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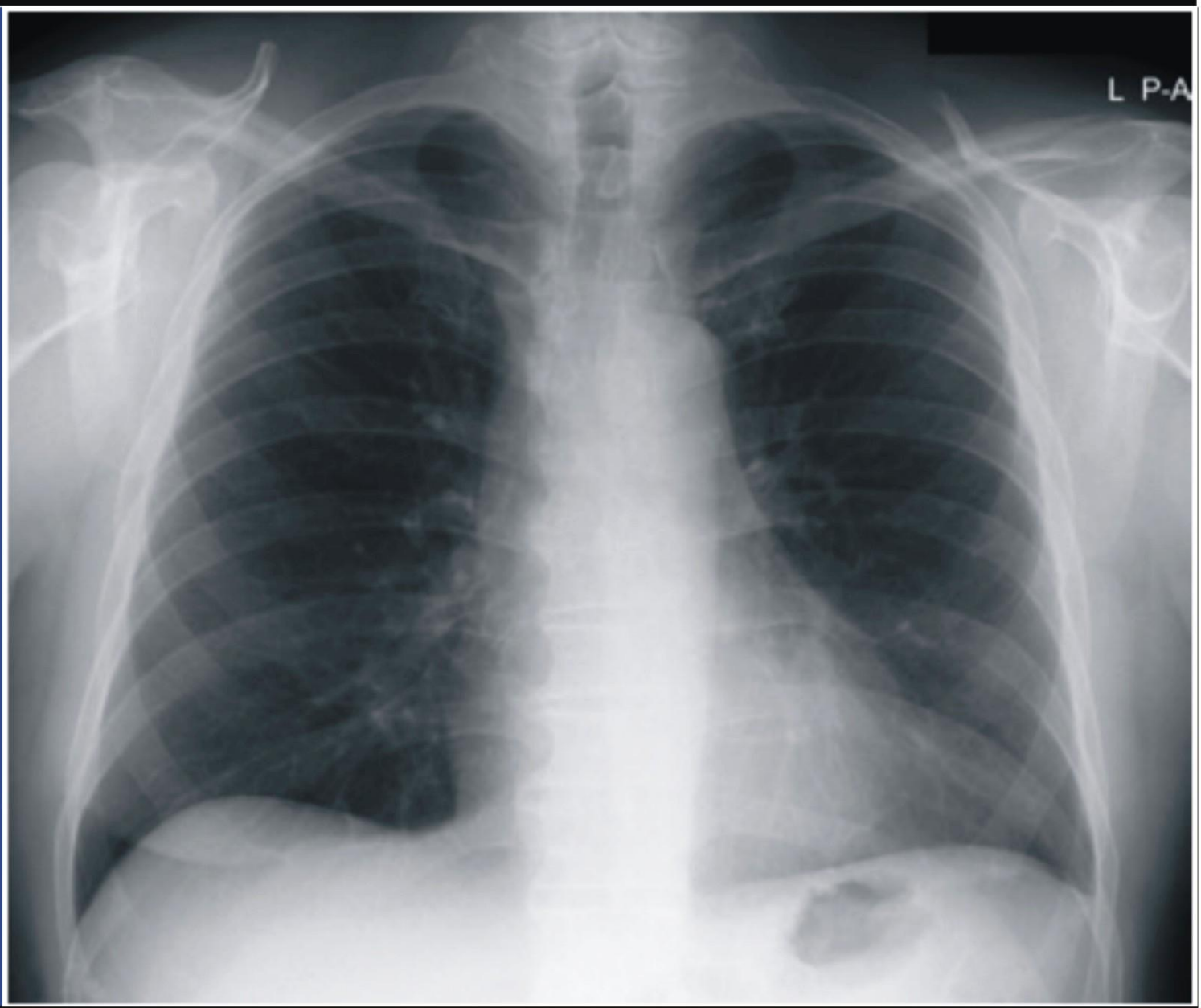

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PACORI
Co-hosts: ARAWA, ARN, NAMP & NIBE
5th Pan-African Congress
Of Radiology and Imaging
10 - 14th August, 2009
Abuja, Nigeria

Challenges of Radiological Practice in Africa

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WELCOME MESSAGE

The 5th biennial scientific conference of the Pan African Congress of Radiology and Imaging has commenced this week in Abuja, Nigeria with the theme: **Challenges of Radiological Practice in Africa.** The last PACORI scientific meeting held two years ago in Kampala, Uganda where hosting privilege for this year's conference was granted to the West African sub-region.

This conference is unique because for the first time, all the professional associations in Nigeria involved in medical imaging namely: Association of Radiologists of West Africa (ARAWA), Association of Radiographers of Nigeria (ARN), Nigerian Association of Medical Physicists (NAMP) and Nigerian Institute of Biomedical Engineers (NIBE) are holding their annual society meetings at the same venue and time. The new, modern and fast growing city of Abuja offers participants a pleasant atmosphere to blend science, technology, social and cultural events.

A pre-conference workshop on vascular ultrasound will herald the activities of this year's congress. Members of the local organizing committee have worked tirelessly these past two years to ensure that a detailed programme is packaged to cater for broad needs of various stakeholders in the PACORI enterprise.

The scientific sessions promise to offer stimulating presentations by speakers from within and outside Africa. The Gala Night/Dinner will provide an opportunity for a social evening that creates a perfect setting for participants to unwind, relax and enjoy special Nigerian cuisine, music and cultural dances.

As usual, industry representatives will provide exhibitions and product presentations on the latest developments in the manufacture of radiological hardware and technological advances; they have been quite supportive of this conference through sponsorships.

Guided tours have been arranged so that delegates and accompanying persons can explore the natural beauty of Abuja landscape, its environs and the rich cultural heritage of the Nigerian people.

Finally, on behalf of the LOC, we welcome you to the conference and wish you a memorable and pleasant stay in the city of Abuja.

Prof DA Nzeh
President, PACORI & Chairman LOC

Dr AO Akanno
Conference Secretary, PACORI 2009

ABSTRACTS

(Abstracts for Radiographers are in normal black colour)

FIRST SCIENTIFIC SESSION: RADFIATION ONCOLOGY / NEURORADIOLOGY

1.1 A Critical Analysis into the Treatment Period and Dose Rate For The Brachytherapy Patient At the National Hospital, Abuja.

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Low Dose Rate (LDR) Brachytherapy treatment started at the National Hospital Abuja (NHA) in the year 2000 for the treatment of cervical carcinoma. The Machine and the professionals involved have so far treated about 250 patients with prescription of dose of between 10.00 and 25.00 Gy. The most frequent prescription on the record chart is the 25 Gy used in this analysis which has a mean dose-rate value of 70.64 cGy/h and standard deviation of 2.5 cGy/h. The period of treatment also is with a mean of 34.84 hrs and a standard deviation of 2.48 hrs. This work creates an opportunity to probe the method of approach so far and as well, concentrate on areas of correction for reduction in errors observed. The result so far gives 95% accuracy and precision with the period of treatment/exposure but with challenges in the next decades due to the further decrease in the decay factor, a major function of the treatment period and a careful look into the dosimetry isodose chart which might also affect the outcome of the results ahead. The need for a complementary high dose rate (HDR) brachytheraphy facility to enhance a more diversified treatment (i.e. more disease conditions other than CaCx) with a concomitant better management and higher patient throughput is hereby, advocated for the hospital.

1.2 Microwave Ablation In Cancer Management.

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The principal of tumor ablation has been known for more than 100 years. The advantages of image-guided ablative therapy compared with traditional cancer treatments include reduced morbidity and mortality, lower procedural cost, suitability for real-time imaging guidance, the ability to perform ablations in an outpatient setting, synergy with other cancer treatments, and repeatability. Many ablation modalities have been used, including dry ablation, ethanol ablation, laser ablation and radiofrequncey (RF) ablation.

This paper presents MW ablation as a method for inducing tumor destruction by using devices capable of emission at different frequencies, but at least 900 MHz. Ablative techniques offer several advantages over extirpative techniques by reducing preoperative morbidity, shortening the hospital stay, promoting faster recovery and importantly, potentially treating patients who are poor surgical candidates. This study involves the design of a variable MW frequency generator; first, for breast and other subcutaneous lesions, then for deep-seated tumors. This cancer management technique hopefully, will offer many of the benefits of RF ablation and several other advantages that may increase its effectiveness. The potential benefits of MW technology include consistently higher intra-tumoral temperatures, larger tumor ablation volumes, faster ablation times and ability to use multiple applicators, improved convection profile, optimal heating of cystic masses and less procedural pain. The technique allows for flexible approaches to treatment, including percutaneous, laparoscopic and open surgical access. This technique is a non-invasive approach compared to radiotherapy and brachytherapy.

1.2 Computed Tomographic Evaluation of Traumatic Head Injury in Ilorin, Nigeria

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Background: Head injury has been defined as physical damage to the scalp, skull or brain by an external force. Aetiologically, the most common cause of head injury worldwide is motor vehicle accident due to increasing use of motor vehicle as means of transport. Head injury requires prompt clinical and radiological intervention hence, computed tomography (CT) is preferred because, it is faster in terms of image acquisition and in addition, it enables adequate assessment of bony injury.

Methods: 50 cases of head injury patients referred from the Accident and Emergency unit to Radiology Department, University of Ilorin Teaching Hospital, were included in this study. A GE Brightspeed Helical CT Scanner was used. Non contrast axial slices were obtained and followed by reformation when necessary.

Results: The age range of the patients used for the study was between 1-90 years (Mean:30 yrs) with a peak in the 21-30yrs, age group. Thirty six cases (72%) were males and 14 cases (28%) were females. Fourteen patients (28%) had intracerebral hemorrhage. Three patients (6%) had soft tissue swelling, 12 cases (24%) had cerebral contusion and 5 cases (10%) cerebral oedema. The CT findings were normal in 6 patients (12%).

Conclusion: The commonest computed tomographic finding amongst the head injured patients was intracerebral hemorrhage, occurring in 14 patents (28%). Males were more affected than females. Computed tomography is a useful modality to assess head injury patients as it demonstrates skull fracture as well as associated intracranial lesions.

1.4 Nuclear Medicine SPECT and PET in Cancer Management

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Nuclear medicine plays an important role in the diagnosis and treatment of patients with suspected or confirmed cancer through the physiological information it provides. The advent of both improved imaging systems, and the discovery of new radiopharmaceutical has increased the effectiveness of nuclear medicine in the management of cancers. A number of procedures in nuclear medicine are available to assist the clinician in evaluating patients with tumours. Lymphoscintigraphy and sentinel lymph node excision biopsy with guided gamma probe are useful techniques in detecting sentinel nodes. SPECT Imaging with Tc-99m MIBI and Gallium -67 citrate are useful in detecting and determining the extent of tumors as well as guiding biopsy. Bone scintigraphy with Tc-99m MDP provides a survey of the entire skeleton aiding in detecting the presence of distant metastases. PET with 18F-fluorodexy-glucose evaluates tumuor glucose metabolism before and after treatment. In addition, PET enables imaging and quantification of cellular function and detection, this approach has several advantages over anatomical modalities like CT which relies on size and architectural changes to diagnose malignancy, thus limits sensitivity and specificity. However, PET is limited by lack of anatomical detail. Therefore, to overcome these limitations, PET is acquired sequentially with the CT on a PET-CT scanner. The combination of anatomical information with metabolic data is the most accurate method for evaluating malignancy. PET-CT has been found to be extremely useful in the initial staging, radiation treatment planning, monitoring therapy response and detecting recurrence of cancers.

1.5 Computed Tomographic Evaluation of Intracranial Space Occupying Lesions In Iiorin, Nigeria

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Background: Intracranial space occupying lesions (SOL) are often due to brain tumours but they also result from other conditions such as abscesses or haematomas. Almost half of intracerebral tumours are primary but the rest may originate outside the CNS and are metastatic in origin. The effect of space occupying lesions may be local, due to focal brain damage and the presentation may give an indication of the location of the lesion but not its aetiology.

Computed tomography (CT), Magnetic resonance imaging (MRI), transfontanelle ultrasound (US) as well as angiography play significant diagnostic role and help in identifying patients that may require urgent neurosurgical intervention. CT is recognized as an important tool in the assessment of non-traumatic intracranial lesion especially, when there is bony involvement.

Methods: 47 patients comprising of 26 males (55.3%) and 21 females (44.7%) referred to Radiology Department of the University of Ilorin Teaching Hospital on account of clinical features suggestive of SOL with no previous history of trauma were selected for this study. Age range was 3-70 years (Mean = 40 years). Patients were scanned with GE Bright speed 4-slice Spiral CT scanner. Routinely, patients had pre- and post-contrast scans.

Results: Meningioma and glioma were the commonest primary solid SOLs and accounted for 3cases (6.4% each); pituitary adenoma was seen in 2 cases (4.3%); sinonasal tumours with intracranial extension were present in 4 cases (8.5%). Three cases (6.4%) had intracerebral abscess. Subdural abscesses were found in 2 cases (4.3%). Non-traumatic haematoma collections were found in 7cases (14.9%). Other conditions encountered that mimicked SOL were: cerebral atrophy 10 cases (21.3%); brain infarct 4 cases (8.5%); meningoenchephailitis 2 cases (4.32%). Normal CT scan finding were seen in 7 cases (14.9%).

Conclusion: The outcome of this study indicates that intracranial tumors (primary and metastic) represent the highest number intracranical SOL in keeping with earlier reports. In addition, these findings emphasize the need for caution in making a diagnosis of SOL based on clinical features alone.

1.6 Tumour Volume Definition Using Carbon Nanotube Coupled Super Paramagnetic Contrasts

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MRI is one of the modern non-invasive imaging modalities employed to produce high quality images of the inside of the human body using the principle of nuclear magnetic resonance. MRI has been able to bridge the most major limitations in conformal radiation therapy (CRT) being the full discernment of the clinical target volume (CTV) for Radiotherapy treatment planning. This paper describes a prospective way of developing new contrast media and mechanisms for improved image quality. This will include the synthesis, analysis and understanding of the principles of MRI from both the microscopic, macroscopic, and imaging system perspective. Consideration will be based on interdisciplinary approach joining general concepts of computer science,

chemistry, biology and modeling of its practical realization. The basic principles of magnetic resonance imaging (MRI) can be exploratively improved using a newly developed MRI contrast agents (name some). The use of carbon nanotube (CNT) coupled with super-paramagnetic iron oxide (SPIO) and explanation of the magnetic interactions and point defects in these systems are discussed. To a large extent, the two-in-one CNT-SPIO has evolved as two-at-once MRI contrast agent for biomedical applications. Computational methods naturally suited to acquire theoretical understanding of the complex MR technology have been used for modeling.

2ND SCIENTIFIC SESSION: GENITOURINARY /SMALLPARTS

2.1 Transrectual Uilrasonographic Patterns of Prostate In Patients Suspected To Have Cancer Of The Prostate In Kampala, Uganda.

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Background & Objectives: Cancer of the prostate is an important, growing health problem, presenting a challenge to urologist, radiologist, and oncologists. Cancer of the prostate is the most common non-dermatologic malignancy in male genital tract in Uganda, yet despite this frequent occurrence, the clinical course is often unpredictable. Currently, many men are identified as having early prostate cancer through the use of prostatic specific antigen (PSA) screening, but few indicators currently distinguish progressive prostate tumours from the indolent cancers. Transrectal ultrasound (TRUS) has revolutionized our ability to image the human prostate and its use in combination with biopsy in men who are considered at risk for harboring carcinoma has promoted an effective means for early detection of prostate cancer.

Purpose: The purpose of the study was to describe sonographic patterns of prostate in clinically suspected cancer at TRUS and to systematically harvest tissue (biopsy) under U/S guidance for histological confirmation and grading.

Methods: This was a cross-sectional descriptive study, with an objective of describing the patterns of prostate pathologies in suspected cases of prostate cancer at Mulago Hospital using TRSU-Biopsy. The study was conducted in Mulago Hospital in Kampala Uganda. The target population was; all male patients at risk of harboring cancer of the prostate attending Mulago Teaching Hospital in Kampala, Complex.
The sample size was sixty four (64) male patients with abnormal digital rectal examination (DRE), or elevated serum prostate specific antigen (PSA) of greater than 4ng/ml, and or both. Those who met the selection criteria underwent a TRUS-Biopsy. Relevant history, physical examinations. laboratory investigations, findings at TRUS and procedure details of TRUS-Biopsy plus histology findings were documented on a coded questionnaire. Data was entered into computer using Epidata and analyzed with SSPS 10.0 version software.

Result: A total of sixty-four (64) patients were recruited. Thirty nine of them were found to have CAP after histological analysis of tissue obtained by TRUS-Biospy while twenty–five patients had benign prostate hyperplasia (BPH). The age range was from 53 to 88 years; with a mean of 68.9 and median of 69. Majority of the patients 31(48.4%) where in 61–70 years age bracket. It was found that CAP increased with advanced age and peak age group was 66- 70 years. The peak age group for BPH was 61 – 65 years. The large group of patient (42%) was from central followed by western (25.0%) and Eastern (20.3%) regions of Uganda. Seven (56.3%) out of 12 patients with family history of CAP had CAP. Among these seven was the youngest patient with CAP within a study group (53years). This patient's brother had suffered from CAP. It has been noted that genetically related CAP starts at an earlier age. Out of the 7 (10.9%) patient with serum PSA level less than or equal to 4ng/dl, 3 (42.9%) of these had BPH and 4(57.1%) CAP. From the 57 patients with serum PSA level greater than 4ng/dl, 22 (38.6%) had BPH and 35(61.4%) CAP. Of the 28(43.8%) patients with hypoechoic lesion(s) at TRUS, 4 (14.3%) had BPH and 15(41.7%) CAP. In the 9 (14.1%) patient with involved prostatic capsular outline, all the 9 (100%) had CAP. In the 3 (4.7%) cases of the involved seminal vesicles, all the 3 (100%) had CAP.

Interpretation & Conclusion: Most patients referred for TRUS - Biopsy of the prostate had sono-pathological changes. The majority 39 (60.9%) had CAP. The screening triad of DRE, PSA and TRUS-Biopsy should be adopted to increase chances of early detection of cancer of the prostate in our society. Preferably, a community base screening for the above 50 years should be done to capture the asymptomatic patients for better treatment outcome.

2.2 How Common Are Rental Artery Anomalies Among Nigerians; Angiographic Cases in Living Transplant Donors.

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Purpose: To report cases of three healthy adult renal transplant donors referred for renal angiography. All the three had renal artery anomalies.

Materials and Methods: Three healthy adult Nigerians from Kano underwent renal angiography using GE LAC DSA Machine in University of Maiduguri Teaching Hospital in June, 2009. Vascular access was gained through the right femoral artery using single wall puncture technique. A 0.35' 120cm long guidewire was introduced under fluoroscopic guidance. A 5F vascular sheath was secured in place. Single bolus of 2500IU of heparin was given to all the subjects. A flush aortogram using iopamidole was obtained using a 5F pigtail catheter above the renal arteries. Bilateral selective renal angiograms were done using a 5F side winder catheter.

Cases: AH was a 22-year- old male donor. The flush aortogram demonstrated accessory renal arteries supplying the apical segments bilaterally. The larger and lower renal arteries measured 4.7cm and 6.5cm in length on the right and left respectively.

Conclusion: Bilateral accessory renal arteries.

Cases 2: AM was a 25-years-old male renal transplant donor. Flush aortogram revealed early branching of the dorsal and ventral branches of the right renal Aartery close to the ostium. However, they share the same origin. There is complete division of the dorsal and ventral branches on the left side with separate origins.

Conclusions:

1. Early branching of the dorsal and ventral branches of the right renal artery close to the ostium
2. Accessory left renal arteries

Cases 3: MA was a 30-years-old-male donor. Flush aortogram demonstrates the aorta and both renal artery measured 5.4cm in length while the left is 4.3cm. The left segmental arteries are normal while early extra renal branching of the right apical segment was observed.

Conclusion: Early Branching of the Right Apical Segmental Branch.

Conclusion: Renal artery anomalies are common among Nigerians. It's mandatory to screen all patient undergoing transplant donation. There is a need to do a larger study to evaluate the nature and extent of these anomalies.

2.3 The Ibadan Multidisciplinary Breast Tumor Board: Our Initial Experience

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Objective: The management of breast cancer using the Multidisciplinary approach is the standard practice worldwide. The University College Hospital of the College of Medicine, University of Ibadan had a/n all purpose tumour board which met to discuss all kinds of tumours. The establishment of the multidisciplinary breast tumour board in our institution is to tailor patients' treatment to imaging, pathology and surgical findings, immunochemistry results and patients' preference and performance.

Methods: The team comprises of radiologists, surgeons, radiation and medical oncologist, pathologist, family physicians, pharmacists, radiographers, oncology and radiology nurses as well as researchers/ scientists. We meet twice every month at the demonstration room of the Radiology department of the University College Hospital, Ibadan. The meeting is usually chaired by Prof. Millicent Obajimi. Our mode of operation includes review of cases, consensus of opinion on line of management after discussions and recently, powerpoint presentations of specific topics.

Results: Over the past 10 months we have had about 20 meetings. Our achievements so far include, coordinated management of patients, reduced waiting time, collaboration in the team for patient care, training and research. Our recommendation and needs will also be enumerated.

Conclusion: The establishment of the breast tumor board has resulted in the co-ordination of the multidisciplinary management of our breast cancer patients and collaboration between members of the teams. This in turn, has improved the quality of life and offered better chances of survival for our patients.

2.4 Proposal of Imaging Features of Breast Lesion in Ilorin, Nigeria: A Preliminary Report

Appraisal of Imaging Features of Benign Breast Lesion In Ilorin, Nigeria: A Preliminary Report

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Background: Breast ultrasound scan is useful in diagnosing breast lesion especially in women younger than 40years. The purpose of this study is to analyze the spectrum of clinical and radiographic findings of benign lesions with an attempt to establish a pattern among women in this region.

Methods: Over a seven months period, a total of 63 patients that hadultrasound, mammography or both were reviewed. Aloka prosound SSD-3500+ultrasound machine equipped with linear and curvilinear 7.5-10 MHz transducers was used for breast scan in both longitudinal and transverse planes. Mammography was done with GE Senographe DMR machine using two standard views and an additional view where necessary. Using the BI-RADS lexicon, lesions in the category 1&2 were analyzed for the study.

Results: Lesions in the BI-RADS category 1 & 2 constituted 40 (63.49%). Mean age was 33.97 yrs (SD 11.84). 38 were females with two males.18 (45%) presented with lumps, 11 on the right, 4 on the left and 3 bilateral. Swelling of the breast accounted for 7(17.5%), R=3, L=3 and bilateral in a case. 16(40%) presented with pain (R=4, L=7, both in 5 cases). Breast abscesses (5%) seen were associated with pain and one of them with swelling. A case of breast lump had associated pain, two cases as screening and a case of left axillary swelling. Twenty-nine patients had ultrasound scan only and nine in combination with mammography only.

Radiologic findings were: Fibroadenoma-18, cysts-7, gynaecomastia-2, abscess-2, intramammary node-2, fibrocystic change-1, thrombophlebitis-1, and no abnormality detected-10.

Conclusion: The commonest indication was breast lump, more frequently seen on the right and radiologically, fibroadenoma was the commonest benign breast finding.

2.5 The Sonographic Pattern of Diseases Presenting with Scrotal Pain at Mulago Hospital, Kampala, Uganda

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Introduction: Scrotal pain is a common presentation in the male patient. There is a wide overlap of signs and symptoms making differentiation at clinical diagnosis difficult. Ultrasound has been documented to improve the accuracy of diagnosis of scrotal diseases.

Objective: To determine the sonographically detectable diseases in patients with scrotal pain, describe their sonographic appearances and to relate the diseases to the socio-demographic and clinical characteristics of the patients presenting at Mulago hospital.

Materials and methods: This was a cross sectional descriptive study done at Mulago Hospital, between May 2003 and March 2004. Consecutive patients with scrotal pain referred for ultrasound evaluation and consented were scanned using an ATL HDI 1500 machine model 2000 with a 5-12 MHz linear probe.

Results: A total of seventy-three patients were recruited in the study. Nineteen had acute epididymitis, 19 chronic nonspecific epididymitis, 12 testicular torsion, and 7 tuberculous epididymo-orchitis diagnosed at ultrasound . The entire epididymis was

more often involved and there was no significant difference in pattern of involvement in acute and tuberculous epididymitis except that the frequency of calcifications was significantly higher in tuberculous epididymo-orchitis lesions than in those of either acute epididymitis ($p = 0.0017$) or chronic epididymitis ($p = 0.0017$). Testicular torsion was more common in adolescents and young adults. Acute epididymitis was seen in all age-groups and was associated with anomalies of the genito-urinary tract at the extremes of age and sexual activity in young adults. Clinical assessment had low accuracy in diagnosing the cause of scrotal pain.

Conclusion: Scrotal ultrasound expedites proper patient management thus reduces morbidity in patients with scrotal pain at Mulago Hospital. Infections and testicular torsion are the commonest cause of scrotal pain. Tuberculous epididymo-orchitis is still highly prevalent at Mulago Hospital.

2.6 Imaging In Breast Filariasis In Ibadan, South West Nigeria

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Introduction: Lymphatic filariasis caused by the nematode Wuchereria bancrofti and Brugia malayi is known to be endemic in the tropics. In Nigeria, 25% of the population is infested. Although the predominant manifestation of the infestation is obstruction of the lymphatic system with subsequent lymph-oedema and elephantiasis, its infrequent manifestation can be found in the breast.

Case Report: Two cases of female breast filariasis in Ibadan, Southwest Nigeria are reported. They presented to the Department of Radiology of the University College Hospital for breast cancer screening. Both mammography and sonomammography were performed on the patients. Mammograms showed linear to coiled, beaded calcifications of varying densities. Sono-mammogram showed no correlation with the mammographic findings. An infestation which in the acute phase is outlined as a granulomatous mass that calcifies over time. These calcifications, especially when not demonstrated in its entirety, could be misdiagnosed for a suspicious carcinomatous micro-calcification.

Conclusion: There is a need for an increased level of suspicion for filarial (or parasite) calcification in endemic areas, to prevent unnecessary invasive procedures for a suspicious micro-calcification.

3rd SCIENTIFIC SESSION
MSK/CHEST/GIT/O&G

3.1 Evaluation Of Chronic Low Back Pain in Adults on Magnetic Resonance Imaging (MRI):Initial Experience at Ilorin, Nigeria

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Background: Low back pain is the commonest indication for evaluation of the lumbo-sacral spine on plain radiography and subsequent Magnetic Resonance Imaging (MRI) in the adult age group. MRI has revolutionalised spinal imaging with superior soft tissue contrast and multi-planar capabilities for adequate detection of lesions in the spine. Moreover, there is no risk of ionizing radiation. Earlier studies showed the preponderance of degenerative diseases and disc herniations as major findings for low pain on plain radiography and MRI. The present study, which is on-going, appraises the pattern of findings for adult patients presenting with chronic low back pain on MRL.

Methods:A total of 29 patients, all with previous plain radiographs and comprising of 16 males (55.2%) and 13 females (44.8%) refereed to the Radiology Department Of University of Ilorin Teaching Hospital, Ilorin on account of clinical features of chronic low back pain. Age range: 21-89 years (Mean = 56 years). Magneton Concerto MRI scanner. Routine weighted images were obtained. Contrast was used where there was suspicion of mass lesion.

Result: Result indicated that disc herniation/ nerve root impingement/canal stenosis were found in 21 cases (72.2%) and degenerative diseases found in 17 cases (58.6%). Overlap of these two conditions was found 12 cases (41.4%). Spondylolisthesis was presented in 5 cases (17.2%). Pott's diseases, 3 cases (10.3%); Osteoblastic metastasis and osteoma were seen in 2 cases each (7.0% each). Multiple myeloma was present in one patient (3.4%). In one case (3.4%), no abnormality was detected.

Conclusion: These findings suggest that in majority of cases progressive degenerative disease is likely to be partly or wholly responsible for disc prolapse/nerve root impingement. It is also prostulated that low back pain is common when nerve root impingement and Spondylolisthesis complicate degenerative diseases.

3.2 Sonographic Measurement of Normal Spleen, Liver and Kidney in Healthy Primary School Pupils in Kampala District, Uganda

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Background: Ultrasound scan is reliable for measurement of liver, spleen and kidney sizes. Normal measurement of these organs have been established in other populations but not in healthy African Ugandan children. Pathology of these organs commonly alters their sizes and ultrasound assessment is important in detecting pathological change in size.

Objectives: 1. To determine the normal sonographic measurements for liver, spleen and kideys in healthy primary school pupils aged 6-15 years; 2. to correlate the measurements with age, height and body weight.

Methods: A cross-sectional study from June to November 2006 in five primary schools in Kampala district, Uganda. Heights and weights of 238 randomly selected healthy pupils aged 6-15 years were measured. Their liver, spleen and kidney sizes were then measured by ultrasound scan. The data was then computer processed.

Results: The lengths of the three organs showed the best correlation with age, height and body weight with weight showing the greatest correlation except for the spleen where height showed the greatest correlation.

Conclusion: Normal sizes of the liver, spleen and kidneys in selected healthy Ugandan children have been documented. The lengths of these organs should be correlated with body weight, height or age.

3.3 Chest Radiographic Abnormalities in Patients with Cough in a Population Highly Endemic for Hiv and Tuberculosis

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Purpose: Patients with chest symptons and an unexplained cough of two weeks or more, admitted into emergency ward of a referral hospital in East Africa, have a high prevalence of HIV and a high mortality. To prevent deaths a quick and accurate disgnosis of chest disease is necessary. The chest radiograph (CXR) is routinely requested to help differentiate between tuberculosis and other chest infections. We aimed to describe CXR findings in this adult patient population.

Methods: We enrolled 396 consecutive eligible patients. Two board certified radiologists (experience 11-20 years) blinded to all clinical and diagnostic information and to final diagnosis (based on culture results and response to treatment), reviewed all radiographs using a standardized interpretation form. Differences in interpretation wee resolved by consensus discussion, including a 3rd radiologist's interpretation.

Results: Five CXRs were excluded because of unreadable quality. Among the 219 tuberculosis patients, HIV positive (n=193, 88%) patients, were less likely to have mixed parenchymal pattern (28% vs 50%, p=0.022), alveolar disease (41% vs 65%, p=0.0180 and cavities (12% vs 46%, p<0.0010, than HIV negative patients. The median CD4 cell count for HIV positive tuberculosis patients was 42/mm^3 (interquartile: 12.5104.5/mm^3)

Conclusion: The chest radiograph may be helpful in differentiating tuberculous from non-tuberculos pneumonias, but less helpful I those with low CD4 cell count. Large studies of patients with low CD4 count, including patients wih non-TB opportunistic infections are needed in order to determine what features are highly predictive of TB.

3.4 Computed Tomographic Evaluation of Adult patients with Obstructive Jaundice: Ilorin Experience

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Background: Obstructive jaundice is the obstruction of the extra-hepatic and/or intra-hepatic biliary with resultant retrograde retention of bile pigments and jaundice. Computed tomography (CT) and other imaging modalities play complementary roles in the adequate evaluation of hepato-biliary system. Earlier studies have shown CT has significant diagnostic ability in evaluating obstructive jaundice, especially, in the detection and staging of pancreatic tumours. The presnt study, which is on going, is to determine the pattern of causes of obstructive jaundice in adult patients, based on CT evaluation in this centre.

Methods: A total of 15 patients comprising of 5 males (33%) and 10 females (67%) referred to the Radiology Department of University of Ilorin Teaching Hospital, Ilorin on account of clinical features of obstructive jaundice were selected for this study. Age range: 32-80 years (Mean=58years). Patients were scanned with GE Bright speed 4-slice spiral CT scanner. Routinely, patients had pre- and post-contrast scans.

Results: Result indicated that Carcinoma of the head of pancreas accounted for 6 out of 15 cases representing 40%. Hepatic masses (abscess and malignancies) accounted for 3 cases (20%). Equal incidences were observed for pancreatic pseudo-cyst, huge mesentric cyst, cholangiocarcinoma and cholelithiasis which accounted for 1 case each (7% each). Non-specific causes accounted for 2 cases (13%).

Conclusion: These preliminary results conform to earlier studies from literature that carcinoma head of pancreas is the commonest malignant cause of obstructive jaundice and benign causes especially, a rare huge mesenteric cyst was reported in this on-going study. This work further supports earlier report on the value of CT in the detection of lesions of pancreatic region**.**

3.5 Knowledge of Ultrasound Safety in Pregnancy Among Radiologists and other Health Workers in Nigeria

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Introduction: Routine obstetric ultrasound is commonly requested by health workers with indications ranging from medical reasons to social scans. These scans are frequently done in oblivion of the potential biological and non-biological hazards.

Aim: The aim of the study is to access radiologists and health workers' knowledge of ultrasound safety issues in Nigeria.

Method: Questionnaires were administered during the 2007 Radiology Faculty Day Lecture organized by the National Postgraduate Medical College in Lagos, while others were administered on some health personnel who perform ultrasound scans in Benin-City. 119 questionnaires were accepted whereas 10 were discarded because of multiple unfilled items. The questionnaire had 27 items that is categorized into 4 segments: general demographic information, personal opinion about ultrasound bioeffects, and opinion about the practice of ultrasound in Nigeria. The statistical analysis was done using SPSS version 15.

Conclusion: Compared to other health workers, radiologists possess more knowledge about ultrasound safety issues; the performance by all cadres of health workers was however, generally poor. Hence, it is recommended that structured enlightenment of the public and health sector be made and that national ultrasound safety standards be created. Finally, only properly trained personnel should be permitted to perform and interpret ultrasound scans.

Keywords: ultrasound safety, obstetric safety, pregnancy scan, knowledge of ultrasound safety, health workers.

3.6 Saying it from the Mind: A Qualitative Study to Examine the Attitudes of Women Related to Routine Sonography in Pregnancy

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Purpose: Ultrasound has become a routine part of care for pregnant women in Uganda. It is one of a range of techniques used in screening and diagnosis, but it differs from most others because of the direct access that it gives women to images of the fetus. In Uganda, routine obstetric sonography has become widely accepted as one of the ways which maternal mortality can greatly be reduced. Unfortunately, the recipients of this technology are seldom asked about how they perceive it.

The purpose of this study therefore, was to explore out the attitudes of pregnant women towards prenatal sonography.

Methods and Materials: Exploratory descriptive study in which semi-structured interviews were conducted. A tape-recorder and notebook were used to capture the ideas.

Results: Four themes were: Before scanning, ultrasound exposure, significance of knowing and doing it again.

Conclusion: Obstetric sonography is highly appreciated as being vital for antenatal care. However, there is need for mothers and healthcare providers to be well informed about the specific purposes of obstetric sonography and what it can and cannot achieve.

4th SCIENTIFIC SESSION: PHYSICS/RADIATION PROTECTION

4.1 Technique factors and Radiation Doses to Patients in Diagnostic Radiology: Need for Matching of Patient Size and Technique factors

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Background: Many Nigerians undergo x-ray screening and medical procedures at diagnostic centers that have little or no documented quality assurance procedures. The result is that patients receive unknown radiation doses that can be detrimental to their health.

Aims and objectives: This study therefore assessed the safety of the patients through the estimation of entrance skin dose (ESD) and effective dose (ED) in our hospital.

Methodology: Patient characteristics were obtained for 193 patients undergoing plain radiographies of the skull (PA & Lat), neck & chest (PA & Lat) and abdomen AP. The X-ray machine technique factors and the output of the X-ray machine (in mGy/mAs) measured with calibrated kV meter were obtained during the routine X-ray examinations.

DoseCAl software was used to calculate the ESD and ED for each patient.

Results: The values of the ESD obtained for different projections are 1.37+0.85, 2.05+0.68, 12.11+5.33, 8.54+7.49, 2.68+0.93 and 46.51+26.73 mGy for chest PA, chest LAT, head PA, head LAT, neck AP and abdomen LAT respectively. The standard deviations indicate disparity in the values obtained for the patient undergoing the same examination. The mean value higher than the reference dose value by at least a factor of 1.6 in both chest PA and LAT.

Conclusion: The disparity here indicates a non-standardization in x-raying procedures and the comparatively higher doses signify higher health risk.

Key Words: Radiation measurement, radiation hazards.

4.2 Thermographic and Adjunct Therapeutic uses of Infra-Red Radiation

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Thermography is the imaging of the emitted heat distribution in patient and it is a clinical diagnostic technique.

The transport of thermal energy in biological tissues is a compex process involving multiple phenomenological mechanisms including, but not limited to conduction, convection, radiation, metabolism and evaporation. Factors influencing tissue heat flow are the thermo-physical properties such as heat capacity and thermal conductivity, the tissue geometry, heat production due to metabolic processes, heat flow due to perfusion of blood and the thermoregulatory mechanisms. We present in this paper the practical clinical diagnostic applications of infra-red (I-R) radiation with emphasis in cancerology. I-R interaction mechanism with biological tissues produce tissue responses that enhance therapeutic processes in disease under certain conditions. The general biophysical principle of the processes are presented with two case reports of our experience in the management of HIV/AIDS as illustrative practical examples

4.3 Occupational Radiation Protection In Medical Practice In Nigeria.

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Occupational exposure to radiation is a potential hazard to all personnel working in the hospital departments where radiation is used. A brief description of occupational radiation protection in medical practice is given in the context of the present situation in Nigeria.

The Nuclear Safety and Radiation Protection Act promulgated in 1995 started to be implemented only in 2001. This led to the establishment of the Nigerian Nuclear Regulatory Authority (NNRA). The NNRA is responsible for the overall supervision and monitoring of occupational radiation protection and has the mandate to stop unsafe practice. There are several thousands medical/dental/veterinary x-ray units, 5 radiotherapy centers and very few nuclear medicine facilities where many workers are occupationally exposed in Nigeria

4.4 Added Value of X-ray in the Interpretation of Tc-99m, MDP Bone Scintigraphy-A case report

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Bone scintigraphy with Tc-99m MDP is a highly sensitive method that enables early detection of a number of pathological processe involving the bone. Its main diagnostic advantages consist of the fact that the metabolic skeletal changes occur mostly earlier than the structural/anatomical changes which are detected with other anatomical imaging methods later. However, low specificity limits use of bone scintigraphy. This can often be overcome by correlation with other diagnostic modalities, more commonly, a simple x-ray. In this case report, we present a typical clinical scenario where x-ray findings added significant complimentary value to the interpretation of a bone scintigraphy in a patient with TB spine.

4.5 Funding and Cost Of Cancer Treatment In Nigeria, A threat To Optimal Care!

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Background: Cancer is a disease no one prays to have! No part of the body is spared except those tissues that are already dead. A cancer patient could be someone's child, wife, husband, mother, father, friend, etc. No age group is spared. It does not respect social status although prognosis is worsened by poverty. The norm in this environment is that of presentation at advanced and mestastic stage, poor performance and nutritional status, apathy for orthodox treatment, prevailing poverty in the community and non-committal attitude of the government in supporting cancer patients as done for patients with HIV/AIDS, Malaria and tuberculosis. The exorbitant cost of cancer treatment in Nigeria and the prevailing poverty is not only a threat to optimal cancer care but a death sentence for most of our patients.

It is a major cause of default, non compliance to treatment, low follow up and worsening prognosis. The government at all levels should be actively involved in cancer management especially, in funding, treatment and sourcing of drugs. Cancer treatment should be included in the National Health Insurance Scheme (NHIS), and Non-governmemtal agencies, multinational companies, philanthropists should be involved in advocacy for optimal cancer care.

4.6 Potentials of Magnetic Resonance Imaging Modality in Modern Radiotherapy Procedures

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Radiotherapy (RT) is a major method in the management of cancers in which about 755 of patients undergo at one stage of the disease management or the other. The current trend, techniques and technological developments demand highly precise definition of tumour volume and accurate treatment planning systems in order to achieve the overall 3% precision in dose delivery as recommended by IAEA and WHO. The lofty goal requires sophisticated and highly precise diagnostic imaging for accurate tumor definition. Magnetic Resonance Imaging (MRI) has recently emerged to break the monopoly of computerized tomography (CT) in RT treatment planning procedures by introducing several imaging benefits that are superior to those of CT. Such benefits include, but not limited to improved soft tissue definition, unlimited multi-planar, volumetric imaging, physiological and biochemical information using magnetic resonance angiography and spectroscopy. Intensity-modulated and adaptive RT techniques would greatly benefit from the functional data from MRI for improved definition of target volumes. New MRI techniques can characterize and quantify different tissue properties and their tumour related changes better than CT. The results of perfusion MRI represent micro-vascular density and permeability. MR spectroscopy depicts particular metabolites, diffusion-weighted imaging shows tissues at risk and tumour cells while dynamic 3-D acquisition and 4-D MRI show organ motions and the mobility of tumour within them. The study of these new features and emerging contrast materials, with a view to using MRI alone for RT treatment plans, form the object of this paper. The newly emerging technical and technological developments of the anatomical components of MRI systems are briefly discussed as well as the current advances in the development of new contrast materials.

5TH SCIENTIFIC SESSION: RADIOGRAPHY

5.1 The Challenges of Equipment Management Policies in Efficient Radiological Practice in Africa

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Radiology department is the most dynamic of all the departments in the hospital. In the past two decades there has been rapid technological advances that have increased the complexity and sophistication associated with medical imaging equipment. In the sub-region that is mainly technology consumer driven, cost implications and breakdown in the absence of competent and prompt repairs and maintenance can make the benefit of modern medical imaging unavailable to the population. There is presently littered in most radiology departments across Nigeria, obsolete, unserviceable and inappropriate equipment which has made radiology practice uninteresting, services to patients limited in diversity, training facility inadequate and responsible for the brain drain in the specialty. There is therefore, need for planned procurement pattern (PPM), planned preventive maintenance plan (PPM) and prompt repairs, when equipment breakdown, for effective and efficient radiological practice. This paper examines the medical imaging equipment acquisition pattern, utilization and maintenance in Nigeria. A suggestion of how this analysis can be employed to achieve a more efficient radiological practice is highlighted.

5.2 Role of Radiology in the Management of Accident and Emergency Cases at University College Hospital, Ibadan, Nigeria

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Background: Radiology plays an integral role in various medical specialties with accident and emergency (A & E) covering both traumatic and pathological emergencies such as pneumonia, pleurisy, intestinal occlusion, peritonitis. A retrospective study to analyze the role of radiography/radiographers in the management of accident and emergency patient was carried out.

Objectives: To evaluate the workload of Radiographers in relations to A & E cases in University College Hospital, Ibadan and also to elaborate on the importance of Radiology Department in the management of A & E cases.

Method: Over a 3-month period in late 2008, all patients who came in as A & E and record of radiological investigation carried out, was collated and analyzed.

Result: The result shows that over 70% of patient passed through Radiology to undertake procedures like CT and plain x-rays. The product of this study will be used in prospective studies based on the findings and recommendations given by the performed retrospective studies.

5.3 Quality Assurance in Diagnostic Radiology

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Introduction: Quality assurance is a plan of activities whose purpose is to provide assurance to show evidence that quality control task is in fact being done effectively. It involves continuous evaluation of adequacy and effectiveness of quality control program with corrective measures initiated where necessary. QA/QC program in diagnostic x-ray department is an event organized by personnel working in the facility to ensure continuous production of diagnostic image of high quality to provide adequate diagnostic information at the lowest cost possible, least exposure dose to patient, provision of high quality healthcare and ultimately departmental management. Quality assurance actions contribute to the production of diagnostic image of consistent quality by reducing variation performance of the system. Poor performance of the system leads to high prevalence of poor image quality which may not yield diagnostic information that could have been available to the referring physician or the radiologist thus misdiagnosis. If the image quality is very poor the patient will be exposed again causing an increase in the cost of the diagnosis and unnecessary radiation dose.

Film Reject. Analysis of rejected films is a basic component of QA. Images judged to be of inadequate quality are classified according to cause of rejection, which may be related to the competence of these elements. Major cause of retakes includes: Exposure faults (esp. in mobile radiography), bad position, equipment malfunction.

Parameters: Checks and test measurements on all parts of the interval that should be done at a reasonable intervals not exceeding one year (Radiography) and two years (fluoroscopy). The parameter monitored during routine QC in radiography includes: beam quality and alignment, uniform collimation, focal spot size and radiation leakage, mA and kV factor within expected parameters (linearity and reproducibility), timer mechanism (consistency and accuracy). Fluoroscopy image quality was tested using special test objects, allowing assessment of geometrical size and distortions, and limiting spatial resolution. The diagram representing the minimal contrast to distinguish an object with a certain size- contrast – detail, is a valuable QC measure and is considered a measure for total image quality. Mammography QC is based on various types of QC equipment and test tools.

Contrast resolution and noise follow a precise protocol which demands special attention due to high radio-sensitivity in relation to the anatomical object and high requirement to the image quality. Film processing QC is important for it determines the final image quality. The parameters to be tested include not only the film and developer, but also the chemistry and film quality. The parameters to be tested include not only the film and developer, but also the chemistry and the film quality, inventory in rotation- on first out basis (shelf life) to be checked according to the workload. Store according to the manufacturers' recommendations, and guidelines on replenishment and disposal. Pre-mixed developer should not be stored in tanks for more than two weeks to avoid oxidation.

5.4 Way Forward in Radiogical Practice

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Kenyatta National Hospital is the largest referral hospital in Kenya and the entire East and Central Africa. In Radiology department about 200 patients are offered diagnostic imaging services daily. Most of our machines are the general units which serve both emergency and other cases. These films are processed with an automatic processor which takes 90 secs. The whole X-ray procedure takes an equivalent of 20 mins from x-raying, processing, and recording to dispatch of the patient. Putting in mind the number of patients we see daily, the cost of films, cassettes (blue and green sensitive) and the chemicals are expensive, considering the fact that there are a lot of repeats due to cassette erasure faults, processing faults, motion blur, errors in exposure, darkroom faults and also equipment faults. In addition to being a teaching and training hospital, the aim is show how implementation of computerized radiography (CR) in radiology department would make a great difference. Since the number of patients seen daily in our department is high, there is need to upgrade our equipments to (CR) to compensate for motion blur, error in exposure, reduced exposure to patient due to the capability of contrast modification, record purpose, improve workflow, increased efficiency, increased working comfort, heavier workloads, less time per patient, outstanding image quality at low dose, containing costs within acceptable limit. The plate is repeatedly used for long time and there are many tools to use like: magnification, adjusting the density and calculating measurements needed as a first move toward digitalization of a department. CR can be used without changing the initial machine but replacing the film-screen as a receptor with a phosphor plate which is reusable.

5.5: Computed Tomographic Angiography on a 16-Slice Spiral CT Scanner

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Introduction: Computed tomogram (CT) angiography is a simple very friendly examination for mostly patients who may not be able to undergo the conventional angiography. Some of the indications are: 1.severed major arteries due to trauma; 2. Aneurysms; and 3. pulmonary embolism; 4.peripheral arterial blockages.

Requirements:

1. A high powered spiral CT with bolus tracking option.
2. Automatic injector pump and 3 non-ionic iodine based contrast agent

Methods: The patient is starved for at least six hours. Blood urea levels are checked. A gauge 21 cannula is fixed on a big peripheral vein. 100mls of contrast is loaded on the pump and set at pressure of 300 PSI, flow rate of 5mls/sec. The patient is positioned into the gantry and the procedure is explained. The protocol is set and tracking done. When the scan starts, the arterial supply of interest is demonstrated. 3D and MIP images are processed, displayed and archived and a radiological report made.

5.6 Patient Dose Reduction in Paediatric Chest Examination by Computed Radiography

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Background: The new computed radiography imaging systems are gradually gaining acceptance in radiological departments. As with all imaging examinations involving ionizing radiation, chest examinations should be performed using the lowest possible radiation exposure to the patient (ALARA), especially paediatric patients who are believed to be up to 10 times more sensitive to ionizing radiation than adults. Our experience indicates that computed radiography (CR) has many advantages over conventional screen-film radiography (SFR). Computed radiography (CR) offers a different approach for pediatric chest radiography by utilizing photostimulable phosphor as detector. Photostimulable phosphor (PSP) imaging plates overcome some image quality limitations since they are more efficient in absorbing lower-energy x-rays than rare-earth intensifying screens.

Purpose: our primary purpose is to test the hypothesis that CR system has the potential for dose reduction in pediatric chest examination, while our secondary purpose is to determine the extent.

Materials & methods: First, we recorded the exposure dose for obtaining an optimum image quality in pediatric chest examination, using the conventional screen-film radiography (SFR). We then utilized 100%, 75%, 50% and 25% of this dose, respectively for pediatric chest examinations, using computed radiography (CR). The diagnostic qualities of the CR images were then objectively determined by 3 unbiased observers who are radiologists.

Results: Our results addressed the inherent disconnection of acquisition from display in CR that allows over exposure in these systems.

Conclusion: We conclude that using computed radiography CR system for pediatric chest examination has great potential to reduce patient dose.

6TH SCIENTIFIC SESSION FREE PAPERS

6.1. Magnetic Resonance Imaging Evaluation of Subdural Hygroma Complicating Surgical Resection of Craniopharyngioma: Case Report

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Background: Craniopharyngioma (CP) is the most common intracranial non-glialtumour observed in pediatric age group. Although histologically benign and amenable to surgical treatment, its location and its relationship to vital nervous and vascular structures makes resection difficult and complications to be encountered frequently.

Clinical Presentation: A 10-year-old boy had radical excision of a huge craniopharyngioma, and was referred for follow-up MRI a year later.

Result: A right sided fronto-parietal subdural hygroma was demonstrated on MRI which appeared hypointense on T_1W and hyperintense on T_2W images suggestive of cerebrospinal fluid collection.

Conclusion. MRI is useful in the detection and characterization of sub-dural collection complicating radical surgery for craniopharyngioma.

6.2 Third trimester Sonographic Behavior of a Thanatophoric Dwarf

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Purpose: Thanatophoric dysplasia (TD) is the most common of the congential lethal skeletal dysplasias. This rare congentital anomaly occurs sporadically in 1/64,000-100,000 live births. Several publications and review have described the clinical, sonographic and radiographic features of TD, but none described the in utero attitudes and behaviors of such babies with serial ultrasound scans.

Objective: To present the in utero third trimeseter sonographic behavior of a TD in a 22-year-old primigravida diagnosed at 32weeks' gestational age, along with the clinical and radiographic characteristics.

Materials & Methods: The same radiologists observed the behaviors of a Thanatophoric dwarf over three fortnights of serial ultrasound scans.

Results: The baby was found to have short limbs that were constantly in rigid abduction, flexed at both elbows and knees, and demonstrated poverty of synchronous movements. The upper limbs were perpetually in embracing position during all scans. In addition, he was hyperactive, showing "YOYO" body movement and constantly hyper-extended neck. Postmortem radiograph was diagnostic of thanatophoric Dysplasia.

Conclusion: Although the body died intrapartum, the observed attitudes and behaviours using serial prenatal ultrasonography that provided us with sufficient information to counsel the family, managed the pregnancy and direct the postnatal evaluation, could possibly add to the in utero diagnostic sonographic features of TD.

6.3 Learning Radiology in the Problem-Based Learning (PBL) Curriculum At the Faculty of Medicine, Makerere University, Uganda

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Introduction: Faculty of Medicine (FoM), Makerere University has been training health professions in Uganda since 1924. Five years ago, it decided to change the entire 5 undergraduate curricula from traditional to 5-year program. Radiology is a necessary and important part of medical curriculum.

When FoM reviewed her curriculums in 2003, radiology was integrated into the different courses throughout the 5-year program. At the FoM several issues that need to be addressed so as to improve the radiology training were identified as follows: shortage of radiologists, Lack of learning outcomes for Radiology training, organization and implementation.

Objective: To improve the implemention for the integration of Radiology in the PBL curriculum and ensure quality, and to involve radiologists in the vertical and horizontal integration of radiology topics in the medical curriculum.

Methods: An inventory of needs was executed by interviewing the radiologists and giving the students questionnaires.

Results: Learning outcomes for Radiology were defined and learning activities were chosen. Learning materials were identified and strategies to improve the implementation were formulated.

Conclusions: The integration and improvement of radiology in the medical undergraduate program is an ongoing process. It requires the commitment and involvement of radiologists and students so as to improve the training of student.

6.4. Methods and Limits of paediatric Chest Digital Image Compression for Telemedicine

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Background: Medical image compression will play a key role as hospitals move towards Filmless imaging and go completely digital. As more digital data are produced, it is expected that the volume of uncompressed data will create problems of storage and transmission of these images. It would be advantageous, therefore, to be able to compress images to reduce storage. Further, as telemedicine becomes a reality, the ability to transmit images quickly without distortion will be highly beneficial.

Purpose: To investigate various compression levels of digital paediatrics chest images and determine the effect on image quality. Our secondary purpose it to establish the optimum compression ratio above which image quality begins to be compromised.

Materials & methods: Paediatric chest examinations at optimum quality digital images, objectively determine by 3 observers. Each image was then subjected to five different compression ratios with quality factors of: 100, 75, 50, 40 and 20 corresponding to "Lossy" compression ratios of 2:1, 14:1, 23:1, 28:1, and 47:1, respectively.

The compressed digital images and the original images were then evaluated objectively by 3 unbiased Radiologists who viewed the images displayed on computer monitors and ranked their confidence on a 5 point scale.

Result: Our results indicate that to achieve an appreciable reduction in image size, some loss of information and consequently, some degradation of image quality must be expected.

Conclusion: JPEG "Lossy" image quality at low and moderate compression ratios.

6.5 Patient Radiation Doses During Selected CT Examinations at the University College Hospital, Ibadan, Nigeria

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Background. Computed tomography (CT) is an invaluable diagnostic tool in current medical practice. Unfortunately, the radiation dose imparted during a CT scan can be significant. Over the last few years, due to recent advances such as spiral and multidetector-row CT technology, CT examination have rapidly increased in number resulting in increased collective radiation dose as reported by many international organizations. It has also been stated that image quality in CT exceeds the level required for confident diagnosis.

Purpose: This paper seeks to establish, verify and validate the radiation dose to patients and estimate diagnostic reference levels for selected routine CT examinations in UCH, Ibadan, Nigeria's largest tertiary hospital using appropriate computational methods for computing dose accurately and efficiently.

Materials and methods: The dose characteristics of a GE Brightspeed CT scanner was determined by using the scanning parameters of 100 previously examined patients. For each scan technique, patient doses were estimated using two methods; (i) the software developed by the ImPACT scan group in conjuction with the NRPB S250 conversion coefficients data, (ii) the displayed scanner DLP against the conversion factors determined the European commission.

Results: The results show that the largest mean $CTDI_{vol}$ (45.8 + 4.2), DLP (1960.1 + 475.9) and effective dose (39.6 + 15.4) was obtained for lumbosacral CT, Head CT, and Abdomen/Pelvis respectively. The average patient dose varied from one study to another. The largest range was found for CT of the abdomen, for which the dose varied from 15.3 to 63.0 (average 38.8) mSv. For head CT, the range was 2.3 to 3.8 (average 2.8) mSv; for chest CT, it was 6.4 to 16 (average 11.8) mSv; and for cervical and lumbosacral CT, it was 3.1 to 6.2 (average 4.6) mSv and 24 to 33 (average 29) mSv, respectively.

Reference dose values were calculated for each exam. The DLP values are as follows: head, 1795 mGy.cm; chest, 1189 mGy.cm; cervical, 1372 mGy.cm; lumbosacral, 1975 mGy.cm; and abdominopelvis, 2548 mGy.cm.

Conclusion. Among studies except head scan, there was considerable variation in the DLP and patient radiation dose for a specific exam. Reference doses and patient doses were higher than the European Commission recommendation. The higher dose levels, which are possibly associated with significant risks, would justify an extensive similar study at the national level in order to unify different approaches towards optimization of CT examinations. The need to train radiology personnel, establish standard dose reduction protocols and continuously monitor the performance of CT equipment to control patient CT doses cannot be overemphasized.

6.6: The Prevalence of Lymphoepithelial Cysts and Diagnostic Ultrasound Patterns of Parotid Glands in HIV Sero-Positive Patients at Mulago Hospital, Kampala, Uganda

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In Uganda, HIV-related parotid swellings are routinely subjected to blind aspiration biopsy and open excision. However, the difficulty and poor results of surgical attempts at removing multiple small cysts render surgery an unsatisfactory treatment option, and often makes an initially cosmetic problem even worse. Having adhered to the ethical considerations, a prospective clinical study, using ultrasound of the parotid gland was performed in 200 HIV positive patients at Mulago Hospital. The aim of the study was to find out the prevalence of epithelial cysts, U/S pattern of parotid gland and identification of patients not suitable for surgery. A wide spectrum of U/S patterns in the parotid gland was seen among this patient, even in the absence of visible parotid enlargement. A high prevalence of lymphoepitheliel cysts, lymphocytic aggregation and fatty infiltration were observed. We therefore found U/S an appropriate imaging tool to describe the patterns and identify patients who should not undergo cosmetic surgical reduction of enlarged parotid glands.

6.7 CT and MRI Findings Of Hypervascular Liver Lesions

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The liver has a dual vascular supply (70% portal vein, 30% hepatic artery) that enables evaluation of the liver masses in arterial phase, portal-venous and interstitial or delayed phase. Enhancement pattern of various liver masses and liver parenchyma helps to identify and characterize different liver lesions. These liver enhancement phases have been made possible by the advent of state-of-the-art scanners which are fast in scanning and have better contrast capture and timing.

The images are obtained in volumetric acquisition of the entire data in a single breath-hold hence improved image quality. We present a pictorial essay of our experience on hypervascular liver masses using 16-MDCT and 1.5 Tesla MRI scanners at the Kenyatta National Hospital, Nairobi, Kenya.

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