of patients showed residual disease on immediate follow. Late recurrence was seen at 12%, primary due to initial tumor size and location.

CONCLUSION: RFA is a viable curative treatment option for patients with HCC, provided patient selection criteria are strictly followed. Selection process and procedure variables matched international recommendations at our institution.

Survival benefit from tace in hepatocellular carcinoma: Impact of tumor characteristics & treatment variations on patient survival

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PURPOSE: To quantify survival benefit of TACE in patients with Hepatocellular carcinoma with respect to tumor characteristics and variations in TACE technique.

MATERIAL & METHODS: We carried out a retrospective study and randomly analyzed 70 patients who had undergone TACE in the last 3 years. Tumor size,

tumor multifocality, vascular involvement, type of TACE procedure (selective right or left, or superselective), Post procedure gelfoam embolization, embolization endpoint and various clinical parameters (AFP levels and Childs score) were analyzed and recorded and compared with patients clinical outcome.

RESULTS: We observed that greater tumor size (>5cm), multifocality, nonselective TACE, Poor lipiodol uptake by the tumor, Level I and IV embolization end points all had less survival benefit. Single tumor with good lipiodol packing and post procedure gelfoam embolization to level II or level III had better prognostic value. AFP level did not correlate with survival benefit, Childs A classification patients did have greater survival benefit.

CONCLUSION: Patient selection and procedure technique are important prognostic parameters in patients undergoing TACE for HCC. Survival benefit is significantly affected by these selection criteria.

Uterine fibroid embolization: Initial experience in our local population

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PURPOSE: To evaluate the results of uterine artery embolization for the treatment of symptomatic uterine fibroids in our local population.

MATERIALS AND METHODS: Medical records and radiological images of all patients undergoing uterine artery embolization (UAE) at Shifa International Hospital (SIH), Islamabad between May 2008 and Sept 2011 was retrospectively analyzed. Ten patients with sonographic diagnosis of uterine fibroids associated with menorrhagia and pelvic pain underwent uterine artery embolization with use of polyvinyl alcohol (PVA) particles. Single femoral access technique was used in all patients. Clinical improvement will be assessed by a questionnaire for symptomatic improvement and follow up ultrasounds, MRIs.

RESULTS: All 10 patients underwent technically successful embolization. Significant reduction in menorrhagia and pelvic pain were seen in most patients one year after the procedure (detailed results yet to be compiled). Majority of patients experienced post procedure pain of various intensities, which was treated conservatively. One patient developed infection, a known complication of this procedure.

CONCLUSION: Uterine artery embolization represents a promising method of treating symptomatic uterine fibroids. Further studies with larger patient population will be required to assess clinical response and durability of this procedure in our local population.

SESSION-III : - MOLECULAR IMAGING

REVIEW TALK

Stereotactic Radiosurgery (SRS), J.P.M.C. Karachi

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This whole body SRS facility is not available in any other public or private sector hospital of the country. In USA cost of treatment on one patient varies from 50,000 to 90,000 USD. This can completely cure many cancers and saves patients from disabilities. This not only treats cancer but can also be used for curative treatment of many non cancerous conditions and pain management.

We have procured CYBER KNIFE Robotic Radiosurgery equipment next generation alternative to surgery delivers treatment with sub-millimeter accuracy.

This unit treats whole body intracranial (brain) and extra cranial (lung, spine, prostate, liver, pancreas etc) lesions. Treat lesions previously determined too difficult to treat. Ablates tumors while minimizing radiation to healthy tissue and critical structures. Delivers high cancer killing doses with minimal or no side effects.

This unit provides an alternative to surgery that is convenient and non-invasive. Minimal recovery time, outpatient procedure that does not require anesthesia, allows for an immediate return to normal activities. Minimal risk, no post treatment complications and minimal side effects.

I will talk about the project objective, procedure, applications and benefits.

PET/CT in thyroid cancer

Maseeh uz Zaman

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Thyroid cancer accounts for 1% of all cancers and about 37000 new cases were diagnosed in USA in 2009. Conventional imaging modalities like ultrasonography and radioiodine whole body scan (WBIS) are the most commonly used worldwide. However, a major challenge which is being encountered not uncommonly is serum positive serum thyroglobulin with negative WBIS. With robust growth of PET/CT, ¹⁸F FDG based PET-CT is playing an increasingly important role in resolution of this dispute. Recently ¹²⁴Iodine (a positron emitter) has been accepted as an important tool not only for WB imaging but also for precise dosimetry of ¹³¹I. Furthermore, introduction of the new PET radiotracers such as ¹⁸F DOPA and ⁶⁸Ga-somatostatin receptor agents (DOTATOC and DOTANOC) may one day revolutionize imaging of medullary and anaplastic thyroid cancers.

FREE PAPERS

Dose reduction in pediatric PET/CT hybrid imaging

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PET/CT Center, Institute of Nuclear Medicine and Oncology (INMOL), Lahore, Pakistan.

PURPOSE: PET/CT combines positron emission tomography and computed tomography that provides the special benefits of both in one procedure. PET scan shows areas with increased metabolic activity, while the CT scan shows detailed anatomical locations. The key intention is to optimizing the pediatric PET/CT scan procedure in order to reduce radiation dose.

MATERIAL AND METHOD: A group of 15 Patients (each < 28.0 kg) were acquired on Discovery STE PET/CT scanner that comprises a combined PET system with a fully diagonal slice CT scanner. Dose reduction in PET/CT involve trade-offs between image quality and effective dose. For major reductions in radiation doses from PET/CT scan, following parameters were studied e.g. kVp, mAs and noise index for CT and administered tracer activity and acquisition time for PET. In each examination, the volume CT dose index (CTDIvol) and dose length product (DLP) were recorded. Overall image quality was also evaluated.

RESULTS: By varying CT acquisition parameter for all patients the CTDIvol and DLP were reduced by 76% and 78%, respectively (p < 0.05). All studies were considered diagnostically adequate.

CONCLUSION: Considerable radiation dose reduction can be achieved by modifying the acquisition parameters for CT in preference to PET.

F18 FDG PET-CT in differentiated thyroid cancer (DTC): 2 year experience

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OBJECTIVE: To review FDG-PET/CT scans done in DTC patients at our cancer centre.

MATERIALS AND METHODS: 24 FDG PET CT scans were performed in 23 DTC patients with high Tg and negative ¹³¹I whole body scans between September 2009 and August 2011. There were 11 females and 12 males with mean age of 44.7±12.5 years (range 19-66 years). 19 patients had papillary carcinoma while 4 had follicular carcinoma. At the time of FDG scan all patients were off thyroxin and had elevated thyroglobulin levels (Tg range 21.3-5909 ng/ml). FDG-PET/CT was performed after intravenous injection of 300-350MBq of FDG.

RESULTS: PET/CT showed FDG avid disease in 20 out of 24 scans (sensitivity 83.3%). 10 (50%) scans showed abnormal FDG uptake in thyroid bed, 6 in cervical nodes, 6 in lungs, 2 in mediastinum/hilum and 1 in retropharyngeal space. Four scans did not reveal any FDG avid disease. However, 1 of these had CT evidence of lung metastases.

Eight patients had histopathological correlation (FNA and/or excision) and all confirmed DTC recurrence. Four of these patients were treated with neck dissection and empiric RAI therapy, 1 with neck dissection-alone, 1 with RAI therapy-alone, and 1 with RAI and external beam radiation (EBT). One patient advised EBT did not follow up. Two patients were based treated with EBT-alone based on FDG avid disease and high Tg, without histopathological confirmation.

Twenty patients registered at our centre are on supra-physiologic thyroxin for TSH suppression. No follow-up was available for the 3 patients not registered at our centre.

CONCLUSION: F-18 FDG-PET/CT is useful in identifying recurrence in DTC patients with high Tg and negative ¹³¹I total body scans.

FDG PET/CT of extranodal involvement in paediatric Hodgkin lymphoma

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ABSTRACT: Extranodal involvement in Hodgkin's Lymphoma is rare. We present retrospective review of staging FDG PET/CT scans in our paediatric HL patients (study-period September 2009 - September 2010). Our aim was to document the frequency and pattern of extranodal involvement. Seventy-six FDG PET/CTs were performed for staging (57 males, 19 females (3:1)). Eighteen (24%) scans revealed extranodal disease. Bone / bone marrow (BM) was the most common site seen in 11/18 patients. Multifocal bone! BM lesions were seen in 6 patients while two had 2 or less lesions. Three patients had heterogeneous abnormal FDG uptake throughout the skeleton. Most FDG avid bone/BM findings had no matching CT findings. Seven patients with abnormal FDG bone/BM uptake had disease involvement on bone marrow biopsy. Liver was the second most common extranodal site identified in 9/18 patients. Six patients had matching FDG PET and CT findings. One patient with diffuse abnormal hepatic FDG uptake had no CT abnormality except hepatomegaly.

Another patient had FDG avid lesions with no corresponding CT correlate. One patient had two non-FDG avid liver lesions; however, his follow up PET/CT revealed new FDG avid lesions suggestive of progressive disease. Matching lung abnormalities were seen in 3/18 patients, which were characterized as infection, infection plus lymphomatous involvement and lymphomatous involvement alone. One patient had FDG avid involvement of left submandibular gland. Our study reiterates that FDG PET/CT helps in identifying extranodal HL, particularly in the skeleton and liver. CT is advantageous in characterizing lung findings.

Role of 18F-FDG PET/CT in carcinoma of unknown primary (CUP) syndrome

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BACKGROUND: Detection of unknown primary tumor site has always been a diagnostic dilemma, necessitating extensive workup. Early detection of primary tumor site coupled with specific therapy significantly improves the prognosis. The low detection rate of primary tumor site can be attributed to very small tumor size to be picked up by the conventional imaging alone and biological behavior of the primary tumor. **Aim:** The aim of the study was to evaluate the role of 18F-FDG PET/CT in detection of the primary tumor site in patients with metastatic cancer from unknown primary origin (CUP syndrome). **Material & Methods:** Thirty two consecutive biopsy proven and negative conventional imaging patients from September 2009 to March 2011 were included in the study. Out of 32 patients 16 were male and 16 female with mean age of 58.6 years and age ranges from 20-85 years. PET/CT images from vertex to mid-thigh were acquired after injecting 300+30 MBq of 18F-FDG on dedicated Philips Gemini TF PET/CT scanner. Images were interpreted by a team of nuclear physicians and radiologist to localize the site of primary tumor.

RESULTS: Primary tumor site was correctly identified by the FDG PET/CT in 24/32 (75%): GI 12/24 (50%), lungs 6/24(25%), ovary 3/24(12.5%), head and neck 2/24(8.33%) and others 1/24(4.16%). In 8/32(25%) primary tumor site was not localized. However, in 5/32, PET/CT identified unexpected metastases which lead to the upstaging of the disease.

CONCLUSION: Our data strongly supports the diagnostic contribution of 18F-FDG PET/CT in the evaluation of patients with CUP syndrome and suggests its use in an early phase of the diagnostic workup to optimize patient management.

Comparison of DWIBS with bone scan in patients of Ca breast with skeletal metastasis

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PURPOSE: To detect skeletal and extraskeletal metastasis on DWIBS in patients with Ca breast having skeletal metastasis on bone scan.

MATERIALS AND METHODS: A total of 60 patients were included in the study. All were diagnosed, operated cases of Ca breast and underwent bone scan to detect bone metastasis. Afterwards, all the cases were assessed for metastasis by MRI; the sequence for which included whole body MRI-T1, T2 fat suppression and DWIBS. Informed consent was obtained from each patient before the scan.

RESULTS: All of the 60 patients with proven skeletal metastasis on bone scan also showed skeletal metastasis on DWIBS, but increased number of skeletal lesions were picked on DWIBS. Out of 60, 36 patients also showed extra-skeletal metastasis in various organs: 30 (50%) showed mets in liver, 24 (40%) in the lymph nodes and 4 (6%) in the contralateral breast.

CONCLUSION: Whole-body magnetic resonance imaging (WB-MRI) has shown promising results in detecting skeletal metastases because MRI can detect lesions at much earlier stage before appearance of changes in bone metabolism. It is especially useful to detect relatively small lesions because of its high CNR (contrast to noise ratio) so it detects more skeletal lesions as compared to bone scan. Not only the skeletal metastases, but extra-skeletal metastatic lesions, e.g; in lymph nodes and liver are also detected. Moreover, its non-invasive and radiation free mode of imaging also make it superior to bone scan.

DAY 3:

SESSION-I : - GASTROINTESTINAL RADIOLOGY

REVIEW TALK

CT Colonoscopy

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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.

FREE PAPERS

Multiphase reconstructions using 320 slice CT in acute abdomen

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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. Our experience at Shifa International hospital regarding utilization of sagittal, coronal and curved multiphase reformats will be shared in this original paper. We reviewed 287 patients referred to us for acute abdomen over a six months duration.

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.

320 MSCT allows imaging of the abdomen in an extremely short time of 06 Seconds in a single breath hold. 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: 320 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 and rare causes of acute abdomen.

Partners or competitors? A comparison of CT and endoscopic ultrasound in predicting vascular invasion by pancreatic adenocarcinoma

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PURPOSE: Vascular invasion from pancreatic carcinoma is a key determinant of surgical resectability and hence patient survival. This study investigates the ability of endoscopic ultrasound (EUS) and computed tomography (CT) to predict vascular invasion resection in patients undergoing pancreaticoduodenectomy.

MATERIAL & METHODS: Patients with pancreatic head adenocarcinoma undergoing surgery with intent to resect during the last 5 years were identified. EUS and CT data on vascular involvement were collected. Preoperative imaging was compared to intraoperative findings and final pathology. Contingency table analysis identified imaging features of EUS and CT associated with unresectability and vascular invasion.

RESULTS: 34 patients met study criteria. (62%) underwent potentially curative PD. Venous involvement >180° and arterial involvement >90° by CT had 90% positive predictive value for pathologic vascular invasion resulting in unresectability. EUS venous abutment or invasion also predicted surgical failure. Combined EUS and CT findings yielded higher degree of confidence in predicting vascular invasion.

CONCLUSION: Pancreas protocol CT imaging appears to be a better predictor of resectability compared to EUS. However, both studies are complementary and should be performed in every surgical candidate.

MRI characterisation of hepatic masses

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PURPOSE: The purpose of this essay is to illustrate the role of MRI in characterisation of hepatic masses.

MATERIALS AND METHODS: A total of 24 patients (18 years-76years) were included in the study having liver focal masses on ultrasonography. Patients then examined with MRI; the sequence for which included -T1 pre contrast, and multiphasic contrast images.

RESULTS: All of the 24 patients show variable signal intensity on TIW images and characterisation is made on post contrast multiphasic images in which

masses show different patterns of enhancement. Hepatic masses reported are haemangiomas 5;20%, hepatic cysts 5;20%, focal nodular hyperplasia 2;8%, hepatic nodules 2;8%, nodules 1;4%, Fibrolamellar HCC1;8%, Hepatic metastasis 3;12%, hepatocellular carcinoma 5;20% and indeterminate masses 1;4%.

CONCLUSION: MRI has emerged as the best imaging test for liver masses detection and characterization, because this modality provides high lesion to liver contrast and does not use ionizing radiation. MRI can detect lesions at much earlier stage. Correct MR diagnosis is needed to avoid unnecessary biopsy and will eliminate unnecessary additional investigations enabling prompt and appropriate treatment.

Utility of Magnetic resonance cholangiopancreatography in the evaluation of the biliary tract obstruction

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PURPOSE : To determine the overall sensitivity and specificity of Magnetic Resonance Cholangiopancreatography and to evaluate it's utility for diagnosis of Cholelithiasis and stenosis due to malignant causes using ERCP and peroperative finding as gold standard.

MATERIALS AND METHODS: A total of 129 patients with clinical and laboratory suspicion of obstructive jaundice, age range of 6 to 75 years, were investigated using Magnetic resonance cholangiopancreatography in the Radiology department of Khyber Teaching Hospital, Peshawar. The findings of Magnetic Resonance Cholangiopancreatography were confirmed using Endoscopic Retrograde Cholangiopancreatography and open surgery. The data was processed using Microsoft excel 2007.

RESULTS: The overall sensitivity and specificity of Magnetic Resonance Cholangiopancreatography for strictures were found to be 98% and 49% respectively. The net positive predictive value and the overall accuracy of Magnetic Resonance Cholangiopancreatography were both 86% for malignant strictures. The sensitivity and specificity for detection of biliary tract calculi were both found to be 90% and 100% respectively. The positive predictive value for biliary tract calculi was also found to be 100%. The overall sensitivity for diagnosis of malignant stenosis of the biliary tract was 83% with a specificity of 70%.

CONCLUSION: Magnetic Resonance Cholangiopancreatography has become a competitive replacement for invasive imaging techniques such as Endoscopic Retrograde Cholangiopancreatography. The lower cost, absence of ionizing radiations, operator independence and greater safety for patients make Magnetic Resonance Cholangiopancreatography an attractive alternative to diagnostic Endoscopic Retrograde Cholangiopancreatography. Major disadvantage of Magnetic Resonance Cholangiopancreatography is lack of therapeutic capabilities.

Sonographic features of polyserositis as an adjunct to clinicopathological parameters in diagnosing and predicting the severity of dengue fever

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BACKGROUND: Dengue fever is an acute febrile viral disease. Being endemic in Pakistan, the transmission of dengue fever has intensified in our country with geographic expansion and recent flood disasters which have contributed to the upsurge.

AIMS/ OBJECTIVES: We aimed to demonstrate sonographic features as an adjunct to clinicopathological parameters in diagnosing and predicting the severity of dengue fever or dengue hemorrhagic fever.

METHODOLOGY: Transabdominal ultrasound scanning was performed on 171 patients (93 male, 78 female; age range 12-70 years, mean age 29 years) between August and December 2010, besides serological configuration of clinical diagnosis of dengue fever. 13 patients were excluded on negative serological results. Initial ultrasound scans were done on day of presentation (first 3 days of fever), with a follow up scan after one week of fever (7th day).

RESULTS: Out of 158 patients, 99 patients (62.65%) demonstrated sonographic features of serositis during initial scanning (first 3 days of fever). Follow up scanning on 7th day confirmed previous findings with additional findings in overall 147 patients (93%). In 11 cases (7%), we didn't demonstrate any sonographic evidence of serositis. Gall bladder wall thickening was the most consistent finding in all the serologically positive cases of dengue fever, 99 cases (62.65%) on initial scanning and 139 cases (88%) on follow up scan. It was almost exclusively associated with pericholecystic edema. 72 patients demonstrated right-sided unilateral pleural effusion (45.6%) on initial scan. None had ascites or left sided pleural effusion or pericardial effusion during the first 3 days of fever. On follow-up scan (day 7), minimal to mild ascites were noted in 37 patients (23.41%), right sided pleural effusion was found in 91 (58%) and bilateral pleural effusion in 48 patients (30.37%). Pericardial effusion depicted in 16 patients (10%). Hepatomegaly, splenomegaly and diffused pancreatic enlargement were found in 17 (10.75%), 12 (7.6%) and 9 (5.7%) cases respectively. Subcapsular fluid collection in liver and spleen was found in 8 (5%) and 2 (1.2%) cases respectively, suggestive of serous fluid rather than hemorrhage. No pararenal and perirenal space fluid collections were found in any of the cases. Joint effusion was demonstrated in elbow and knee joints in 2 patients (1.2%).

CONCLUSION: Transabdominal ultrasound is an important diagnostic tool to clinical profile in diagnosing Dengue fever early in its course compared with other modes of diagnosis before the severe form of disease is clinically apparent, thus ameliorating various complications. Sonographic surveillance is necessary besides clinical and laboratory correlation due to the high risk of aggravation of dengue fever into its more severe forms.

Transabdominal sonographic detection of distal esophageal varices and its correlation with endoscopic grading system in advanced liver disease

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OBJECTIVE: To establish sonographic grading system of esophageal varices using esophageal wall thickness and irregularity on transabdominal ultrasound and to correlate its usefulness with endoscopic grading system in advanced liver disease.

STUDY DESIGN: Cross-sectional (observational) study.

PLACE AND DURATION OF STUDY: Department of Radiology in collaboration with Department of Medicine (Unit-IV), Services Hospital, Lahore, between June 2008 and December 2009.

MATERIAL AND METHODS: Upper gastrointestinal endoscopy followed by transabdominal ultrasound was performed in 63 patients with liver cirrhosis and portal hypertension. The endoscopic variceal grading was done according to Japanese Research Society. Transabdominal ultrasound was performed for thickness of anterior wall of the intra-abdominal esophagus and wall surface irregularity. The findings of both modalities were then compared and correlated.

RESULTS: Among 63 patients, there were 40 men and 23 women (age range 20-70 years, mean age 46.31±7.85 years). Endoscopy demonstrated 6 F0 (9.5%),

14 F1 (22.3%), 18 F2 (28.5%) and 25 F3 (39.7%) cases of esophageal varices respectively. Single variceal column was found in 12 cases, while 16, 8 and 27 patients with two, three and multiple columns of varices were observed. Portal gastropathy and red wale markings were also observed in most of patients with grades F2 and F3. On transabdominal ultrasound, keeping 5 mm esophageal wall thickness as a diagnostic criterion for varices, it was found that 5.9 mm±0.7 mean wall thickness was observed in F1, 7.3 mm±1.5 in F2, and 8.0 mm±1.1 in F3 grade of esophageal varices. More than half of the patients with varices (55.5%) demonstrated irregularity of wall surface. The sensitivity and specificity of the sonographic grading for esophageal varices were 84.2% and 100%; positive and negative predictive values were 100% and 40% respectively.

CONCLUSION: Preliminary sonographic grading of esophageal varices could be a useful screening tool to avoid unnecessary bulk of endoscopies in patients with low grade varices due to chronic liver disease.

Diagnostic accuracy in detection the cause of intestinal obstruction by CT scan versus histopathology

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INTRODUCTION: Intestinal obstruction is one of the common surgical emergencies, but majority of cases present late. This leads to delay in its management and hence increases complication rate. Intestinal obstruction is life threatening condition, if we can effectively diagnose the cause of intestinal obstruction on ct before surgery so we can help out our surgery team to better operative and post operative management and prevention of complications.

OBJECT: To determine diagnostic accuracy in detection the cause of intestinal obstruction by CT scan versus histopathological examination.

MATERIAL AND METHOD: 79 patient with age range (20-60 years) having clinical history of intestinal obstruction undergoing abdominal and pelvis CT with oral and intravenous contrast were included in study. All of these patient had undergone conventional imaging. Causes of obstruction was precisely determined in most of the cases. CT findings were correlated with histopathological finding obtained from histopathological records of ion.

RESULTS: Most cases of intestinal obstruction was abdominal tuberculosis, followed by obstructed / strangulated hernia, post operative adhesions, large gut malignancy, volvulus and small gut malignancy. In our study sensitivity of CT in detection of cause of obstruction was 90% and specificity was 80%.

MDCT features of amoebiasis: Important mimicker of acute abdomen

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OBJECTIVE: To evaluate the MDCT features of amoebic colitis in patients who presented with acute abdomen in emergency.

STUDY DESIGN: cross-sectional

PLACE AND DURATION OF STUDY: Radiology department, Aga Khan University Hospital from August 2009 to July 2011.

METHODS: 22 patients (14 males & 8 females) with clinically signs and symptoms of acute abdomen referred to radiology department for CT evaluation.

CT findings were compared with lab data, surgical findings / clinical follow up.

RESULTS: CT findings included acute right sided colitis (60%), secondary acute appendicitis (10%), multifocal colitis (20%), non-necrotic lymphadenopathy (88%), ascites, liver abscess (20%), ileocecal thickening (40%), and acute cholecystitis (5%). Some appearances were mimicking (50%) tuberculosis, crohn's disease and ischemic colitis. Patients had followed up in clinic and a few (20 %) had follow up abdominal scans showing resolution of abnormal CT findings.

CONCLUSION: Amoebiasis is more prevalent in our population and a common clinical dilemma which has potential of false diagnosis on imaging. Knowledge of abdominal manifestation of amoebiasis on imaging can lead to important clue and appropriate diagnosis using laboratory parameter as an adjunct.

Role of MRI in preoperative staging of rectal cancer

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ABSTRACT: Rectal cancer is a common malignancy that continues to have a highly variable outcome, with local pelvic recurrence after surgical resection usually leading to incurable disease. The success of tumor excision depends largely upon accurate tumor staging and appropriate surgical technique, although the results of recent surgical trials indicate that evaluation of the involvement of the mesorectal fat, mesorectal fascia and levator ani muscle is even more important than T staging for treatment planning. Magnetic resonance (MR) imaging is increasingly being used to evaluate tumor resectability in patients with rectal cancer and to determine which patients can be treated with surgery alone, which will require radiation therapy to promote tumor regression and whether sphincter saving surgery can be performed or not. High spatial resolution MR imaging has proved useful in clarifying the relationship between a tumor and the mesorectal fascia, which represents the circumferential resection margin at total mesorectal excision. Phased-array surface coil MR imaging in particular plays a vital role in the therapeutic management of rectal cancer. At present, phased-array MR imaging best fulfills the clinical requirements for preoperative staging of rectal cancer. For nodal status not only mesorectal but extramesorectal lymph nodes should also be assessed as these are very important for treatment planning. However, preoperative evaluation of nodal status is still problematic, and further studies will be needed to better define the role of MR imaging in this context.

Peritoneal tuberculosis mimicking peritoneal carcinomatosis: Differentiating features on contrast enhanced CT abdomen

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OBJECTIVE: To determine CT features helpful in differentiation between peritoneal tuberculosis (PT) and peritoneal carcinomatosis (PC).

MATERIALS AND METHODS: CT scans of 45 patients with known PT were retrospectively reviewed and compared to CT scans of 50 patients with known PC by two radiologists having more than 10 yrs of experience in body imaging. Peritoneum was evaluated for smooth versus irregular thickening, enhancement and presence of nodules on the parietal peritoneum. Omental involvement in form of caking, nodularity and smudge pattern were noted. The associated abdominal lymphadenopathy was evaluated for presence of necrosis and calcification.

RESULTS: Majority of patients with PT (46 of 50) had smooth thickening and pronounced enhancement of parietal peritoneum in comparison to PC patients (7 of 50)($p < 0.001$). In contrast irregular thickening was found in most of PC patients (24 of 50 PC compared to 4 out of 50 pt patients ($p < 0.001$). Peritoneal nodules were seen in most of PC patients (19/50)($p < 0.01$). Only 2 out of 50 patients of PT showed peritoneal nodules. Omental involvement was more common in PC than PT. 26 out of 50 patients of PC showed omental caking in comparison to 7 out of 50 with PT. Most of the patients with PT (32 out of 50) was showing smudge pattern of omental involvement. Abdominal lymphadenopathy was present in all cases of PT and PC. In most of patients with PT lymph nodes were seen in chunks with necrosis (34 out of 50)($p < 0.001$). Only 7 patients with PC showed lymph nodes necrosis, in remaining 43 patients solid appearing lymph nodes noted. In 9 out of 50 patients with PT calcified lymph node were noted while none of PC patient showed calcification.

CONCLUSION: CT findings like smooth peritoneal thickening, pronounced enhancement, smudged pattern of omental involvement, nodal necrosis with calcification and absence of peritoneal nodularity, omental caking can help in differentiating peritoneal tuberculosis from peritoneal carcinomatosis.

Radiological complications of dengue fever: One month experience at Mayo Hospital Lahore

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OBJECTIVE: To evaluate radiologically identifiable complications of dengue fever.

MATERIAL AND METHODS: This study was conducted at Radiology Department KEMU /Mayo Hospital Lahore during month of September 2011. 100 patients who had dengue test positive (IgG and IgM) were included in the study and these patients underwent X rays chest, Ultrasound abdomen and chest, Color Doppler, and CT abdomen and brain.

RESULT: Out of 100 serologically proven dengue patients, 21 patient had acute acalculus cholecystitis, 15 patients had mild to moderate pleural effusion (either unilateral or bilateral) with alveolar pneumonia, 8 patients had acute pancreatitis, 3 patients had brain parenchyma or subdural hematoma and 1 patient had panophthalmitis.

CONCLUSION: Radiology modalities are helpful to identify complication of dengue fever for better treatment of patients.

The role of MR spectroscopy in diagnosis of steatosis in obese patients as a non invasive technique

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OBJECTIVE: Despite the increasing prevalence of nonalcoholic fatty liver disease (NAFLD), the criteria used to diagnose it vaguely defined. Magnetic resonance spectroscopy (MRS) accurately measures hepatic steatosis but has been used only in some research studies. The objective of study to evaluate the role of MRS as non invasive technique in the diagnosis of hepatic steatosis in obese patients.

MATERIAL AND METHODS: A total of 45 patients included in study having BMI > 30 .MRS used to analyze the distribution of hepatic triglycerides content (HTGC) in all participants as a noninvasive technique. The reproducibility of the procedure validated by showing that duplicate HTGC measurements

were high correlated ($r = 0.99$, $P < 0.001$) and that the coefficient of variation between measurements was low (8.5%). Intake of a high-fat meal did not significantly affect the measurements, and values were similar when measurements were made from the right and left hepatic lobes. To determine the "upper limit of normal" for HTGC, the distribution of HTGC was examined in the 13 subjects who had no identifiable risk factors for hepatic steatosis (non obese, nondiabetic subjects, normal liver function tests, and no known liver disease). The 95th percentile of HTGC in these subjects was 5.56%, which corresponds to a hepatic triglyceride level of 55.6 mg/g.

RESULT : 95th percentile of HTGC value use as a cutoff, the prevalence of hepatic steatosis was estimated to be 67.6%.

CONCLUSION: Thus MRS provides a sensitive, quantitative, noninvasive method to measure HTGC and, when applied to a large population, revealed a strikingly high prevalence of hepatic steatosis.

DAY 3:

SESSION-II : - THORACIC IMAGING

REVIEW TALK

Understanding HRCT of the Lung

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High Resolution Computerised Tomography (HRCT) is the mainstay of imaging diffuse lung diseases. The technique has changed the way we manage understand and manage lung diseases. Its major impact has been on Diffuse Parenchymal Lung Diseases (DPLDs) several of which have characteristic HRCT appearances and may be diagnosed with confidence based on radiological appearances alone obviating the need for lung biopsy in many circumstances. However the examination requires attention to detail not only to obtain a diagnostic quality image but also to interpret this image appropriately. This review will initially describe the basic technique of image acquisition and the radiological anatomy as demonstrated by the HRCT focusing on the respiratory lobule. This will be followed by a brief introduction to DPLDs and their working classification going on to discuss the basic patterns of the DPLDs and their pathological correlates. Finally a brief review of the more common DPLDs including IPF and Sarcoidosis will be presented.

FREE PAPERS

Sensitivity of high resolution computed tomography (HRCT) chest in active pulmonary tuberculosis as compared to sputum and bronchoalveolar lavage (BAL) smear examinations

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INTRODUCTION : Sputum smear examination and sputum culture for acid fast bacillus (AFB) are considered the gold standard tests for diagnosing active pulmonary tuberculosis, but their sensitivities are quite low i.e. 21% and 27% respectively. BAL for AFB is a cumbersome procedure. On the other hand HRCT chest; which is a non-invasive procedure, is capable of showing some typical findings favoring the diagnosis of active pulmonary tuberculosis

OBJECTIVE: To determine the sensitivity of HRCT chest in diagnosing active pulmonary tuberculosis as compared to sputum & BAL smear exams for AFB.

MATERIALS AND METHODS: This cross sectional descriptive study

was carried out in the Department of diagnostic radiology, Military Hospital Rawalpindi from 1st June 2011 to 5th October 2011. Forty two patients with clinical suspicion of active pulmonary tuberculosis, for whom sputum/BAL smear for AFB examinations had already been done, were included in the study. Findings on HRCT chest; suggestive of active disease, were compared with the results of sputum and/or BAL smear examinations for AFB.

RESULTS: For diagnosis of disease in patients with clinical suspicion of active pulmonary tuberculosis, HRCT chest was found to be 90% sensitive as compared to 47 % in case of sputum & BAL smear examinations for AFB.

CONCLUSION: As the diagnostic yield of sputum exam for AFB in active pulmonary tuberculosis is practically quite low, HRCT chest can be considered in sputum negative patients before going for invasive procedure like BAL examination for AFB.

Congenital coronary artery anomalies: Diagnosis with 64 slice multidetector CT

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OBJECTIVE: Congenital coronary artery anomalies are uncommon, generally incidental and asymptomatic. However, some can cause severe potentially life threatening symptoms and require early diagnosis. The common mode of studying the coronary arteries is Interventional Coronary Angiogram. ECG gated. Multidetector CT is an upcoming non invasive modality. The objective of our study was to identify rare congenital coronary artery anomalies and discuss their clinical significance.

MATERIAL AND METHODS: A total number of 900 MDCT coronary angiograms were carried out at our institution between the period of March 2006 till December 2010. Patients with coronary artery anomaly constituted the subject of study.

RESULTS: The incidence of anomalous anatomical origin and course of the coronary arteries in our study was 1.55% . Haemodynamical significance was seen in five patients. 3 cases of single coronary artery originating from right coronary sinus were seen. 1 case of anomalous left coronary artery arising from main pulmonary artery was seen. 4 cases of anomalous RCA arising from left aortic cusp, 6 cases of absent LMCA with separate origin of LAD and LCX were seen.

CONCLUSION: Multidetector row CT is a noninvasive modality in cardiac imaging and can be considered as a first-line imaging method for delineating coronary arterial anomalies. It provides precise depiction of anomalous vessel origin and course along with the complex anatomical relation with the adjacent structures. It provides superior resolution of coronary tree and its variant as there is no projectional vascular overlapping. Various postprocessing techniques outclass catheter angiography imaging. Definition of ostia and proximal course of the coronary arteries by Multidetector CT is better than catheter angiography.

CT guided transthoracic biopsies: Pneumothorax rate and patient position

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PURPOSE: Pneumothorax is the most common complication of the percutaneous transthoracic CT guided biopsy which is a common method used to get histological diagnosis. The purpose of this study is to evaluate the effect of position of the patient on the rate pneumothorax.

MATERIALS AND METHODS: The study was done in Shaukat Khanum Memorial Cancer Hospital. Retrospective review of 318 patients who underwent CT guided transthoracic biopsy from July 2006 to June 2011 were selected using consecutive sampling technique. Only those patients were included whose imaging was available. Pre biopsy and post biopsy imaging of all these patients was analyzed. Out of 318 patients 180 patients underwent FNA using 22G Cheeba needle, 52 patients had Trucut biopsy using 20G Temno needle and 86 underwent both FNA and Trucut. The average size of lesion was 33.56mm and average depth of lesion was 21.7 2mm.

RESULTS: Total biopsies performed in prone position were 185, biopsies performed in supine position were 104 and number of patients who underwent biopsy in decubitus position were 29. Pneumothorax occurred in 75 patients out of 318 patients. Rate of pneumothorax was highest in decubitus position reaching upto 41.38% followed by prone position and supine position have the rate of 27.02% and 12.5% respectively.

CONCLUSION: The rate of pneumothorax is significantly higher in decubitus and prone position as compared to the supine position. So the rate of pneumothorax can be significantly decreased by appropriate positioning of the patient given the depth of the lesion is not significantly higher in supine position and the fissure is not crossed.

Incidence of pneumothorax in ultrasound guided pleural fluid aspiration

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PURPOSE: The purpose of this study is: (1) To determine the incidence of pneumothorax performed under ultrasound guidance by residents and radiologists in a tertiary referral teaching hospital; (2) To evaluate the cases of pneumothorax whether it develops more with a particular needle; (3) To evaluate whether its incidence is more with residents or with consultant radiologists.

DESIGN: Retrospective observational study.

SETTING: Radiology department, Shifa International Hospital Islamabad.

PATIENTS: All OPD and IPD patients referred to the radiology Department, between Jan 01, 2010 to Aug 30, 2011.

MATERIAL AND METHODS: Pleural fluid was aspirated using, 18G and 16G cannula, 20G, 18G and 16 G LP needle and 10 cc syringe and afterwards chest X ray was done to check for pneumothorax.

RESULTS: A total of 200 different patients were selected, in whom pleural fluid aspiration was performed during the study period. Out of 200 patients, 6 patients developed pneumothorax (3%), evident on chest x ray. Out of 6 patients, in 3 patients, 18G cannula in 2, 16 G and in 1, 16 G was used. So the incidence is more with 18G cannula (50%). All the cases in which pleural effusion developed were performed by residents (incidence with residents is 100%).

CONCLUSIONS: The incidence of pneumothorax is more with Residents performing the procedure compared to the Consultant radiologists. Similarly it is more with 18G needle compared to other needles.

DAY 3:

SESSION-III : - GENITOURINARY AND FEMALE IMAGING

FREE PAPERS

Assessment of apparent diffusion coefficient values as predictor of aggressiveness in peripheral zone prostate cancer: Correlation with gleason score

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OBJECTIVE: The objective of our study was to determine association between apparent diffusion coefficient (ADC) value on diffusion-weighted imaging (DWI) and Gleason score (GS) in patients with prostate cancer.

MATERIALS AND METHODS: This retrospective case series was carried out at Radiology Department of Aga Khan University Hospital between June 2009 and June 2011. 28 patients with biopsy-proven prostate cancer were included who underwent MRI as well as ultrasound guided sextant prostate biopsy. MRI was performed with 1.5 T machine and pelvic phased array coil. MRI protocol included axial, sagittal and coronal T1, T2 and post contrast images with DWI. Images were analysed on diagnostic console and regions of interest (ROIs) were drawn on ADC maps based on 6 anatomical quadrants of prostate peripheral zone. Data was recorded on SPSS 19 along with corresponding Gleason scores acquired from histopathology reports. Results were based on the number of quadrants. Frequency, percentages and mean ADC values of each Gleason score was calculated individually along with their ranges.

RESULTS: In 28 patients 168 quadrants were biopsied and 106 quadrants were positive for malignancy. 89 lesions with proven malignancy showed diffusion restriction and their distribution according to Gleason score was GS 6 = 35; GS 7 = GS 28; GS 8 = 10 and GS 9 = 16. The mean ADC value for disease with a Gleason score of 6 was 940 mm²/s (range: 1650-542); Gleason score of 7 was 837 mm²/s (range: 1236-465); Gleason score of 8 was 614 mm²/s (range: 785-479) and Gleason score of 9 was 571 mm²/s (range: 731-452). Inverse relationship was observed between Gleason score and mean ADC values.

CONCLUSION : DWI and specifically quantitative ADC values may help differentiate between low-risk (Gleason score, 6), intermediate-risk (Gleason score, 7) and high-risk (Gleason score 8 and 9) prostate cancers, indirectly determining the aggressiveness of the disease.

A prospective study to compare the diagnostic performance of breast ultrasound elastography versus conventional breast ultrasound

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OBJECTIVE: To compare the diagnostic performance of breast ultrasound elastography versus conventional ultrasound in the assessment of breast lesions.

MATERIALS AND METHODS: A prospective study involving 50 women were examined from June 2010 to Aug 2011. 70 breast lesions were evaluated separately by conventional ultrasound, elastography and combined conventional ultrasound with elastography. Ultrasound assessment was based on the BIRADS classification, whereas elastographic assessment was based on strain pattern, color coding and the elastographic size ratios. Histological diagnosis was used as the reference standard. The sensitivity, specificity, and accuracy of each technique were compared.

RESULTS: The mean age of the patients was 49 years. 17 were malignant and 53 were benign. Sensitivity, specificity, and accuracy were 85.5, 42.0 and 50.6%, respectively, for conventional ultrasound, 100, 74.8, and 80%, respectively, for elastography, and 88.5, 78.6, and 80.9%, respectively, for combined imaging. The specificity and accuracy of elastography and combined imaging were significantly better than that of conventional ultrasound ($p < 0.0001$), whereas there was no statistically significant difference in the sensitivity between all three groups.

CONCLUSION: This initial experience with ultrasound breast elastography showed that it was more specific and more accurate than conventional ultrasound. Combining elastography with ultrasound improved specificity and accuracy of ultrasound and can potentially reduce unnecessary breast biopsies.

Wire localization biopsy of breast lesions: Is it the right approach?

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OBJECTIVE: To evaluate the usefulness of hookwire localization biopsy under imaging guidance for suspicious breast lesions

MATERIAL & METHODS: A descriptive study conducted at the Radiology Department of Aga Khan University Hospital Karachi. All patients undergoing needle localization biopsy of breast lesion under either mammographic or ultrasound guidance between January 2009 to December 2010 were included in the study. Patients with incomplete medical records were excluded from the study. All patients mammograms or ultrasound were categorized using BIRADS® assessment categories. The percentages of benign and malignant lesions were determined by pathological examination of surgically removed specimen. The complications associated with the procedure were also recorded.

RESULTS: A total of 151 biopsies were carried, 80 were performed under mammographic guidance and 71 were performed under ultrasound guidance. The mean age of patients was 51.89 years. The overall malignancy rate was 41.72%. Out of 93 cases reported as malignant 60 turned out to be malignant and out of the 58 cases reported as probably benign 3 were reported malignant on histopathology. The sensitivity was 95% and the specificity was 62%. The malignancy rate was 5% in probably benign and 64.51% in probably malignant lesions respectively as stated on pre-biopsy imaging. There were no complication related to wire localization, only two patients had minor complications of small hematoma formation following surgical excision giving a complication rate of 1.32%.

CONCLUSION: Hookwire localization biopsy is a safe and effective procedure for definitive diagnosis of suspicious lesions on imaging; it is more helpful if the imaging findings are suspicious.

Breast imaging report: Are we maintaining recommended standards?

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OBJECTIVE: To evaluate mammography reports of all diagnosed cancer cases in government and private centers in Karachi with respect to concordance with BIRADS standards.

MATERIALS AND METHODS: A prospective descriptive multi-center study was conducted in Radiology sections of the following institutes at Karachi, AKU, PNS, ARC, KIRAN and CHK (between May to October 2010) after approval from ERC of AKU. All patients, with mammograms reported as BI RADS category 4 and 5 were included in the study, and mammograms reported as BLRADS category 1, 2 and 3, were excluded. 50 reports from each centre were collected. Data was collected focusing on categorical variables as clinical indication, breast density, lesion location, lesion description, calcification and comments on axillary lymph nodes, taking into consideration the BIRADS lexicon. SPSS 19 was used to enter and analyze data. Proportions were reported for all categorical variables. The chi square test was applied to assess completeness for reports of the 2 groups in accordance with the BIRADS lexicon. For variables stated above, a p value of < 0.05 at a 95% confidence interval was taken as significant.

RESULTS: The mean age of the patients was 50±12 years. The clinical indication, breast parenchymal density, lesion location, and presence of calcification, all were described well by private centers while lymph node description was better stated by the government centers with a p value which were statistically significant. Description of masses by two groups did not show any statistical difference.

CONCLUSION: Our study shows that reporting in private sector is more in line with BIRADS lexicon, as compared to government sector; this may be overcome by arranging refresher courses for radiologist in government sector. The lymph node documentation was better by government sector; this may be attributable to the fact that more patient in government sector present with advanced disease.

Comparison of un-enhanced CT of kidney, ureter and bladder with intravenous urogram for detection of stones and obstruction

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OBJECTIVES: To compare the diagnostic accuracy of unenhanced CT (CT KUB) and intravenous urogram (IVU), performed in the same patient.

MATERIAL AND METHODS: We retrospectively reviewed radiological and clinical data of patients who had both CT KUB and IVU for suspected stone and obstruction in the last 6 years. Only those patients were selected who had CT KUB and IVU procedure both within 4 Weeks of each other. The data was analyzed using commercially available statistical packages i.e. epidata™ and SPSS™. The number of calculi, presence of hydronephrosis and hydroureter, cysts and wall thickening were looked at in both CT and IVU. Additionally perinephric stranding in CT and delayed excretion in IVU was also evaluated.

RESULTS: Of the 139 patients there were 87 males and 52 females. 73.4% (n=102) patients had positive findings on CT KUB and 51.1% (n=71) on IVU. Of the 193 total findings, in CT KUB the number of calculi, presence of mass, hydronephrosis, hydroureter, cysts, wall thickening and perinephric stranding were seen in 80 (41.5%), 1(0.5%), 43 (22.3%), 34(17.6%), 1 (0.5%), 4 (2.1%), 7 (3.6%) patients respectively. In IVU the number of calculi, hydronephrosis, hydroureter, cysts, wall thickening and delayed excretion were seen in 46 (36.5%), 31 (24.6%), 18 (14.3%), 1 (0.8%), 1 (0.8%) and 5 (4.0%) respectively. In addition incidental findings were more in CT KUB (n=23/139) than IVU (2/139).

CONCLUSION: CT KUB has demonstrated higher number of calculi and related obstruction than IVU. Increase in number of incidental findings also makes CT more useful.

Role of diffusion weighted imaging in MRI breast and its potential in lesion characterization by Quantitative assessment keeping histopathology as gold standard

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OBJECTIVE: The objective is to determine the validity of diffusion weighted sequence in MRI breast and Quantitative assessment of apparent diffusion coefficient in differentiating the benign and malignant breast lesions keeping histopathology as gold standard.

MATERIAL AND METHODS: 105 patients under went breast MRI examination during the study period from Jan 2008 -to Dec 2010 with 1.5 tesla machine using bilateral dedicated breast coil.

Echoplanar diffusion weighted sequences with four different b-values incorporated in MRI breast examination in addition to normal standard sequences. Enhancing lesions more than 1 cm in size on dynamic scans were looked on diffusion imaging and considered as diffusion positive if appears bright than the remaining breast parenchyma specially at b- 800. Enhancing lesion less than 1cm in size and cyst were excluded. For lesion characterization apparent diffusion coefficient value of each lesion was calculated from the ADC map.

RESULT: 105 patients under breast MRI with diffusion weighted imaging. Enhancing lesion was identified in 45 patients on dynamic scan. Diffusion was positive in 40 patients giving the sensitivity and specificity of 88% and 96% respectively. The mean ADC value for benign breast lesions ($1.0 \times \pm 0.23 \times 10.3 \text{ mm}^2/\text{second}$) with sensitivity and specificity of 94 and 96% respectively and malignant lesion ($0.7 \pm 0.20 \times 10.3 \text{ mm}^2/\text{second}$).

The mean value of ADC was significantly lower for malignant lesions compared to benign lesions ($p < 0.0001$).

CONCLUSION: DW sequence in MRI breast examination will increase the overall specificity by providing differentiation between benign and malignant breast lesions with good specificity.

Clinical utility of proton magnetic resonance spectroscopy in diagnosis of breast tumors v/s histopathology as gold standard

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PURPOSE: To prospectively evaluate the diagnostic performance of magnetic resonance (MR) spectroscopy in patients with biopsy-proven tumors at MR imaging by using histologic findings as the reference standard.

MATERIALS AND METHODS: After institutional review board approval & informed consent from patients were obtained, breast MR spectroscopy was performed in patients with biopsy- proven malignant lesions measuring 1 cm or larger at MR imaging. Single- voxel Spectroscopic measurements were taken following contrast-enhanced MR imaging by applying a point resolved spatially localized spectroscopy sequence. Cancerous lesions demonstrate elevated composite choline levels arising from increased cellular proliferation. Proton magnetic resonance spectroscopy (1H-MRS) can differentiate benign and malignant breast lesions in a non-invasive manner by detecting increased levels of composite choline (Cho) compounds. Using the residual water signal as a reference (4.7 ppm), a choline peak at 3.22-3.23 ppm was defined as malignant.

RESULTS: A total of 56 patients (age range, 20-77 years) with 57 lesions were imaged. Histologically, 31 (54%) of 57 lesions were malignant, and 26 (46%) were benign. A choline peak was present in 34 of 57 lesions (including all cancers) giving MR spectroscopy a sensitivity of 100% and a specificity of 88%.

CONCLUSION: Proton MR spectroscopy provides a noninvasive, biochemical

measure of metabolism in cancerous tissue & can successfully be incorporated into breast MR imaging studies for lesions measuring 1 cm or larger. The use of the composite choline signal as a marker for malignancy in breast (1)H MRS is a robust method with highly reliable interpretation, because it is based on the appearance of a single peak.

Increase in incidence of adrenal gland injury due to blunt abdominal trauma: A computed tomography based study from Karachi

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PURPOSE: To determine the frequency of adrenal injuries in patients presenting with blunt abdominal trauma, by using computed tomography.

MATERIALS AND METHODS: During a 6 month period from 01 January 2011 to 30 June 2011, 82 emergency CT examinations were performed in the setting of major abdominal trauma, which were retrospectively reviewed for adrenal gland injuries.

RESULTS: A total of seven patients were identified as having adrenal gland injuries (6 males and 1 female). Two patients had isolated adrenal gland injuries. In the other 5 patients with non isolated injuries, injuries to the liver (1 case), spleen (1 case), retro peritoneum (2 cases) and mesentery (4 cases) were identified. Overall 24 cases with liver injuries (29 %), 11 cases with splenic injuries (13%), 54 cases with mesenteric injuries (65%), 14 cases (17%) with retro peritoneal injuries and 09 cases with renal injuries were identified.

CONCLUSIONS: Adrenal gland injury was identified in 07 patients (6%) out of a total of 82 patients who underwent CT after major abdominal trauma. Most of these were non isolated injuries. Our experience indicates that adrenal injury resulting from trauma is more common than suggested by other reports. The rise in incidence of adrenal injuries could be attributed to the mode of injury.

Usefulness of transrectal ultrasound in evaluation of distal reproductive tracts in infertile males

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OBJECTIVE OF THE STUDY: To evaluate the role of transrectal ultrasonography (TRUS) in the diagnosis of male infertility in patients with azospermia / oligospermia.

MATERIALS AND METHODS: 141 infertile men with azospermia or oligospermia and low ejaculate volume were examined with Transrectal Ultrasonography during a 03-year period.

RESULTS: Out of the 130 men, 60 (46 %) had no anatomic abnormality. Of the remaining 70 (54%) patients, 17 (13 %) had seminal vesicle & ejaculatory duct dilatation and obstruction, 22 (17 %) had seminal vesicle and vas deference hypoplasia / aplasia, 8 (6%) had midline Prostatic cyst, 15 (12%) with prostatic and periurethral calcifications.

CONCLUSION: Transrectal ultrasound is an important and sensitive, non-invasive diagnostic tool for evaluating the distal male reproductive tract. It minimizes the need for more invasive studies in the evaluation of azospermia, particularly when associated with low ejaculate volume.

Pre-operative detection of peritoneal deposits arising from ovarian carcinoma: Current and emerging imaging techniques

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INTRODUCTION: In the management of ovarian cancer, the identification of peritoneal deposits is the most important prognostic factor. Peritoneal metastases are often the first presentation of ovarian malignancy. Evaluating the extent of disease critically determines tumor resectability and can also predict outcome.

OBJECTIVE: To compare the diagnostic performance of MDCT, MRI and integrated PET/CT for the preoperative detection of peritoneal carcinomatosis arising from primary ovarian cancer.

MATERIALS AND METHODS: Seventy six patients with suspected ovarian tumors underwent a contrast-enhanced MDCT, 1.5 Tesla MRI and a 18F-fluorodeoxyglucose (FDG) PET/CT prior to surgery. The peritoneal cavity was subdivided into six specific sites for a lesion-based analysis. The imaging findings were compared statistically with the histopathological findings.

RESULTS: Sensitivity and specificity for detection of peritoneal deposits has been found to be 73.9% 93.3% for MDCT, 84% and 50% for MRI and 95% and 50% for PET/CT respectively.

Us elastography: Adjunctive role in breast lesion assessment in a cancer setup

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Ultrasound Elastography is a new and upcoming imaging modality for assessment of breast lesions. This review paper will highlight and critically analyze the role of this new emerging technique, by analyzing a single centre's short term experience with this modality.

We would examine the technique, assessment criteria and accuracy of elastography in patients with breast cancer. Role of strain ratio measurement and colour stress mapping will be examined as well, highlighting their clinical accuracy.