**Abstract - ID: 38**

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| **Author(s):** | Zaheer Chiragh **(Presenter)**, Gurayat General Hospital |
| **Are you an invited speaker/presenter to ICRM2018?:** | No |
| **Title:** | Scintigraphic Evaluation of Kienbock's Disease in Comparison to Plain Radiography |

**Abstract:**

Kienbock's disease is a clinical disorder of the wrist joint. it is presumed to affect people of young age (15-40 years). Clinical manifestation may precede the radiological diagnosis & symptoms mainly include recurrent pain, stiffness, and limitation of extension of wrist. The author presents a local bone scan and x-ray images of 22 years old male, simple laborer by profession, who sustained a blunt trauma to the right hand about four years ago. He had been treated conservatively and current complaint was intermittent pain in the right hand that worsened on extension & moderately alleviated with oral non-steroidal anti-inflammatory drugs (NSAIDs). The plain x-ray AP view of right hand that showed sclerotic changes of the lunate bone [Figure. 1]. Bone scan was performed with Tc-99m Methylene diphosphonate (Tc-99m MDP), initial rapid flow & pool phase were obtained in an anterior projection. Delayed static planar and pin-hole imaging showed abnormally increased focal uptake coinciding with the anatomical location of lunate bone. The scan was reported as positive focal bone pathology of lunate.

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**Abstract - ID: 42**

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| **Author(s):** | Dalia Hassanein **(Presenter)**, Inaya Medical collagee<br>Heba Meska, Inaya Medical Collage |
| **Are you an invited speaker/presenter to ICRM2018?:** | No |
| **Title:** | Several imaging modalities in assessment of condylar hyperplasia(CH) |

**Abstract:**

**Authers: Heba Meska[1], SHAHA FAISAL[1], SARA MAHER[1], Dalia Hassanin[1,2],**

**Nuclear Medicine department, Inaya Medical College, Riyadh KSA[1]**

**Nuclear Medicine department, South Egypt Cancer Institute, Assiut, EGYPT[2].**

**Corresponding Auther: Dalia Hassanin[1,2]**

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Abstract:

Purpose: The aim of our research is to investigate the use of several imaging modalities in the appraisal of condylar hyperplasia(CH) and to decide the predominant method for the diagnosis. Method: We have designed a survey of 14 questions extracted from numerous number of articles. This survey was published among the social media and groups related to the medical field. In particular Oral and Maxillofacial Surgeons, Plastic Surgeons, Nuclear Medicine Physicists/Technologists and Radiologist. Result: 48.6% of respondents agreed that adultery is the most common age of patients with condylar hyperplasia. More than half come to end that the most common etiology of CH is condylar cartilage inflammation. In addition, the most common clinical finding is facial asymmetry (74.3%). The superior method in determining condyle dimensions is CT (71.4%) also it has the best resolution (51.4%), while bone scan is dominant in determining growth differences between both condyles and has better sensitivity in detection of CH. Conclusion: Based on our survey analysis, the best diagnostic modality for the diagnosis of

condylar hyperplasia, for determining the growth differences between both condyles, and for obtaining high sensitivity is bone scintigraphy. On the other hand, CT is helpful for determining condyle dimensions and for obtaining high resolution.

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**Abstract - ID: 76**


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| **Author(s):** | Sajid Bashir **(Presenter)**, PINUM Cancer Hospital<br>Amat Zahra, GC University<br>Aamir Shahzad, GC University |
| **Are you an invited speaker/presenter to ICRM2018?:** | No |

**Title:** Establishment of Diagnostic Reference Levels and Achievable Doses in Children and Adults in Nuclear Medicine

**Abstract:**

In radionuclide imaging a specific amount of radiopharmaceuticals is injected into the patient to examine the molecular processes within the body. The amount of isotope injected is a function of age and weight of the patient as well as type of clinical investigation. Small patients must be given small amount of isotope as opposed to adults that require higher amount of radiation doses.

In order to estimate the administered activities, a survey of radiation doses administered (mCi or MBq) to children and adults of commonly performed imaging procedures were carried out. A data of about 3053 patient population from different hospitals was gathered. Out of 3053, 1990 were adults (male or female) and 1054 were children. Diagnostic reference levels (DRLs) and Achievable doses (ADs) were determined for pediatric and adult population whish are set at 75$^{th}$ and 50$^{th}$ values respectively. The radiation doses were further compared with those suggested by Society of Nuclear Medicine & Molecular Imaging (SNMMI) and European Association of Nuclear Medicine (EANM) consensus guidelines.

It was observed that reference levels in most cases are lower than the established international guidelines; however, children undergoing bone scan and renal DTPA get slightly higher doses. Further optimization of imaging protocols is needed to lower the dose and to investigate the causes of higher doses.

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**Abstract - ID: 85**


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| **Author(s):** | Nasreddine Boutaghane **(Presenter)**, University of Sciences and Technology Houary Boumediene USTHB<br>Boualem Bouzid, Laboratoire SNIRM, Faculté de Physique, USTHB<br>Habib Zaidi, Division of Nuclear Medicine and Molecular Imaging, Geneva University Hospital, |
| **Are you an invited speaker/presenter to ICRM2018?:** | No |


**Title:** Impact of detector/collimator characteristics on the imaging performance of a large pixelated CZT camera: A Monte Carlo study

**Abstract:**


Conventional scintillation camera-based single-photon emission computed tomography (SPECT) systems are widely used in clinical nuclear imaging. However, their limited performance stimulated the introduction of solid-state detectors, such as CZT, based design concepts. The aim of this work is to assess parameters reflecting the performance of a large pixelated CZT camera, including the combination detector/collimator characteristics. To this end, a large pixelated CZT camera (64´64 pixels, 2.46 mm pixel pitch, 0.20 mm interpixel gap) with a hole matched collimator was simulated using GATE Monte Carlo package. The influence of pixel size and interpixel gap on the resulting spatial resolution and sensitivity for three collimator hole lengths was also studied. SPECT images were reconstructed using OSEM reconstruction algorithm with resolution recovery implemented within STIR software. The preliminary results showed an energy resolution of 6.2%, a sensitivity of 1217.2 cpm/µCi, a spatial resolution of 11.9 mm, a central reconstructed spatial resolution of 12.7 mm in air and 13.3 mm in water. The crosstalk events fraction with the 2.36 mm pixel detector and the 15.7 mm hole length varied from 9.5% to 21.8% with an interpixel gap of 100µm and 460µm, respectively. Hence, a large pixel size and small hole collimator length increased considerably the sensitivity at the detriment of spatial resolution. It can be concluded that an optimal combination of detector/collimator characteristics can be proposed for a novel CZT-based clinical SPECT imaging system.

**Keywords**: Monte Carlo simulations, CZT camera**,** SPECT, parallel-hole collimator.

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**Abstract - ID: 405**

**Author(s):** Ibrahim Mohammed Ibrahim **(Presenter)**, Alnoor Specilist Hospital Makkah
Sahar Alsebaie, NGH
Ahmed yassin, MCH-MAKKAH
Maysa Taybe, AL-Noor Spicialist Hospital
meshal melbary, alnoor specilist hodpital
Bothina Abdulshakour, alnooor spesilist hospital

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| **Are you an invited speaker/presenter to ICRM2018?:** | No |
| **Title:** | Tc99m Meckel`s Scan Although Simple but Effective Arare Case Report of Intestinal Duplication with Ectopic Gastric Mucosa |

**Abstract:**


17 months old baby girl wirh rectal bleeding referd to the NM for meckle`s scan.

Routine investigations were normal

Planar abdominal scintigraphy after bolus intravenous administration of 74 MBq (2 mCi) Tc-99m pertechnetate; show focal area at the left lower quadrant of abdomen with subsequent stomach uptaket: Distribution of activity suggestive of intestinal ectopic gastric mucosa; with left lower quadrant structure partial tracer washout through intestinal lumen, induced by hemorrhage-enhanced peristalsis.

Diagnosis of intestinal duplication with ectopic gastric mucosa was consider.

Next day patient was send to OR Duplicated small bowel 90 cm in leng proximal to it: 125cm length of normal bowel from the DJ-junction Distal to it: 75cm length of normal bowel to the ileocecal valve. .

Stripping of proximal 45 cm and resection of distal 45 cm was performed

Patient recover well and follow up for the next 9 months was unremarkable


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**Abstract - ID: 427**


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| **Author(s):** | Ibrahim Mohammed Ibrahim **(Presenter)**, Alnoor Specilist Hospital Makkah<br>Hossam Elgabali, alnoor specilist hospital<br>Basim Felemban, alnoor specilist hospital<br>Maysa Taybe, AL-Noor Spicialist Hospital<br>meshal melbary, alnoor specilist hodpital<br>Bothina Abdulshakour, alnooor spesilist hospital |
| **Are you an invited speaker/presenter to ICRM2018?:** | No |


**Title:** Duplicated Ectopic Gallbladder Diagnosed by SPECT/CT HIDA Scan Acase Report

**Abstract:**


20 years young man with history of surgicall repair of gastroschisis presented to ER with acute abdomen.

*CT scan of the abdomen showed incomplete small bowel obstructions with possible epigastric collection antro-inferior to the left liver lobe, requested for percutaneous drainage. However, NECT two days later showed contrast filled collection denoting* ***vicarious excretio****n raising the possibility of ectopic gall bladder.*

*U/S pre and post fatty meal wasnot conclusive*

*patient was Referred for HIDA scan for confirmation*

*Dynamic and SPECT/CT images showed that normal homogeneous liver extraction with excretion*

*into both the relatively smaller sized orthotopic gall bladder as well as the previous suspected collection with free passage of the tracer into small bowel confirming ectopic duplicated gallbladder with normal 24 hours complete excresion.*

*Confirmaory MRCP* showed duplicated IHBR system with duplicated GB.

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**Abstract - ID: 428**


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| **Author(s):** | Yousif Almalki **(Presenter)**, KFSHRC<br>Hadeel Mutwali, KFSH&RC<br>Mohammed Al Qahtani, kfshrc |

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| **Are you an invited speaker/presenter to ICRM2018?:** | No |
| **Title:** | Biological evaluations of laminin derivatives that have a potential as an imaging tools for angiogenesis |

**Abstract:**

The growth of new blood vessels (angiogenesis) sustains tumor spread and growth or metastasizes by supplying oxygen and nutrients. Angiogenesis has been identified as a target site for therapeutic intervention because of its important role in tumor growth, metastasis, and inflammatory diseases.

Molecular markers for angiogenesis such as (VEGFRs) and the integrins have become the logical targets for investigation. The receptors are known to bind peptides containing the arginine, glycine, and aspartic (RGD) amino acids sequence. These small peptides have been investigated extensively as drugs. Additionally the radiolabeled (F-18, Tc-99m, In-111, and Cu-64) analogs are being investigated as tracers for noninvasive measurement of angiogenesis. These agents have shown promise in both animals and human patients. Therefore there is need to develop imaging methods that would measure the actual process at the molecular level. Thus, the objectives of this study were to radiolabeling and in vitro investigation of several C8 peptides on the angiogenesis process.

In this study monomeric C8 peptide and a number of its derivatives, labeled with $^{123/125/131}I$ and in some cases $^{18}F$ was used and were compared in vitro. Using human umbilical vein endothelial cells (HUVEC) cell line we evaluate their binding affinity and specificity. The targeted peptide was radioiodinated using the direct electrophilic method via chloramine-T. The radiosynthesis procedures as well as initial biological evaluation will be presented.

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**Abstract - ID: 430**


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| **Author(s):** | Hadeel Mutwali **(Presenter)**, KFSH&RC<br>Yousif Almalki, KFSHRC<br>Mohammed Al Qahtani, kfshrc |
| **Are you an invited speaker/presenter to ICRM2018?:** | No |


**Title:** 68Ga–Radiolabeling of Short Peptide with DOTA-NHS-ester investigated by HPLC

**Abstract:**


Integrin family consists of 24 different hetero-dimerized transmembrane receptors which play an important roles in many physiological and pathological processes including cell survival, growth, differentiation, migration, inflammatory responses, platelet aggregation, tissue repair and tumor invasion (*1*). There are two major targets for angiogenesis imaging with Positron Emission Tomography (PET); vascular endothelial growth factor receptor (VEGFR) and integrin αvβ3. VEGFR is the most significant and potent stimulator of angiogenesis and integrin αvβ3, a heterodimeric cell surface receptor, plays a significant role in angiogenesis by allowing cells to interact with the extracellular matrix, contributing to the migration of endothelial cells.

In our present study we select a short peptide, containing eight amino acids domain and having affinity towards the αvβ3 integrin receptors over expressed in angiogenesis, and introduce various modifications and then been labeled with $^{68}$Ga.

[$^{68}$G]-DOTA-Peptide was prepared in good radiochemical yield and high radiochemical purity. The product might be a promising for noninvasive imaging of integrin $\alpha v\beta_3$ expression which will

be a possible target for early cancer diagnosis.

**References:**

[1] Niu G, Chen X. Why, “integrin as a primary target for imaging and therapy”, *Theranostics*. 2011; 1: 30-47.

[2] M. Lourdes Ponce, Suguru Hibino, Agata M. Lebioda, Mayumi Mochizuki, Motoyoshi Nomizu, and Hynda K. Kleinman, “Identification of a Potent Peptide Antagonist to an Active Laminin-1 Sequence That Blocks Angiogenesis and Tumor Growth”, Cancer Research 63, 5060–5064, August 15, 2003.

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| **Other Subject Category - Please Specify:** | Radiopharmaceuticals |
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**Abstract - ID: 496**


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| **Author(s):** | Mahmoud Al-Abedi **(Presenter)**, CancerCare Manitoba<br>Samantha Eustace, Medical Physics Department, CancerCare Manitoba |
| **Are you an invited speaker/presenter to ICRM2018?:** | No |


**Title:** Investigating the effect of off-centre positioning of the heart in cardiac studies using the GE Discovery NM530c dedicated cardiac camera


**Abstract:**

Myocardial perfusion imaging (MPI) is traditionally performed by using multi detector SPECT imaging. Innovative designs of dedicated cardiac cameras were introduced recently to simultaneously image the entire cardiac field of view (FOV) using stationary detectors surrounding the ROI. The cadmium-zinc-telluride (CZT) detectors were used to enhance the camera performance.

The purpose of this study was to assess the impact of off-centre positioning of the heart in MPI using a CZT camera with a stationary gantry that utilizes pinhole culmination. In large patients it is not possible to position the heart in the centre of the FOV. Concern was raised that this was affecting the appropriate visualization of tracer uptake within the myocardium.

Methods: A torso phantom was imaged by the system (GE Discovery NM530c) with the cardiac insert placed at the centre of the FOV, then at several off-centre positions.

Results: This study shows that images acquired with the heart positioned a few centimeters off-centre of the FOV during MPI with this camera can induce regions of count loss in the reconstructed images. In a clinical patient, these could be falsely interpreted as myocardial perfusion defects.

Conclusion: For obese patients, performing MPI with this camera may produce perfusion artifacts that are variable in extent and location (i.e. not predictable) as the patient's heart can’t be positioned within the centre of the FOV. Thus, if the optimal patient positioning can’t be achieved with this CZT camera, it is important to consider alternative solutions including schedule the patient on a conventional SPECT camera for cardiac imaging.


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