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Tehran University of Medical Sciences

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ICR 2017

33rd Iranian Congress of Radiology

Tehran, Iran

9-12 May 2017

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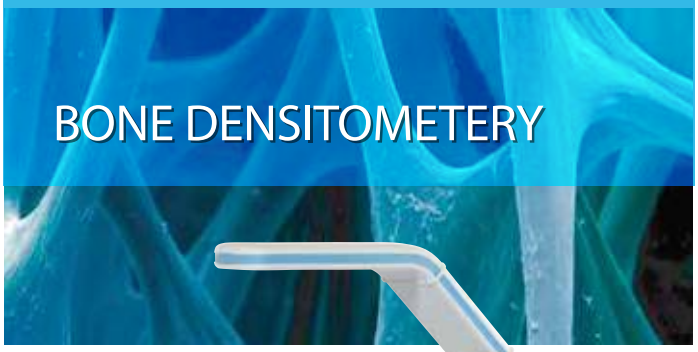

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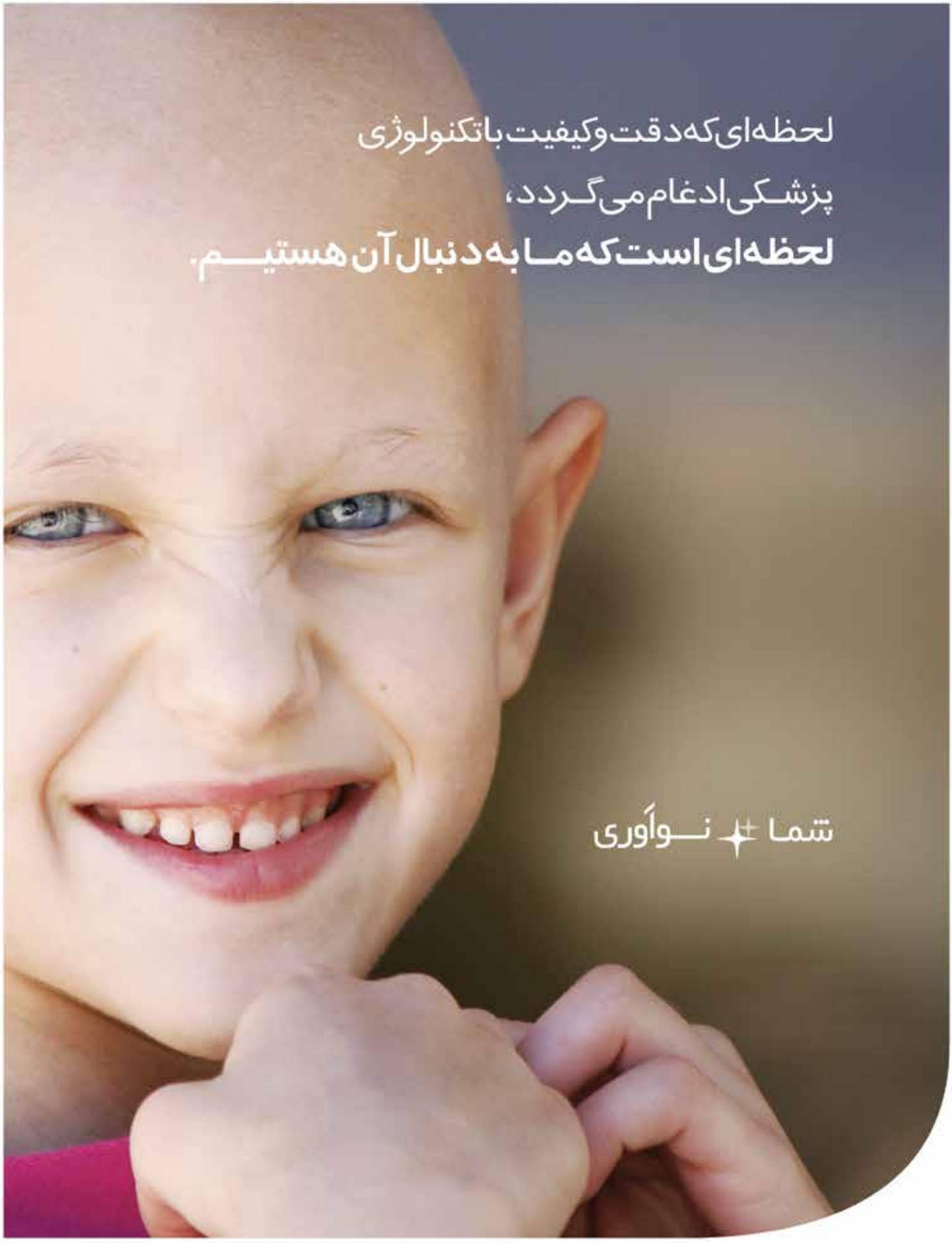

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شرکت پیشگامان صنعـت تایمـــاز (سهامی خاص) در سال ۱۳۸٤ با هدف خدمت رسانی در حوزه بهداشت و درمان، فعالیت خود را آغاز نمود. در طی این سال ها با گسترش روزافزون زمینه های مختلف پزشکی، این شرکت همواره در تلاش بوده تا با استفاده از متخصصان متبحر، در ارتقای سطح کیفی این صنعت گامی موثر بردارد.

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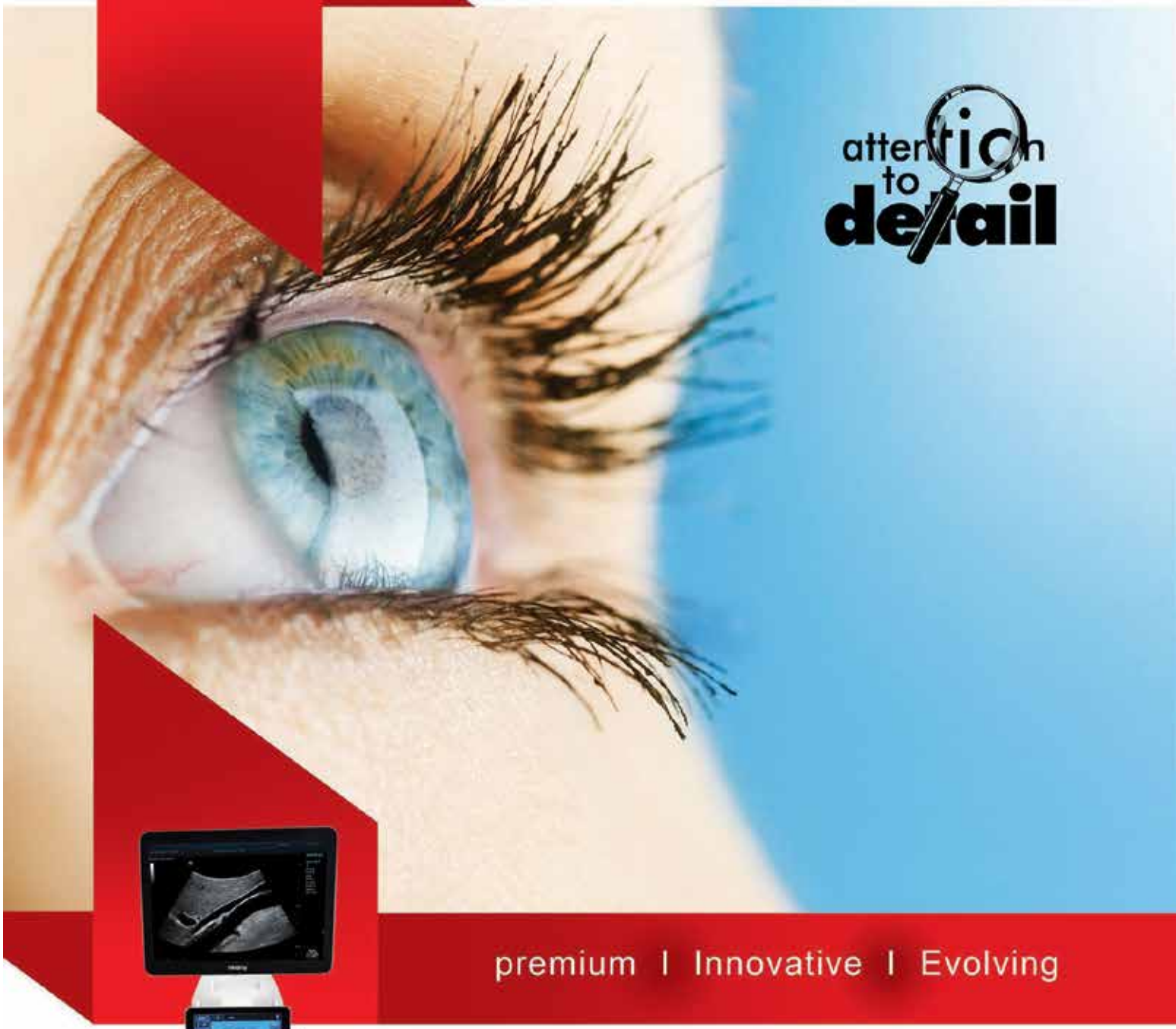

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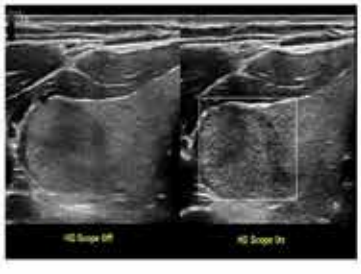

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33rd Iranian Congress of Radiology
May9 –12, 2017 – Tehran/Iran

JOURNAL INFORMATION

AIM AND SCOPE

The Iranian Journal of Radiology is the official journal of *Tehran University of Medical Sciences* and the *Iranian Society of Radiology*. It is a scientific forum dedicated primarily to the topics relevant to radiology and allied sciences of the developing countries, which have been neglected or have received little attention in the Western medical literature.

This journal particularly welcomes manuscripts which deal with radiology and imaging from geographic regions wherein problems regarding economical, social, ethnic and cultural parameters affecting prevalence and course of the illness are taken into consideration.

The Iranian Journal of Radiology has been launched in order to interchange information in the field of radiology and other related scientific spheres. In accordance with the objective of developing the scientific ability of the radiological population and other related scientific fields, this journal publishes research articles, evidence based review articles and case reports focused on regional tropics.

Iranian Journal of Radiology operates in agreement with the below principles in compliance with continual quality improvement:

1-Increasing the satisfaction of the readers, authors, staff and co-workers.

2-Promotion of the scientific content and appearance of the journal.

3-Advancing the scientific validity of the journal both nationally and internationally.

Such basics are accomplished only by aggregative effort and reciprocity of the radiological population and related sciences, authorities and staff of the journal.

CONTENT COVERAGE

Iranian Journal of Radiology is an authentic clinical journal with a content devoted to selected compilation of the latest worldwide and interdisciplinary research and reviews in the field of radiology. In addition, consensus evidential reports not only highlight the new observations, original researches and results accompanied by innovative treatments and all the other relevant topics, but also include highlighting disease mechanisms or important clinical observations and letters on articles published in the journal.

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Welcome

The 33rd Iranian Congress of Radiology is held in Tehran from May 9 to 12, 2017 and the congress venue is the international convention center of Tehran Milad tower. ICR 2017 has focused on four main themes including Women's imaging, Neuroradiology, Neuro-intervention and musculoskeletal imaging. The congress scientific program consist more than 340 lectures from International and Iranian expert radiologists and clinicians in English or Persian languages. The number of accepted scientific presentations at the 33rd ICR is 178, including 40 and 138 oral and poster presentations, respectively. More than 55 workshops in various fields are held in this congress which are presented as hands on or interactive case presentation sessions. The scientific program also includes quiz of the day sessions which has been organized by displaying total 9 challenging cases for the participants in a specific site at lobby and three participants with the highest scores will be announced at the closing ceremony and awarded.

General Information

Venue

International Conference Center of Tehran Milad Tower, Tehran, Iran

Organizer:

33rd Iranian Congress of Radiology (ICR 2017) is organized by the Iranian Society of Radiology and 15th congress of Iranian Radiographic Sciences Association is organized by Iranian Radiographic Sciences Association

Date

May 9- 12, 2017

Language

The languages of the congress are English and Persian

Secretariat Registration

Registration fee includes:
•Admission to scientific sessions and commercial exhibition
•Congress bag, program and the abstract issue, the welcome receptions

Scientific Program Secretarial

Assistance and information regarding the scientific program will be provided by secretariat at conference center lobby

Speaker Ready Room

The slide preview room is located in lobby at the east (left) side of the main hall

VIP Room

The VIP room (Molavi Hall) is available for all ICR2017 speakers on -1/B1 floor at Conference Center.

Electronic Posters

All posters should be prepared in PowerPoint 2003 format similar to a regular lecture presentation but with more description to let them be used stand-alone. Posters will be displayed in a specific site at lobby on several workstations.

Publications

The ICR2017 publications consist of:
•Booklet of abstracts
•Program in English
•ISR newsletter

Badges

Participants are requested to always wear their badges. The badges contain a bar-code which will be used for registering your entrance into the halls and also restaurants.

Workshop Registration

Workshops need separate registration. Workshop schedule will be available at ICR2017.ir.

Meals

Coffee break will be available daily at 10:30-11:00, 16:00-16:30 and lunch at 13:00-14:00.
All participants are advised to acquire the badge for meals in advance at the time of their registration, otherwise they ought to get the voucher from registration desk.

Society Booth

The Iranian Society of Radiology booth is located on ground floor. Application forms and general information for membership are available. It provides membership services, information and an opportunity to pay annual dues for the society,

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• 1001

NEW TECHNIQUES IN MRI GIVE US THE APPERTUNITY TO HAVE BETTER DETECTION, BETTER EVALUATION OF BRAIN LESIONS

Homayoun Hadizadeh Kharazi [1,*]

[1] *Iran University of Medical Sciences*

* *Corresponding author: Homayoun Hadizadeh Kharazi, MD, Iran University of Medical Sciences. E-mail: drhhh_kharazi@yahoo.com.sg*

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Abstract:

One of most chalenging problems in neuroradialogy is differentiation lesions in brain and another chalenging problems is post op. or post radiation/post chemotherapy changes vs recurrennce /remnant.

On this lecture I am going to show you many cases that on the basis of new technique such as SWI, PWI, MRS, cine MRI, DTI and tractography we can achieve the final diagnosis.

• 1002

SPONTANEOUS INTRACRANIAL HYPOTENSION (SIH) AND IDIOPATHIC INTRACRANIAL HYPERTENSION (IIH): IMAGING PRESENTATIONS

G.Reza Bakhshandehpour [1,*]; Mohammad Reza Movahhedi

[1] *Paytakht Medical Imaging Center, Tehran*

* *Corresponding author: G Reza Bakhshandehpour, MD, Paytakht Medical Imaging Center, Tehran. E-mail: bakhshandehpour@gmail.com*

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Abstract:

Learning Objectives: Upon completion of this presentation, participants will be able to:

1) Recognize MRI appearance of the spontaneous intracranial Hypotension and Idiopathic Intracranial Hypertension (Pseudotumor cerebri).

2) Review their various clinical and imaging presentations.

Presentation Summary:

- Any change in Intracranial pressure (ICP), either elevation or reduction, could be with clinical and neuroimaging presentations which depend to the severity of the pressure changes. The principal symptom in both of these syndromes, that is, intracranial hyper and hypotension, is headache which in SIH , is mainly orthostatic or postural (positional) type which occurs when the patient is in upright position, and gradually disappears when the patient is lying down. In most cases, the headaches gradually increase from the moment the patient wakes up in the morning. However, in other cases the headaches are quick and severe. The acuteness of the headaches varies in each case, which affects how quickly the condition is diagnosed. Some of the other related symptoms in intracranial hypotension state are loss of hearing, dizziness, tinnitus, vertigo, stiffness of the neck, nausea, Loss of consciousness, Coma and even vomiting. In intracranial hypertension situation transient visual obscuration or blurring ,double vision, visual loss and less likely joint pain ,low back pain and even intermittent ataxia. In neurological examinations cranial nerve palsies (mainly VI) may be found.

In neuroimaging studies especially on MR imaging several nonspecific and heterogeneous presentations such as dural enhancement, vertical displacement of the brain (an appearance like Arnold-Chiari type I malformation), subdural effusion or subdural hematomas mainly in chronic cases in Idiopathic intracranial hypotension and flattening of the posterior sclera, distension of perioptic subarachnoid space, tortuosity of optic nerve and an empty sella in Idiopathic intracranial Hypertension might be seen which the presence of 3 or more of the MRI features is 95% specific in predicting idiopathic intracranial hypertension.

CSF leak is a recognized cause of intracranial hypotension. This condition may be spontaneous or secondary to spinal puncture; neurosurgical procedures (iatrogenically); dehydration; uremia and spinal trauma. In intracranial hypertension situation the etiology is unknown. However, two hypothesis are reduced CSF absorption at the level of the arachnoid villi and increased brain intraparenchymal water (Vasogenic brain edema).

Conclusion: In this presentation we will review Imaging presentations of our several proved cases. As mentioned, there are heterogeneous groups of signs and symptoms and MRI presentation in these disorders which may cause misdiagnosis with other neurologic disorders and awareness, understanding, and recognition of these presentations may

permit the radiologist to play a significant role in the prevention of misdiagnosis, unwanted surgical interventions or extensive diagnostic evaluation procedures.

Keywords: Spontaneous Intracranial Hypotension (SIH); Idiopathic Intracranial Hypertension (IIH); Magnetic Resonance Imaging (MRI)

• 1003

HYDROCEPHALUS

Amir Pejman Hashemi Taheri [1,*]

[1] *Radiologist, Department of Radiology, Shariati Hospital, Tehran University of Medical Sciences*

[*] *Corresponding author: Amir Pejman Hashemi Taheri, Radiologist, Department of Radiology, Shariati Hospital, Tehran University of Medical Sciences. E-mail: apejmanht@yahoo.com*

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Abstract:

Hydrocephalus is a common finding in patient with extensive intracranial pathology. This finding may have obvious cause or even happened by a subtle abnormality. Some of the normal looking ventricles are really hydrocephalus when compare with previous images and some are due to NPH. Communicating and non communicating hydrocephalus should be separated to divided pathologic causes. This session is about production, circulation, absorption, technical MRI evaluation and pathology of hydrocephalus. CISS is the main MRI sequence that use to evaluation which give an excellent image for diagnosis. Ventriculostomy is also one of the main surgical procedures which could be done for treatment of many pathological conditions and will be shown by films.

• 1004

NERVE AND TENDON ULTRASOUND

Kambiz Motamedi [1,*]

[1] *Professor of Radiology, David Geffen School of Medicine, University of California, Los Angeles, Director, UCLA Beach Imaging and Interventional Center USA*

[*] *Corresponding author: Kambiz Motamedi, Radiologist, Professor of Radiology, David Geffen School of Medicine, University of California, Los Angeles, Director, UCLA Beach Imaging and Interventional Center USA. E-mail: KMotamedi@mednet.ucla.edu*

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Abstract:

This presentation will cover:

- Appearance of normal nerve versus tendon
- Anisotropy (advantage and disadvantage)
- Special case carpal tunnel
- Tendinopathy
- Nerve impingement
- Special case cubital tunnel

• 1005

ULTRASOUND GUIDED INTERVENTIONS

Kambiz Motamedi [1,*]

[1] *Professor of Radiology, David Geffen School of Medicine, University of California, Los Angeles, Director, UCLA Beach Imaging and Interventional Center USA*

[*] *Corresponding author: Kambiz Motamedi, Radiologist, Professor of Radiology, David Geffen School of Medicine, University of California, Los Angeles, Director, UCLA Beach Imaging and Interventional Center USA. E-mail: KMotamedi@mednet.ucla.edu*

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Abstract:

Key features covered by this talk are:

- Choice of transducers and needles
- Patient positioning
- Joint injections and aspirations
- Tendon sheath injections
- Cyst aspirations
- Biopsies

• 1006

FUTURE AND NEW DEVELOPMENTS IN MSK ULTRASOUND

Kambiz Motamedi [1,*]

[1] *Professor of Radiology, David Geffen School of Medicine, University of California, Los Angeles, Director, UCLA Beach Imaging and Interventional Center USA*

[*] *Corresponding author: Kambiz Motamedi, Radiologist, Professor of Radiology, David Geffen School of Medicine, University of California, Los Angeles, Director, UCLA Beach Imaging and Interventional Center USA. E-mail: KMotamedi@mednet.ucla.edu*

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Abstract:

This talk reviews the following topics:

- Fenestration (dry needling)
- Barbotage
- PRP injection
- Elastography
- Ultrasound versus MRI

• 1007

POST-OPERATIVE IMAGING OF SHOULDER

Kambiz Motamedi [1,*]

[1] *Professor of Radiology, David Geffen School of Medicine, University of California, Los Angeles, Director, UCLA Beach Imaging and Interventional Center USA*

[*] *Corresponding author: Kambiz Motamedi, Radiologist, Professor of Radiology, David Geffen School of Medicine, University of California, Los Angeles, Director, UCLA Beach Imaging and Interventional Center USA. E-mail: KMotamedi@mednet.ucla.edu*

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Abstract:

This presentation features:

- Modalities: Plain radiographs, CT, MRI, and ultrasound
- Arthroplasty
- Hardware loosening
- Suture anchor migration
- AVN, collapse, arthritis
- Rotator cuff repair
- Labral repair

• 1008

WORKSHOP MUSCULOSKELETAL ULTRASOUND OF THE UPPER EXTREMITY

Kambiz Motamedi [1,*]

[1] *Professor of Radiology, David Geffen School of Medicine, University of California, Los Angeles, Director, UCLA Beach Imaging and Interventional Center USA*

[*] *Corresponding author: Kambiz Motamedi, Radiologist, Professor of Radiology, David Geffen School of Medicine, University of California, Los Angeles, Director, UCLA Beach Imaging and Interventional Center USA. E-mail: KMotamedi@mednet.ucla.edu*

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Abstract:

Tis workshop features:

- (Live) demonstration of sonographic technique of the upper extremity joints
- Patient positioning
- Transducer choices, operation and position on the anatomic landmarks
- Optimal evaluation of the anatomic structures in shoulder, elbow and wrist
- Hopefully on Thursday or Friday

• 1009

PEDIATRIC PRIMARY MALIGNANT BONE TUMOR

Ali Hekmatnia [1,*]; Maryam Riahinejad [1]

[1] *Department of radiology, Isfahan University of Medical Science Isfahan, Iran*

[*] *Corresponding author: Ali Hekmatnia, Department of radiology, Isfahan University of Medical Science Isfahan, Iran. E-mail: ahekmatnia@hotmail.com*

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Abstract:

Primary bone tumors are the sixth most common neoplasm occurring in children and constitute approximately 6% of all childhood malignancies with a peak incidence in 15- to 19-year- old individuals. These lesions are the third most Common tumors in adolescents and young adults (exceeded only by leukemia and lymphoma) common complaints are intermittent to constant mild to severe pain, constitutional symptoms (fever, weight loss). Swelling, erythema in the affected extremity; fracture and lesions may be found incidentally on radiographs obtained for other reasons.

Radiographic distinction are poorly circumscribed mass with cortical disruption; multiple layers of poorly organized periosteal new bone (eg, and quot; onionskin and quot; appearance of Ewing's sarcoma); slow-growing lesions will have moth-eaten lucencies, while faster-growing lesions will have permeative destruction Osteosarcoma and small round cell tumor such as Ewing sarcoma and lymphoma are the most

common malignant bone tumors in this age group. Although the overall incidence of osteosarcoma is higher than Ewing sarcoma in adolescents younger than 20 years, Ewing sarcoma is more common in children younger than 10 years of age.

- MRI or CT to determine extent of skeletal involvement and biopsy is necessary for definitive histologic diagnosis. LDH can be used as a marker to detect response to therapy as well as for recurrence in Ewing sarcoma; and elevated serum alkaline phosphatase in osteosarcoma can

• 1010

IMAGING OF VASCULAR LESIONS IN PEDIATRIC

Houman Alizadeh [1,*]

[1] *CHMC- Tehran University of Medical Sciences*

** Corresponding author: Houman Alizadeh, CHMC- Tehran University of Medical Sciences. E-mail: houmanalizadeh68@gmail.com*

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Abstract:

Introduction: The most common soft tissue tumors during infancy and childhood are vascular lesions. Although the vast majority of these lesions have typical clinical features and do not require any further exam, but sometimes atypical superficial or deeply located lesions need complementary studies to be diagnosed and classified. In that way it is also very important to exclude very less common malignant soft tumors.

Imaging studies play an essential role for categorization of vascular lesions.

Vascular tumors such as hemangiomas and vascular malformations have their own imaging characteristics to be classified.

Although MRI is the best imaging modality because of its excellent soft tissue resolution, but ultrasound and Color Doppler studies are the first step and sometimes preferred imaging approach in most of the cases.

This is a review article to describe the various imaging findings of different types of vascular lesions in childhood and infancy.

• 1011

PEDIATRIC MSK CASE PRESENTATION SESSION

Ali Hekmatnia; Neda Pak [1,*]

[1] *Assistant Professor at Tehran University of Medical Sciences*

** Corresponding author: Neda Pak, Assistant Professor at Tehran University of Medical Sciences. E-mail: pakneda@yahoo.com*

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Abstract:

In this session, we will discuss 7 cases in pediatric musculoskeletal field. These cases will include different aspects of bone and MSK disorders in pediatrics such as bone tumors (benign and malignant), bone involvement in metabolic and hematologic disorders, infectious diseases and soft tissue vascular lesions. During this session, we will ask some volunteered radiology residents to explain the radiological findings and deliver their differential diagnosis. Next they will discuss the case interacting with the audience who will also comment on the topic and finally the confirmed diagnosis will be offered and discussed in more depth.

• 1012

PEDIATRIC MUSCULOSKELETAL IMAGING GUIDELINES, PEDIATRIC MUSCULOSKELETAL IMAGING AGE CONSIDERATIONS

Fatemeh Mehdipour [1,*]

[1] *MD, Radiologist Assistant Professor of Radiology at Jondishapour University of Medical Science*

** Corresponding author: Fatemeh Mehdipour, MD, Radiologist Assistant Professor of Radiology at Jondishapour University of Medical Science. E-mail: mdp.ftm@gmail.com*

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Abstract:

Many conditions affecting the musculoskeletal system in the pediatric population are different diagnoses than those occurring in the adult population. For those diseases which occur in both pediatric and adult populations, minor differences may exist in management due to patient age, comorbidities, and differences in disease natural history between children and adults.

Patients age < 18 years old should be imaged according to the pediatric musculoskeletal imaging guidelines, and patients age ≥ 18 years should be imaged according to the musculoskeletal imaging guide-

lines, except where directed otherwise by a specific guideline section.

Pediatric musculoskeletal imaging appropriate clinical evaluation and conservative treatment

A recent (within 60 days) face-to-face evaluation including a detailed history, physical examination, appropriate laboratory studies, and basic imaging such as plain radiography or ultrasound should be performed prior to considering advanced imaging, unless the patient is undergoing guideline-supported scheduled follow-up imaging evaluation.

Plain X-ray should be done prior to advanced imaging for musculoskeletal conditions to rule out those situations that do not require advanced imaging, such as osteoarthritis, acute/healing fracture, osteomyelitis, and tumors of bone amenable to biopsy or radiation therapy (in known metastatic disease), etc.

Even in soft tissue masses, plain X-rays are helpful in evaluating for calcium/bony deposits, e.g. myositis ossificans and invasion of bone.

Provider-directed conservative care may include any or all of the following: R.I.C.E (rest, ice, compression, and elevation), NSAIDs (non-steroidal anti-inflammatory drugs), narcotic and non-narcotic analgesic medications, oral or injectable corticosteroids, viscosupplementation injections, a provider-directed home exercise program, cross-training, physical medicine, or immobilization by splinting/casting/bracing.

These guidelines are based upon using advanced imaging to answer specific clinical questions that will affect patient management. Imaging is not indicated if the results will not affect patient management decisions. Standard medical practice would dictate continuing conservative therapy prior to advanced imaging in patients who are improving on current treatment programs.

Repeat imaging studies of the same body area are not necessary solely for return-to-play decisions.

Unless otherwise stated in a specific guideline section, repeat imaging studies of the same body area are not necessary unless there is evidence for progression of disease, new onset of disease, and/or documentation of how repeat imaging will affect patient management or treatment decisions.

Pediatric musculoskeletal imaging modality general considerations

MRI:

MRI without contrast is the preferred modality for pediatric musculoskeletal imaging unless otherwise stated in a specific guideline section, as it is superior in imaging the soft tissues and can also define physiological processes in some instances, e.g. edema, loss of circulation (AVN), and increased vascularity (tumors).

MRI without and with contrast is frequently recommended for evaluation of tumors, infection, post-operative evaluation, arthrography, and juvenile idiopathic arthritis, as described in the disease-specific guideline sections.

Due to the length of time for image acquisition and the need for stillness, anesthesia is required for almost all infants and young children (age < 7 years), as well as older children with delays in development or maturity. In this patient population, MRI imaging sessions should be planned with a goal of avoiding a short-interval repeat anesthesia exposure due to insufficient information using the following considerations:

MRI should always be performed without and with contrast unless there is a specific contraindication to gadolinium use, since the patient already has intravenous access for anesthesia.

If multiple body areas are supported by eviCore guidelines for the clinical condition being evaluated, MRI of all necessary body areas should be obtained concurrently in the same anesthesia session.

The presence of surgical hardware or implanted devices may preclude MRI, as magnetic field distortion may limit detail in adjacent structures.

The selection of best examination may require coordination between the provider and the imaging service.

CT:

CT without contrast is generally superior to MRI for imaging bone and joint anatomy; thus it is useful for studying complex fractures (particularly of the joints, dislocations, and assessing delayed union or non-union of fractures, integration of bone graft material, if plain x-rays are equivocal.

CT should not be used to replace MRI in an attempt to avoid sedation unless listed as a recommended study in a specific guideline section.

CT beam attenuation can result in “spray” artifact which can obscure adjacent details. This can occur with radiopaque material such as metal objects or dense bones.

The selection of best examination may require coordination between the provider and the imaging service.

Ultrasound:

Ultrasound is frequently used to evaluate infants for

hip dysplasia, to detect and/or aspirate joint effusion, and as an initial evaluation of extremity soft tissue masses.

CPT codes vary by body area and presence or absence of Doppler imaging and are included in the table at the beginning of this guideline.

Nuclear medicine:

Nuclear medicine studies are commonly used in evaluation of the peripheral musculoskeletal system, and other rare indications exist as well:

Bone scan is indicated for evaluation of suspected loosening of orthopedic prostheses when recent plain X-ray is nondiagnostic.

Nuclear medicine bone marrow imaging is indicated for detection of ischemic or infarcted regions in sickle cell disease.

Triple phase bone scan is indicated for evaluation of complex regional pain syndrome or reflex sympathetic dystrophy.

Bone scan is indicated for evaluation of suspected frostbite.

Bone scan is indicated for evaluation of Paget's disease.

3D Rendering:

3D Rendering indications in pediatric musculoskeletal imaging are identical to those for adult patients. See MS-3 ~ 3D Rendering for imaging guidelines.

The guidelines listed in this section for certain specific indications are not intended to be all-inclusive; clinical judgment remains paramount and variance from these guidelines may be appropriate and warranted for specific clinical situations.

• 1013

THE ROLE OF IMAGING IN CHILDHOOD OSTEOMYELITIS

Roxana Azma [1,*]

[1] *Assistant Professor of Radiology, Mofid children's Hospital, Shahid Beheshti University of Medical Sciences*

[*] *Corresponding author: Roxana Azma, MD, Assistant Professor of Radiology, Mofid children's Hospital, Shahid Beheshti University of Medical Sciences. E-mail: roxanaazma@gmail.com*

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Abstract:

Osteomyelitis in childhood can be a challenging diagnosis. Imaging plays an important role in the diagnosis of osteomyelitis in children, and the imaging findings are crucial in the treatment decision.

Pediatric hematogenous osteomyelitis may have variable radiological expression, which is influenced by the age and condition of the patient, the virulence of the causative agent, the stage of the disease, or the selected imaging tool.

Different imaging modalities exist for imaging of osteomyelitis which include: conventional radiography, Three-phase bone scintigraphy, Ultrasound (US), computed tomography (CT) and Magnetic resonance (MR) imaging.

Conventional radiography is the initial step in evaluation of osseous changes. In most cases it will be the only imaging technique used in the diagnosis, as well as treatment.

Ultrasonography, is a very useful modality. It allows correlating the physical exam with US findings and comparing the affected side with the opposite side.

After conventional imaging MRI is the most important imaging modality for the evaluation of osteomyelitis. MRI excellent delineation of the osseous component as well as, soft tissue extension, joint effusion and complications of osteomyelitis such as abscess formation, especially in case of failure to respond to therapy.

CT scan is more useful and superior to MR in detecting cortical destruction, air and sequesters.

Bone scintigraphy using ^{99}Tc methylene diphosphonate may help to confirm suspected osteomyelitis by showing increased uptake in all three phases of the dynamic perfusion.

• 1014

SKULL BASE (MIDDLE CRANIAL FOSSA LESIONS)

Jalal Jalal Shokouhi [1,*]

[1] *Iranian Society of Radiology*

[*] *Corresponding author: Jalal Jalal Shokouhi, MD, Iranian Society of Radiology. E-mail: jalaljalalshokouhi@hotmail.com*

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Abstract:

Anatomy:

Middle cranial fossa mainly floored by sphenoidal

bone and located post. To innominate bone or lesser wing and ant. to temporal bone.

Main foramens are located in deep part, bilateral to sellae are orbital fissures, optic canals, foramen rotundom, ovale and spinosum, foramen lacerum also meckle cave or trigeminal impression and carotid canal. This fossa is like a butterfly in shape.

Lesions:

Related to basic anatomy optic canal (gliomas, schwannomas) chiasmal, anterior clinoidal and middle also post clinoidal tumors (meningiomas) pituitary macroadenomas, carotid aneurysms, cavernous sinus tumors, all nerve tumors in related foramens or fissures, arachnoid cysts, skull base metastasis, bone tumors like Ewing's sarcoma and Osteogenic sarcoma.

Imaging:

Both CT and MRI with and without contrast are needed for exact diagnosis but CT is special for bone and MRI for soft tissue and vessels. They are complementary for each other.

CT also is special for calcification, sclerosis and CSF leakage.

Useful MR pulses are T1, T2 of spin-echo, STIR-T2, T2* (calcification, paramagnetic effect and melanin) and DWI to DDX between benign and malignant tumors.

T1+GD images are necessary to enhance lesions. PET-CT and PET-MR for metabolic activity and metastatic evaluation could be helpful.

Radiology and imaging for surgery:

Imaging is not only necessary for diagnosis but for a good and one and only way to find surgery approach and reducing post-op. complication even complications in surgery room.

By modern operating rooms and in future real time CT and MRI could control surgery procedure.

• 1015

IMAGING OF CERVICAL LYMPH NODES

Yasmin Davoudi [1,*]

[1] *Associate Professor of Radiology, Mashhad University of Medical Sciences, Mashhad, Iran*

[*] *Corresponding author: Yasmin Davoudi, MD, Associate Professor of Radiology, Mashhad University of Medical Sciences, Mashhad, Iran. E-mail: yasmindavoudi@gmail.com*

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Abstract:

The imaging assessment of nodal disease can be challenging for the radiologist because there are multiple sites to review and differing opinions about criteria for abnormal nodes.

The ability to accurately detect nodal metastases is improved with knowledge of the criteria for abnormal nodes, the nodal drainage patterns, and common imaging pitfalls. In this article, we introduce these basic concepts and review the appropriate approach for evaluation of metastatic cervical lymph nodes on cross-sectional neck imaging.

This presentation would cover the following topics:

- Criteria for abnormal nodes which includes size, morphology, margin and internal content of the lymph nodes (cystic changes, Ca, etc.).

- Site classification based on the system devised by American head and neck society and American academy of otolaryngology-head and neck surgery.

- Features important for staging and the radiologist's role is to describe characteristics pertinent to the N staging.

- Important features for management such as extra capsular spread.

It would also have a brief review of advanced imaging techniques for nodal metastases and the indications for FNA in head and neck lymphadenopathies.

• 1016

IMAGING OF ANTERIOR SKULL BASE PATHOLOGIES

Leila Aghaghazvini [1,*]

[1] *Tehran University of Medical Sciences, Shariati Hospital, Tehran, Iran*

[*] *Corresponding author: Leila Aghaghazvini, MD, Tehran University of Medical Sciences, Shariati Hospital, Tehran, Iran. E-mail: aghaghazvini.leila@gmail.com*

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Abstract:

Several lesions (Inflammatory, neoplastic and congenital) can involve in the skull base. The role of imaging is to detect the location and extension of lesion, determine mass and mass like lesions, differentiate benign from malignant tumors, detect invasion to adjacent structures and make decision in surgical planning.

Skull base divides to anterior, middle and posterior cranial fossa and some pathologies are common in all spaces and a few are only seen in special sites.

In this presentation we plan to explain the lesions in anterior skull base.

• 1017

OUTLINES IMAGING OF SALIVARY GLANDS

Maryam Mohammadzadeh [1,*]

[1] *MD, Assistant Professor, Department of Radiology, Division of Neuroradiology, Amiralam Hospital, Tehran University of Medical Sciences*

[*] *Corresponding author: Maryam Mohammadzadeh, MD, Assistant Professor, Department of Radiology, Division of Neuroradiology, Amiralam Hospital, Tehran University of Medical Sciences. E-mail: m-mohammadzadeh@sina.tums.ac.ir*

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Abstract:

In this regards first of all cross sectional anatomy of salivary glands and different diagnostic modalities such as ultrasound, CAT scan, conventional MRI and nuclear studies will be discussed. Advanced MRI modality such as DCE (dynamic susceptibility enhanced) imaging will be introduced.

Then various pathologies of salivary glands including infectious, benign and malignant neoplastic processes and their different imaging characteristics will be mentioned in detail along with high quality images.

At the end a diagnostic algorithm for appropriate management of patients with salivary gland lesion will be presented which is very helpful for both clinicians and radiologists especially for residents.

• 1018

IMAGING OF LARYNX AND HYPOPHARYNX

Mohammad Ali Kazemi [1,*]

[1] *Assistant Professor of Tehran University of Medical Sciences, Amira'alam Hospital, Department of Radiology*

[*] *Corresponding author: Mohammad Ali Kazemi, MD, Assistant Professor of Tehran University of Medical Sciences, Amira'alam Hospital, Department of Radiology. E-mail: aliksp@yahoo.com*

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Abstract:

Squamous cell carcinoma comprises 95% of laryngeal carcinomas. It is usually detected by laryngoscopic evaluation.

Imaging plays an important role in the evaluation of submucosal extension and staging of this malignancy. Supraglottic, glottic and sublottic regions are separately evaluated. In supraglottic region extension of the mass to preepilottic and paraglottic spaces and cartilges invasion are assssed.

Bilateral TVCs and anterior commissure are evaluated in the glottic region and cricoid ring is scrutinized in subglottic area. Complete evaluation of cervical lymph nodes and distant metastasis are the next step.

Hypopharyngeal SCC can involve pyriform sinus, post-cricoid and posterior pharyngeal walls. These must be differentiated from laryngeal carcinoma extension.

• 1019

IMAGING OF PARANASAL SINUSES, FOCUSING ON NEOPLASTIC LESIONS

Hashem Sharifian [1,*]

[1] *Tehran University of Medical Sciences Amira'alam hospital*

[*] *Corresponding author: Hashem Sharifian, MD, Tehran University of medical sciences Amira'alam hospital. E-mail: hashemsharifian@gmail.com*

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Abstract:

Dependency of clinicians and surgeons on imaging studies for primary evaluation of patients and also for follow up of them, significantly increased in recent years, parallel to advances in imaging methods and new imaging modalities.

Regarding to these tips, it is important that we can use new concepts in conducting imaging to fulfill new requirements of clinicians and then provide sufficient data in our reports to answer their questions about the patient disease.

Here I try to discuss different imaging modalities in evaluation of patients and how to design and conduct protocols to meet our needs in this era. Presentation of appropriate cases better shows the goal of this lecture.

• 1020

NEW GUIDELINES IN MANAGEMENT OF THYROID NODULE, WHEN TO BIOPSY AND WHEN TO FOLLOW

Bijan Bijan [1,*]

[1] *Professor of Nuclear Medicine and Radiology Radiology and Nuclear Medicine / PET Divisions, University of California Davis Medical Center, Sacramento, California, USA*

[*] *Corresponding author: Bijan Bijan, MD, MBA, CIIP, MD, Professor of Nuclear Medicine and Radiology Radiology and Nuclear Medicine / PET Divisions, University of California Davis Medical Center, Sacramento, California, USA. E-mail: bbijan2002@yahoo.com*

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- Prerequisites: Familiarity with basic thyroid nodule ultrasound

- Objectives:

5 main feature categories of thyroid nodules: 10 minutes

Review of thyroid nodule classification: 5 minutes minutes

Case-studies: 15 minutes

Abstract:

Lack of unified system in characterizing and reporting thyroid nodules is deeply felt almost in every institution and is a source of confusion among diagnostic radiologists, pathologists, thyroid surgeons, oncologists, endocrinologists and interventionalists.

Elaborate systems exist but they are not easy to use. Therefore many of those systems cannot be utilized widely in general radiology practice.

A simplified approach to thyroid nodule is a crucial need to prevent unnecessary work up, follow up or procedures.

A combination of TIRADS and ACR guidelines probably would strike a balance between high sensitivity with acceptable specificity.

• 1021

REVIEW THE APPROPRIATE APPROACH FOR EVALUATION OF METASTATIC CERVICAL LYMPH NODES ON CROSS-SECTIONAL NECK IMAGING

Yasmin Davoudi [1,*]

[1] *Associate Professor of Radiology, Mashhad University of Medical Sciences, Mashhad, Iran*

[*] *Corresponding author: Yasmin Davoudi, MD, Associate Professor of Radiology, Mashhad University of Medical Sciences, Mashhad, Iran. E-mail: yasmindavoudi@gmail.com*

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Abstract:

The imaging assessment of nodal disease can be challenging for the radiologist because there are multiple sites to review and differing opinions about criteria for abnormal nodes.

The ability to accurately detect nodal metastases is improved with knowledge of the criteria for abnormal nodes, the nodal drainage patterns, and common imaging pitfalls. In this article, we introduce these basic concepts and review the appropriate approach for evaluation of metastatic cervical lymph nodes on cross-sectional neck imaging.

This presentation would cover the following topics:

- Criteria for Abnormal Nodes which includes size, morphology, margin and internal content of the lymph nodes (cystic changes, Ca,etc.).

- Site classification based on the system devised by American head and neck society and American academy of otolaryngology-head and neck surgery.

- Features important for staging and the radiologist's role is to describe characteristics pertinent to the N staging.

- Important features for management such as extra capsular spread.

It would also have a brief review of advanced imaging techniques for nodal metastases and the indications for FNA in head and neck lymphadenopathies.

• 1022

IMAGING OF VASCULAR MASSES OF THE HEAD AND NECK

Mohammad Davoodi [1,*]

[1] *Department of Radiology, Shariati Hospital, Tehran University of Medical Sciences, Tehran, Iran*

[*] *Corresponding author: Mohammad Davoodi, MD, Department of Radiology, Shariati Hospital, Tehran University of Medical Sciences, Tehran, Iran. E-mail: mohammaddavoodi47@yahoo.com*

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Abstract:

The classification and imaging appearances of vas-

cular masses of the head and neck are reviewed. The radiological appearances of congenital vascular masses (infantile haemangiomas and other congenital vascular tumours, high-flow and low-flow vascular malformations), acquired vascular masses (benign and malignant tumours, non-neoplastic lesions) and other hypervascular masses are described and illustrated.

• 1023

US IMAGING FOR INFERTILITY WORKUP

Firoozeh Ahmadi [1,*]

[1] *Radiologist, Department of Reproductive Imaging, Reproductive Biomedicine Research Center, Royan Institute for Reproductive Biomedicine, ACECR, Tehran, Iran*

[*] *Corresponding author: Firoozeh Ahmadi, Radiologist, Department of Reproductive Imaging, Reproductive Biomedicine Research Center, Royan Institute for Reproductive Biomedicine, ACECR, Tehran. Iran. E-mail: dr.ahmadi1390@gmail.com*

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Abstract:

Infertility can be defined as the inability to conceive a pregnancy after 1 year of unprotected intercourse or after 6 months in a woman over 35 years old. The use of sonography, in particular transvaginal sonography (TVS), has become an integral component of the evaluation and treatment of infertility. The TVS allows high-resolution assessment of the uterus, ovaries, and fallopian tubes. TVS plays a critical role in the diagnosis and treatment of infertile women.

Initial baseline ultrasound examination is used primarily to identify structural abnormalities that might affect fertility such as uterine anomalies, endometrial polyps or submucosal leiomyomas, endometrial adhesions/synechiae, or hydrosalpinges. Sonography is also used to assess for possible underlying pathologic processes associated with infertility such as adenomyosis, endometriosis, polycystic ovary syndrome (PCOS), and low antral follicular count. If the baseline pelvic sonogram is inconclusive or noncontributory, further anatomic evaluation can be obtained by means of pelvic magnetic resonance imaging (MRI), hysterography, sonohysterography, or even hysteroscopy and laparoscopy, as indicated.

CT and MRI play essential roles in evaluating gynecological disease .with the advent of multidetector CT faster scanning during optimal vascular opacification is now available which may improve accuracy in the detection and staging of gynecologic disease. However due to multiplanar capability and excellent tissue contrast, MRI is the preferred imaging modality of the female pelvis in many instances.

Hysterosalpingography (HSG) is a valuable technique in evaluating the uterus and fallopian tubes. Contrast material introduced into the uterus through the cervical canal outlines the inner cavity of the uterus and tubes. A spill of contrast material into the peritoneal cavity reveals the patency of the fallopian tubes.

• 1024

OVARIAN CANCER STAGING BY MDCT

Mahrooz Malek [1,*]

[1] *Assistant Professor of Tehran University of Medical Sciences*

[*] *Corresponding author: Mahrooz Malek, Assistant Professor of Tehran University of Medical Sciences. E-mail: mahrooz.malek@gmail.com*

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Abstract:

Ovarian cancer is the most lethal gynecological cancer and about 70% of the patients are advanced stagein the time of diagnosis.

Decision about management (surgical debulking versus neoadjuant chemotherapy) in ovarian cancer patients is dependent on initial staging by abdominopelvic MDCT or MRI, so ,Radiologist expertise on ovarian cancer staging is very important.

Involvement of mesenteric root,peritoneal implante larger than 2cm,lymphadenopathy superior to renal hilum and implants near hepatic veins are criteria for nonresectability of ovarian cancer and radiologist must be familiar and expert on the imaging protocol and findings on MDCT for ovarian cancer staging.

• 1025

SONOGRAPHIC AND IMAGING OF GRUNULOMATOUS DISEASE OF BREAST

Ahmad Soltani Shirazi [1,*]

[1] *Jundishapour Univesity of Medical Sciences*

[*] *Corresponding author: Ahmad Soltani Shirazi, Jundishapour Univesity of Medical Sciences. E-mail: dr.a.soltanishirazi@gmail.com*

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Abstract:

Idiopathic lobular grunulomatous mastitis is a chronic inflammatory disease of breast that can clinically mimic Brent carcinoma or pyogenic abscess.

The most common clinical presentation is a fine unilateral discrete mass associated Inflammation of overlying skin. Nipple retraction and sinus formation are present. Breast TB should be considered in differential we present a few cause of our center with sonography findings and lab test data. The most common mammographic findings an asymmetric density or ill-defined mass. Ultrasound findings are variable irregular hypoecho mass and cyst with thick irregular wall. The cyst wall and septation show imageble flow on color Doppler images. Fistule formation with echogenic fluid and imageble flow of fistule ducts are seen in 60% of patient. In our cases 15% have ductal ectesia with abscess 85 % thick irregular wall multiple complex cysts and 65 % echogenic fluid collection and fistula tract.

• 1026

WEIGHT OF DIFFERENT DESCRIPTORS OF MAMMOGRAPHY

Masoumeh Gity [1,*]

1 Associate Professor of Radiology, Tehran University of Medical Sciences

** Corresponding author: Masoumeh Gity, MD, Associate Professor of Radiology, Tehran University of Medical Sciences. E-mail: p_gity@yahoo.com*

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Abstract:

Mammography has been recognized as the best method of screening for breast cancer, for a long time. Although the sensitivity of mammography is acceptable, it has limited specificity and a radiologist should be aware of limitations and pitfalls. There are different positive findings in mammography which are descriptors of breast disease including benign lesions or breast cancer. In this talk I will explain different descriptors of mammography. These descriptors are different in weight toward predicting malignancy. For example, a mass is classified by the shape, margin and density. It has been discussed that some forms of "margin" have a high positive predictive value for malignancy. Also microcacifications as good descriptors for early malignant process are classified by their shape (morphology) and distribution.

We will discuss the comparative weight of different descriptors as predictors of breast cancer.

• 1027

BASIC AND NEW TECHNIQUES FOR MRI OF THE BREAST

Thomas Helbich [1,*]

[1] Department of Radiology, Division of Molecular and Gender Imaging; Medical University of Vienna

** Corresponding author: Thomas Helbich, MD, Department of Radiology, Division of Molecular and Gender Imaging; Medical University of Vienna. E-mail: thomas.helbich@meduniwien.ac.at*

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Abstract:

MRI of the breast has evolved as a non-invasive imaging modality and is ideally suited for several indications e.g. pre-operative staging and screening in women at increased risk for breast cancer. The widespread use opens also the discussion on over-diagnosis if only 20 - 30 out of 100 MRI - guided breast biopsies lead to the diagnosis of breast cancer. Thus MRI based strategies are needed to significantly reduce the number of unnecessary biopsies by decreasing over-diagnosis.

In their development cancer have acquired several functional capabilities, which are defined as the hallmarks of cancer. For a deeper understanding of the hallmarks of cancer, and, consequently, improved personalized patient care, diagnostic tests must be multilayered and complex to identify the relevant underlying processes of cancer development and progression. Contrast-enhanced MRI (CE-MRI) is the most sensitive test for breast cancer detection, with a good specificity. Recently, several functional parameters on MRI have been assessed for breast imaging and this combined application is defined as multiparametric imaging. Multiparametric imaging with

different functional MRI parameters (mpMRI) visualizes and quantifies the functional processes of cancer development and progression at multiple levels, and provides specific information about the hallmarks of cancer. MpMRI of the breast improves diagnostic accuracy in breast cancer, obviates unnecessary breast biopsies, and enables an improved assessment and prediction of response to neoadjuvant therapy.

This lecture will provide a comprehensive overview of the current strategies and emerging techniques for mpMRI of the breast.

• 1028

BREAST CANCER SCREENING WITH MRI

Thomas Helbich [1,*]

[1] *Department of Biomedical Imaging and Image guided Therapy, Medical University of Vienna*

[*] *Corresponding author: Thomas. Helbich, MD, Department of Biomedical Imaging and Image guided Therapy, Medical University of Vienna. E-mail: thomas.helbich@meduniwien.ac.at*

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Abstract:

The sensitivity and specificity of mammography are limited in highly fibroglandular breasts (ACR density C and D). Digital mammography provides increased sensitivity in young women and those with moderately dense breasts, and digital three-dimensional mammography (Tomosynthesis) promises further improvement. For women with the densest breasts, however, radiography is unlikely to be the optimum solution. MRI, although not affected by breast density, is expensive and access is often limited. Nevertheless, enthusiasm for the use of MRI as a screening modality is growing because MRI demonstrated to be the most sensitive test and cancer yield is significant higher in comparison to any other imaging technology. This has been demonstrated in women at high and average risk. In comparison to mammography the specificity is lower, but technical developments have given rise to sharper, more informative images. These improvements foster the use of MRI. Different trials have been preformed and promising results have been reported.

This talk will focus on benefits, harms, and cost-effectiveness of supplemental MRI based breast cancer screening.

• 1029

BIRADS CLASSIFICATION IN BREAST ULTRASOUND, IS IT REALLY HELPFUL

Nasrin Ahmadinejad [1,*]

[1] *Associated Professor Tehran University of Medical Science, Advanced Diagnostic and Interventional Radiology Research Center (ADIR)*

[*] *Corresponding author: Nasrin Ahmadinejad, Associated Professor Tehran University of Medical Science, Advanced Diagnostic and Interventional Radiology Research Center (ADIR). E-mail: n_ahmadinejad@yahoo.com*

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Abstract:

Breast Us is an important compliment to the clinical mammographic investigation of breast lesions and role of breast US has rapidly expanded from simply characterizing the internal content of the mass to differentiating between benign to malignant breast masses and as an adjunctive to mammography especially in young women or women with dense breast.with resent development in Us equipment sonography is now a well stablished tool in breast imaging, allowing identification of up to 27% of breast masses that are occult on mammography especially in women younger than 50 years of age. ACR established BIRADS lexicon for US in an attempt to standardize image interpretation among radiologists, referring physicians and surgeons.as well as BIRADS lexicon provides standardized terminology to facilitate accurate and consistent breast sonography and mammography reporting.

BIRADS assesment for Us are based on analysis of several feature categories include: shape of mass, orientation of mass, margin of mass, lesion boundary, echo pattern, posterior acoustic features and calcification.

Many studies shows that features from the standardized sonographic lexicon can be helpful in distinguishing benign from malignant solid masses.

• 1030

HOW TO APPLY BI-RADS CLASSIFICATION IN IRAN

Nahid Sadighi [1,*]

[1] *Radiologist, Associate Professor of Radiology, TUMS, Imam Khomeini Hospital, MIC, ADIR and Cancer Institute, Tehran, Iran*

* Corresponding author: Nahid Sadighi, MD, Radiologist, Associate Professor of Radiology, TUMS, Imam Khomeini Hospital, MIC, ADIR and Cancer Institute, Tehran, Iran. E-mail: sadighii@yahoo.com

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Abstract:

BI-RADS is the widely accepted common language for interpretation of findings in mammography, sonography and MRI.

After giving multiple lectures in our joint seminars with the surgeons, they became familiar with the system.

Nowadays the surgeons expect us to give the BI-RADS score to the breast lesions. As a matter of fact, they have become dependent on our reports and they rely on them. However, there are still surgeons who may be confused with the BI-RADS based reports especially the category 0 and 3.

On the other hand, after performing an image-guided biopsy, the pathologist needs a BI-RADS score of the lesion. After getting the report of pathology, the radiologist is expected to mention if the report of pathology is concordant or discordant with the image findings.

In spite of the widespread use of BI-RADS for reporting breast images in Iran, there are still reports from different centers, which show discrepancy between the image findings and conclusion. There are also non -standard use of lexicon.

In this lecture I will try to talk about these issues.

• 1031

WHAT ARE THE BASIC NEEDS OF A MAMMOGRAPHY SCREENING PROGRAM?

Florian Dammann [1,*]

[1] Diagnostic and Interventional Radiologist, Senior Attending Physician, Dept. of Diagnostic, Interventional and Pediatric Radiology, Inselspital, University Hospital Bern, Switzerland

* Corresponding author: Florian Dammann, MD, Diagnostic and Interventional Radiologist, Senior Attending Physician, Dept. of Diagnostic, Interventional and Pediatric Radiology, Inselspital, University Hospital Bern, Switzerland. E-mail: fx-radiology@gmx.com

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Abstract:

A screening program in the strict sense of the term is a population based medical program involving non-symptomatic individuals of a defined population group. Best possible coverage of the specified population group has to be seeked. A participation rate of at least 70% is claimed by the European guidelines for a mammography screening program.

For identification of eligible individuals, an up-to-date population register is essential. The right of access to these data should be managed in agreement with the relevant data protection regulations.

Economical conditions of a screening program have to be evaluated meticulously. A stustainable refunding of the expenses covers all parts of the screening program including administration overhead.

Best possible, homogeneous and continuous medical quality is a core characteristic of a screening program. All mammography machines involved have to pass periodical quality checks. Medical personal, including radiographers as well as physicians, should pass through a dedicated education program before accreditation as a member of the mammography screening staff. An annual minimum number of mammographies for each medical staff member has to be ensured to preserve sufficient professional experience and quality.

A strictly performed quality management is crucial to check continuously for defined key performance parameters. They serve as a benchmark of the program and provide surrogat parameters indicating the success of the program. The final endpoint of a mammography screening program is defined as the decrease of mortality for mamma carcinoma but cannot be evaluated earlier than 15 - 20 years after starting the program.

• 1032

FETAL MRI, PRINCIPLES AND TECHNIQUES

Maryam Rahmani [1,*]

[1] Associate Professor, Radiology Department, Advanced Diagnostic and Interventional Radiology Research Center, Imam Khomeini Complex, Tehran University of Medical Science

* Corresponding author: Maryam Rahmani, MD, Associate Professor, Radiology Department, Advanced Diagnostic and Interventional Radiology Research Center, Imam Khomeini Complex, Tehran University of Medical Science. E-mail: m49rahmani@yahoo.com

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Abstract:

Nowadays perinatal diagnosis of fetal anomalies

improved extraordinary. Perinatal assessments includes special laboratory tests and dedicate ultrasound assessment in first and second trimester also there are invasive methods as CVS and amniocentesis.

But for questionable structural anomalies, specially CNS anomalies, MRI has a complementary and problem solving role.

Regarding special condition of exam, for mother and moving fetus, adequate planning with special care should be considered to get high quality images and conclusive results.

For example use of Gadolinium in entire pregnancy and use of MRI in first trimester are not recommended. Before MRI, no fasting or medication for mother is used as well. Time acquisition for imaging should be adjusted as short as possible.

• 1033

MRI OF PLACENTAL ABNORMALITIES AND ABDOMINAL PAIN DURING PREGNANCY

Amir H. Davarpanah [1,*]

[1] *Divisions of Abdominal and Cardiothoracic Imaging, Massachusetts General Hospital, 55 Fruit Street, Boston, MA 02114, USA*

[*] *Corresponding author: Amir H Davarpanah, MD, Divisions of Abdominal and Cardiothoracic Imaging, Massachusetts General Hospital, 55 Fruit Street, Boston, MA 02114, USA. E-mail: adavarpanah@mgh.harvard.edu*

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Abstract:
The use of magnetic resonance (MR) imaging in the evaluation of pregnant patients is increasing. Although ultrasonography (US) is considered the imaging study of choice for evaluation of abdominal pain in pregnant patients, MR imaging is a valuable adjunct to US in evaluation of pregnant patients with acute right lower quadrant pain with inconclusive US results. Furthermore MR imaging is frequently used for suspected placental invasion, the incidence of which has increased dramatically, more than 10 fold in the past 30 years, due to the increasing number of cesarean deliveries. If unrecognized prior to delivery, abnormal placentation can lead to catastrophic perinatal hemorrhage and accounts for between one third and one half of emergency peripartum hysterectomies. MRI is indicated in the diagnostic workup when the ultrasound evaluation is equivocal or in patients with high clinical risk factors for placenta accreta. In cases where US has already made a definitive diagnosis, MRI is often used to plan the cesarean section delivery and peripartum hysterectomy. Given the high stakes involved where the goal is to minimize both maternal and fetal harm, the radiologist must be familiar with the recommended protocols for MRI performance and implications of exam findings for appropriate management.

In this talk, we summarize MR imaging protocols for the comprehensive evaluation of pregnant patients. We will show how MRI can be used to evaluate for acute appendicitis and mimics as well as invasive placentation.

• 1034

ECTOPIC PREGNANCY

Mojgan Kalantari [1,*]

[1] *Associate Professor, Shahid Beheshti University of Medical Sciences, Mahdieh Hospital*

[*] *Corresponding author: Mojgan Kalantari, MD, Associate Professor, Shahid Beheshti University of Medical Sciences, Mahdieh Hospital. E-mail: mojgan.kalantary@gmail.com*

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Abstract:
Almost all ectopic pregnancies occur in the fallopian tube (98 percent), but other possible sites include: cervical, interstitial (also referred to as cornual; a pregnancy located in the proximal segment of the fallopian tube that is embedded within the muscular wall of the uterus), hysterotomy (cesarean) scar, intramural, ovarian, or abdominal. In addition, in rare cases, a multiple gestation may be heterotopic (include both a uterine and extrauterine pregnancy).

Any women with a possible pregnancy who has vaginal bleeding and/or abdominal pain should be evaluated for ectopic pregnancy.

Ectopic pregnancy affects 1% to 2% of all pregnancies and is responsible for 9% of pregnancy-related deaths in the United States.

Recent advances in diagnosis and treatment have led to a 50% reduction in mortality rates since the 1980s.

The diagnosis of ectopic pregnancy is based upon a combination of measurement of the serum quanti-

tative human chorionic gonadotropin and findings on transvaginal ultrasonography.

The diagnostic challenge occurs when ultrasonography does not identify a pregnancy as intrauterine (either viable or failing) or ecto-pic, resulting in the diagnosis of pregnancy of unknown location. The approach to a pregnancy of unknown location requires a balance of benefits and risks.

Diagnosis of rupture of the structure within which the ectopic gestation is implanted (usually the fallopian tube) is a clinical diagnosis. The typical findings of rupture are abdominal pain, shoulder pain due to diaphragmatic irritation by blood in the peritoneal cavity, and, eventually, hypotension and shock.

The three approaches to the management of ectopic pregnancy are surgery (salpingostomy or salpingectomy), MTX treatment, or expectant management. Approximately one-third of women with ectopic pregnancies are candidates for MTX treatment.

Expectant management is an option in selected women with probable EP who have a small mass with low and falling hCG provided they have minimal symptoms and are compliant with follow-up.

Methotrexate (MTX) therapy may be considered for women with an adnexal mass < 35 mm whose initial hCG is less than 1500 IU/L, provided they have minimal symptoms and compliance with follow-up is anticipated.

In this lecture I'll disscuse about diagnosis and role of imaging in non surgical management.

The remaining of women will require surgery (eg, due to suspicion of a ruptured tube, large ectopic pregnancy, inability to comply with the follow-up for MTX therapy) and some patients may prefer surgical treatment.

• 1035

HIGH RISK PREGNANCY AND IUGR

Behnaz Moradi [1,*]

[1] *Assistant Professor, Department of Radiology, Yas Hospital, Tehran University of Medical Sciences, Tehran, Iran*

[*] *Corresponding author: Behnaz Moradi, MD, Assistant Professor, Department of Radiology, Yas Hospital, Tehran University of Medical Sciences, Tehran, Iran. E-mail: b.moradi80@gmail.com*

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Abstract:

Fetal growth restriction (FGR, also called intrauterine growth restriction (IUGR)) is the term used to describe a fetus that has not reached its growth potential because of genetic or environmental factors. This situation is due to fetal, placental, or maternal factors.

Prenatal care is based on determination of the growth restricted fetus and fetus is at risk. The most common sonography-based definition of FGR is a weight below the 10th percentile for gestational age. It can be difficult to distinguish between the fetus that is constitutionally small versus growth restricted. Antenatal identification of FGR can improves outcome. Numerous approaches to differentiate the fetus or infant with growth restriction from the small, but otherwise healthy, baby have been proposed.

The fetal AC is the most sensitive single morphometric measurement for diagnosis of FGR. However, it is not as predictive of FGR as sonographic estimation of fetal weight. Sonographic estimation of fetal weight is the best method for identifying fetuses whose birth weight is likely to be below the 10th percentile for gestational age. Estimated fetal weight < 3rd percentile is consistently associated with adverse outcome. Its with abnormal umbilical artery Doppler velocimetry is highly predictive of FGR and is the best tool available for identifying the growth.

• 1036

TWIN PREGNANCY

Leila Bayani [1,*]

[1] *MD Radiologist of Arash Hospital in TUMS*

[*] *Corresponding author: Leila Bayani, MD Radiologist of Arash Hospital in TUMS. E-mail: leilabayani@yahoo.com*

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Abstract:

The increase in multiple births during the past 30 years has been well documented, making multiple gestations one of the most common high-risk conditions encountered by obstetricians and radiologists.

The increase in multiples is due to assisted reproductive technology (ART), as well as older maternal age at childbirth, a known risk factor for spontane-

ous dizygotic twinning.

Diagnosis of multiple gestations is an important issue.

Prenatal ultrasound is invaluable to the early diagnosis of a multiple gestation. Before the advent of routine prenatal ultrasound, many twins were not diagnosed until late in gestation or at delivery.

Using transvaginal ultrasound, separate gestational sacs with individual yolk sacs can be identified as early as 5 weeks from the first day of the last menstrual period, and embryos with cardiac activity can usually be seen by 6 weeks.

Determination of Chorionicity is another role of sonography.

Nowadays, sonography has critical role in first and second trimester screening.

And finally there are complications unique to multiple gestations which should be discussed in more detailed.

• 1037

FEMALE PELVIC FLOOR IMAGING

Amir H. Davarpanah [1,*]

[1] *Divisions of Abdominal and Cardiothoracic Imaging, Massachusetts General Hospital, 55 Fruit Street, Boston, MA 02114*

[*] *Corresponding author: Amir H Davarpanah, MD, Divisions of Abdominal and Cardiothoracic Imaging, Massachusetts General Hospital, 55 Fruit Street, Boston, MA 02114. E-mail: adavarpanah@mgh.harvard.edu*

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Abstract:

Pelvic floor anatomy is complex and is unraveled by means of magnetic resonance (MR) imaging. It is a reliable technique for accurate diagnosis of pelvic floor weakness, which refers to a spectrum of functional disorders caused by impairment of the ligaments, fasciae, and muscles that support the pelvic organs. Such disorders include urinary and fecal incontinence, obstructed defecation, and pelvic organ prolapse. Dynamic MR imaging using steady-state sequences enables functional evaluation of pelvic floor. In addition, the superb soft-tissue contrast and multiplanar imaging capability of MRI allow characterization of disorders affecting the female urethra and also permit visualization of lesions outside the urethra, including the perineum, that may present with clinical symptoms of dysuria or palpable masses. Localizing female periurethral and perineal lesions is the key in differentiating pathologic entities. Because therapeutic management can vary, preoperative diagnosis with MRI is crucial.

In this talk we review pelvic floor anatomy, the MR imaging protocol used in our institutions, common MR imaging findings in the presence of pelvic floor weakness, and highlight key details that radiologists should provide surgeons to ensure effective treatment and improved outcomes. We will also illustrate the MRI findings of benign and malignant perineal lesions and the features that differentiate them.

• 1038

APPROACH TO ADNEXAL MASSES AND TORSION

Amir H. Davarpanah [1,*]

[1] *Divisions of Abdominal and Cardiothoracic Imaging, Massachusetts General Hospital, 55 Fruit Street, Boston, MA 02114*

[*] *Corresponding author: Amir H Davarpanah, MD, Divisions of Abdominal and Cardiothoracic Imaging, Massachusetts General Hospital, 55 Fruit Street, Boston, MA 02114. E-mail: adavarpanah@mgh.harvard.edu*

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Abstract:

Incidental detection of adnexal masses (so called incidentalomas) has created a management dilemma for both clinicians and radiologists, particularly in the oncology patient in whom any mass, clinical or subclinical, warrants further evaluation. Pelvic ultrasound (US) remains the primary, and in most cases the preferred, imaging modality to evaluate adnexal cysts. The majority of adnexal masses can be correctly categorized based on grayscale and color or power Doppler US features. However, the differential diagnosis for such lesions is wide, encompassing a range of benign, borderline, and malignant entities. Stratification of risk is made on age, menopausal status, imaging features, and tumor markers.

In this talk, we review the different imaging modalities available to characterize adnexal masses, describes the typical ultrasound and magnetic resonance imaging features of the most commonly encountered adnexal lesions, and discuss an imaging

algorithm in the management of such patients. We will also discuss approach to acute onset pelvic pain in female patients. Because ovarian torsion is rare and usually clinically occult, radiologists play an important role in making this diagnosis and knowledge of imaging is crucial for timely diagnosis and treatment.

• 1039

ENDOMETRIOSIS

Seyed Reza Saadat Mostafavi [1,*]

[1] *Assistant Professor of Radiology, Iran University of Medical Science, Tehran, Iran, Hazrat-e- Rasool Hospital*

[*] *Corresponding author: Seyed Reza Saadat Mostafavi, Assistant Professor of Radiology, Iran University of Medical Science, Tehran, Iran, Hazrat-e- Rasool Hospital. E-mail: reza_sm1357@yahoo.com*

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Abstract:

Endometriosis is a common disease among women of reproductive age. The prevalence is almost 10% in general population and may be more in patients referred for pelvic pain or infertility. The current knowledge on diagnosis and treatment of endometriosis is not sufficient.

The First step and imaging modality of choice in diagnosis of endometriosis is transvaginal or transrectal ultrasound. However, the diagnostic performance of this test is highly dependent on the quality of the equipment and the familiarity of the operator with the typical and atypical presentation of endometriosis on ultrasound. In 20% of patients, the diagnosis is especially challenging because there is no cystic lesion in the pelvis and pelvic nodules, adhesions and involvement of the uterosacral ligament or rectovaginal septum only manifest the disease. This group of patients may remain undiagnosed for decades.

There are multiple maneuvers for detecting the adhesions through applying pressure on the abdominal wall by both the transducer and the other hand simultaneously. In patients without adhesion, mobility of the pelvic organs by these maneuvers can accurately be observed and is considered as positive sliding sign. On the other hand, the restricted mobility of the pelvic organs is considered as negative sliding sign and reflects possible adhesion. The entire pelvis and the bowels walls should also be scrutinized for the presence of any nodule and the severity of invasion should be reported. It is also possible to find thick uterosacral ligament and its nodule. The dynamic nature of ultrasound scanning provides the opportunity to evaluate the tender points more precisely.

There is a 1% - 2.5 % chance of malignancy in endometrioma cysts so an ovarian cyst with the imaging appearance in keeping with an endometrioma should be accurately evaluated for any sign of malignancy like mural nodule or internal thick septation.

Hereby, we are going to share our experience of diagnosing more than 1000 cases of endometriosis on ultrasound along with presenting multiple pictures and clips from our interesting cases.

• 1040

ARCHITECTURAL DISTORTION ON BREAST IMAGING

Mahshid Haghighi [1,*]

[1] *Isfahan University of Medical Sciences*

[*] *Corresponding author: Mahshid Haghighi, MD, Isfahan University of Medical Sciences. E-mail: mahshidh9@yahoo.com*

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Abstract:

- Definition based on BIRADS lexicon: The normal architecture of the breast is distorted with no definite visible mass. Its PPV for malignancy is about 75%.

- Causes: 1- benign lesions like Radial scar, complex sclerosing lesions, sclerosing adenosis, Fat necrosis,...

2- MAlignant lesions consist of IDC, ILC, DCIS.

- Detection: By mammography, tomosynthesis, ultrasound, MRI.

• 1041

SCREENING OF BREAST CANCER IN EUROPE

Hadi Zomorrodian [1,*]

[1] *MD Diagnostic and Interventional Radiologist, Responsible Radiologist for Senology, Radiology and Neuroradiology Department, Nordwest Hospital, Frankfurt am Main, Germany*

[*] *Corresponding author: Hadi Zomorrodian, MD, Diagnostic and Interventional Radiologist, Responsible Radiologist for Senology, Radiology and Neuroradiology Department, Nordwest Hospital, Frankfurt am Main, Germany. E-mail: Hadiz59@yahoo.com*

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Abstract:

European Union has more than 500 million population with approximately > 5 million deaths per year. It is estimated that more than one fourth of death cases are due to cancer (2nd common cause) and breast cancer is responsible for > 90,000 deaths per year. In addition to the life style modifications and preventive actions, EU governments as per the European council recommendations going back to year 2003, have taken "common action to implement national, population-based screening programs for breast, cervical and colorectal cancer."

"Organized population-based screening programs with defined target population, screening interval, protocol of testing and follow up with comprehensive quality assurance at all levels" are considered to decrease the death rate from these cancers.

Mammography is a scientifically approved method for screening breast cancer. Out of the 28 EU countries only Bulgaria, Greece and Slovak Republic does not have a mammography screening program. 16 of these 25 states use digital mammography only (%64), the rest also use film-screen mammography. Similarly, in %64 of countries the target population is women in the age group of 50 - 69 years. The screening interval is 2 years for most of the countries, exceptions are only Malta and United Kingdom with 3 years interval.

According to the "cancer screening in the European union report on the implementation of the council recommendation on cancer screening" prepared and published in January 2017 by international agency for research on cancer in collaboration with CPO Piemonte and University hospital "Citta della Salute e della Scienza" Turin, Italy and mass screening registry/finnish cancer registry Helsinki, Finland in the index year 2013 approximately from the 32 million female annual population in the age group of 50 - 69 years, nearly 25 million have been invited to mammography screening (coverage by invitation 79%), from which 60% participated (participation rates of countries varied between 6.2% and 83.5%) so 16 million have been screened (coverage by examination 50%). The mean treatment referral rate was 7.1 per 1000 women screened (range of various countries 2.3 - 12.2) and the mean detection rate of cancer (DCIS and invasive cancer) was 6.2/1000 women screened (range 2.3 - 10.2). The positive predictive value (PPV) of mammography to detect breast cancer was 12.2% (range 4.4 - 27.9).

In Germany as an example out of 1000 women participating in mammography screening program 30 woman with suspect findings are asked to return for a follow-up examination such as an ultrasound (30/1000) or biopsy (12/1000) out of which 6 turn out to be a malignancy (6/1000 positive-positive mammogram and biopsy). So 24 out of 1,000 women have false-positive mammography findings, and 6 of these women are biopsied.

Financial and logistic support with political will and engagement are needed bases for an organized population-based fair expanded program. For breast cancer the European guidelines for quality assurance in screening and diagnosis are available (2006, supplements 2013) and vastly followed. They include many details such as systematic written invitation of the target group, systematic administration, responsible team for quality assurance, linkage between the screening and cancer registries, etc. but obviously, there are still shortcomings which need improvements e.g. barriers to access to screening and also to bring quality assured services.

• 1042

PRENATAL ASSESSMENT OF FETAL SKELETAL SYSTEM

Masoud Poureisa [1]; Sedigheh basirjafari [1,*]

[1] *Department of Radiology, Imam Reza Teaching Hospital, Tabriz University of Medical Sciences, Tabriz, Islamic Republic of Iran*

[*] *Corresponding author: Sedigheh basirjafari, MD, Department of Radiology, Imam Reza Teaching Hospital, Tabriz University of Medical Sciences, Tabriz, Islamic Republic of Iran. E-mail: sed_basir_6886@yahoo.com*

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Abstract:

Skeletal dysplasias are a heterogeneous group of conditions associated with abnormalities of the skeleton, including abnormalities of bone shape, size, and density that manifest as abnormalities of the limbs, chest, or skull.

Chest: the chest circumference and cardiothoracic ratio should be measured. A chest circumference less than the 5th percentile for gestational age has been proposed as an indicator of pulmonary hypoplasia.

Hands and feet: the hands and feet should be evaluated to exclude the presence of (a) polydactyly; (b)

syndactyly; (c) clinodactyly and (d) other deformities. Foot length should be measured and any missing bones evaluated. Any postural deformities such as “hitchhiker’s thumb”, “rocker-bottom” feet, and clubbed feet or hands should also be evaluated.

Skull: head circumference and biparietal diameter should be measured to exclude macrocephaly. The shape, mineralization, and degree of ossification of the skull should be evaluated.

Pelvis: The shape of the pelvis can be important in certain dysplasias and dysostoses, such as limb-pelvic hypoplasia; femoral hypoplasia; achondroplasia.

Examples of fetal skeletal dysplasia

- Limb deficiency: Amelia, Meromelia, Phocomelia, Micromelia.

- Thanatophoric dysplasia: characterized by disproportionate dwarfism with very short extremities.

- Osteogenesis imperfecta: heterogeneous group of disorders, leading to increased bone fragility.

- Chondrodysplasia punctata: calcific stippling of epiphyses.

- Diastrophic dysplasia: micromelic dwarfism with clubfeet, hand deformities, multiple flexion contractures, and scoliosis.

• 1043

SOFT MARKERS IN SECOND TRIMESTER OBSTETRIC ULTRASOUND

Behnaz Moradi [1,*]

[1] *Department of Radiology, Yas Hospital, Tehran University of Medical Sciences, Tehran, Iran*

[*] *Corresponding author: Behnaz Moradi, MD, Department of Radiology, Yas Hospital, Tehran University of Medical Sciences, Tehran, Iran. E-mail: b.moradi80@gmail.com*

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Abstract

Aneuploidy and especially Down syndrome is the most common genetic abnormality detected by antenatal sonography. Fetuses with abnormal karyotypes often have anatomic changes or sonographic markers. Sonographic findings, maternal serum markers, and maternal risk factors for genetic disease are all considered in determining the risk that the fetus is affected. However, invasive testing is required to obtain a definitive diagnosis.

Second trimester soft markers are sonographic findings with uncertain significance and usually with normal outcome (ie, normal variants), and are transient. However they do carry an increased risk for fetal aneuploidy. These markers include: increased nuchal fold, absent nasal bone, ventriculomegaly, abberant right subclavian artery (ARSA), echogenic bowel, pyelectasis, shortened long bones (humerus, femur), echogenic intracardiac focus, choroid plexus cysts.

Individual soft markers will vary in the degree of association with fetal aneuploidy. It has become practice to estimate the degree of association as a likelihood ratio (LR) by which the a priori background risk is altered. Also when more than one marker is present, the likelihood of aneuploidy is significantly increased. Although use of soft markers for screening for, or excluding, fetal aneuploidy is inefficient, a detailed evaluation of fetal anatomy should be performed. Also these markers could alter the patient prior risk and decrease the number of invasive tests (e.g. amniocentesis).

• 1044

RENAL UNUSUAL AND PSEUDO MASS LESIONS

Amir H. Davarpanah [1,*]

[1] *Divisions of Abdominal and Cardiothoracic Imaging, Massachusetts General Hospital, 55 Fruit Street, Boston, MA 02114*

[*] *Corresponding author: Amir H Davarpanah, MD, Divisions of Abdominal and Cardiothoracic Imaging, Massachusetts General Hospital, 55 Fruit Street, Boston, MA 02114. E-mail: adavarpanah@mgh.harvard.edu*

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Abstract

The vast majority of primary renal neoplasms represent renal cell carcinomas, angiomyolipomas, or transitional cell carcinomas. However, a number of more rare masses can also be encountered, many of which can be very difficult to differentiate from these more common entities based on their imaging features. Even if a radiologist is unable to make a specific diagnosis, knowledge of these entities is important, as it allows radiologists to guide post-surgical follow-up, as well to understand the most common sites of metastatic disease. Furthermore, there is a spectrum of non-neoplastic conditions of the kidneys that can mimic neoplasm. These condi-

tions include infectious, inflammatory, granulomatous, vascular and postoperative entities.

In this talk, a variety of renal unusual and pseudomass lesions are presented. Knowledge of these processes and their relevant imaging features can help to appropriately guide management.

• 1045

IMAGING OF SCROTAL EMERGENCIES

Seyed Morteza Bagheri [1,*]

[1] *Assistant Professor of Radiology and Chief in Department of Radiology, Hasheminejad Kidney Center (HKC), Iran University of Medical Sciences, Tehran, Iran*

[*] *Corresponding author: Seyed Morteza Bagheri, Assistant Professor of Radiology and Chief in Department of Radiology, Hasheminejad Kidney Center (HKC), Iran University of Medical Sciences, Tehran, Iran. E-mail: smb_53@yahoo.com*

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Abstract:

Although scrotal emergencies arenot common, but may be leading to adverse consequences. Therefore quick review and urgent medical action is needed. Infectious diseases, trauma and vascular accidents, are the most common underlying causes. The ultrasound is initial modality and in most cases will lead to a definitive diagnosis and provide appropriate treatment. Infectious diseases (includes epididymitis and epididymo-orchitis) and their complications, including abscesses and Pyocele, is well diagnosed by ultrasound. In scrotal trauma, diagnosis of intra or extra testicular hematoma, evidence of tunica albuginea rupture and Hematocele is provided. Testicular torsion is the most important disease of scrotum that requiring emergency surgery.

So it's quick and has high detection sensitivity, ultrasound is the imaging modality of choice for early evaluation of scrotal emergencies. Scrotal sonography is extremely helpful in differentiating other diseases such as testicular tumors and varicocele. Other imaging modalities have complimentary role in diagnosis of scrotal emergencies. For example, CT scan has an important role in the diagnosis of Fournier's gangrene. MRI is benefit to differentiated tumoral lesion from non-tumoral lesions. We give an overview of scrotal emergencies, described the role of imaging modalities and we try to explain the most important imaging findings of these diseases.

Keywords: Imaging; Scrotum; Emergency

• 1046

IMAGING OF HEPATIC METASTASIS

Amir Reza Radmard [1,*]

[1] *Department of Radiology, Shariati Hospital, Tehran University of Medical Sciences, Tehran, Iran*

[*] *Corresponding author: Amir Reza Radmard, MD, Department of Radiology, Shariati Hospital, Tehran University of Medical Sciences, Tehran, Iran. E-mail: radmard@tums.ac.ir*

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Abstract:

Metastases are the most common malignant hepatic lesions and considered to be the most frequent indication for imaging of the liver. The accurate detection and characterization of liver metastasis remains a critical issue at the initial diagnosis of primary cancer or during the course of patient treatment. In the recent years, the advent of highly efficient imaging modalities and new techniques has facilitated the early detection of hepatic metastases. This can provide a unique opportunity for applying different treatment options including resection (like colorectal metastases) or radiologic interventional therapies. Optimized MDCT and MRI protocols and application of liver MRI specific contrast agents have also been promising in this agenda. The radiologist's knowledge from underlying histopathologic changes in different types of liver metastases can aid for accurate detection and interpretation of imaging findings. In this talk, the spectrum of imaging findings in hepatic metastasis will be reviewed and new updates in technical aspects will be discussed.

• 1047

IMAGING PRESENTATION OF BUDD-CHIARI SYNDROME

Atousa Adibi [1,*]

[1] *Professor of Radiology, Isfahan University of Medical Sciences*

[*] *Corresponding author: Atousa Adibi, MD, Professor of Radiology, Isfahan University of Medical Sciences. E-mail: a_adibi@med.mui.ac.ir*

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Abstract:

Budd-Chiari syndrome is caused by the obstruction of the hepatic venous, with high mortality rate in nontreated cases.

Because the clinical presentation of this syndrome is nonspecific, is very important. Contrast enhanced multiphase computed tomography (CT) and magnetic resonance (MR) angiography permits morphologic and functional assessment of liver changes in suspicious clinical setting. The aim of this presentation is to present the classical imaging features of this syndrome.

Radiographic features

1- CT scan:

1-1- Inhomogeneous mottled liver with delayed enhancement in the periphery of the liver and around the hepatic veins

1-2- Peripheral zones of the liver may appear hypo attenuating because of reversed portal venous blood flow

1-3- Caudate lobe enlargement and increased contrast enhancement compared with the remainder of the liver

1-4- Inability to identify hepatic veins

2- Ultrasound:

2-1- acute

2-1-1- hepatomegaly

2-1-2- splenomegaly

2-1-3- heterogeneous echotexture

2-2- chronic

2-2-1- hypertrophied caudate lobe

2-2-2- peripheral atrophy

2-2-3- regenerative nodules

2-4- gallbladder wall thickening

2-5- ascites

3- Color-flow Doppler:

3-1- part of or the entire right hepatic vein with no flow or inappropriately directed flow

3-2- discontinuity between the main hepatic vein and the IVC

3-3- reversed flow in hepatic veins and intra and extrahepatic collaterals

3-4- portal vein changes such as hepatopetal or hepatofugal flow

3-5- thrombus or tumour within the IVC

3-6- increased resistive index within the hepatic artery: > 0.75

• 1048

DIAGNOSIS AND STAGING OF HEPATOCELLULAR CARCINOMA

Amir H. Davarpanah [1,*]

[1] *Division of Abdominal and Cardiothoracic Imaging, Massachusetts General Hospital, 55 Fruit Street, Boston, MA 02114*

[*] *Corresponding author: Amir H Davarpanah, MD, Division of Abdominal and Cardiothoracic Imaging, Massachusetts General Hospital, 55 Fruit Street, Boston, MA 02114. E-mail: adavarpanah@mgh.harvard.edu*

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Abstract:

Hepatocellular carcinoma (HCC) is the fifth most common tumor in the world, and its incidence is increasing. It is second most common cause of cancer related death worldwide and fastest growing cause of cancer death in the United States. Cirrhosis is the most important clinical risk factor for HCC, with approximately 80% of cases of HCC developing in patients with a cirrhotic liver. HCC differs from most malignancies because it is commonly diagnosed on the basis of imaging features alone, without histologic confirmation. The prognosis of HCC depends largely on the stage at which the tumor is detected. The detection of HCC early in its development, therefore, is critical to improve the survival of affected patients.

In this talk, we discuss surveillance strategies with ultrasonography (US) as the primary screening imaging test as well as current state of the art for the imaging-based diagnosis and staging of HCC.

• 1049

THE CURRENT DIAGNOSTIC AND TREATMENT OPTIONS FOR MANAGING HEMOBILIA

Mohammad Gharib Salehi [1,*]

[1] *Assistant Professor of Medical Science, Imam Reza Hospital, Kermanshah University of Medical Science, Kermanshah, Iran*

[*] *Corresponding author: Mohammad Gharib Salehi, MD, Assistant Professor of Medical Science, Imam Reza Hospital, Kermanshah University of Medical Science, Kermanshah, Iran. E-mail: Kumssalehi@yahoo.com*

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Abstract:

hemobilia is a rare source of upper gasterointestinal bleeding.

Though the incidence is increasing along with the rise in minimally invasive biliary interventions.

Prompt diagnosis and treatment rests of having appropriate clinical Suspicion which should be based on the patients presenting signs and Symptoms, as well as history including recent instrumentation. Endoscopy should be reservedfor cases of upper gasterointestinal bleeding with low suspicion for hemobilia. Interventional radiology may be the first line diagnostic and therapeutic option for patients with a high suspicion of hemobilia.

While embolization is the mainstay of therapy, other options include thrombin injection, stent placement, and/or placement of a percutaneous biliary drain. Surgery should be reserved for failed treatment by interventional radiologist.

• 1050

WHAT SHOULD WE KNOW BEFORE DOING MECHANICAL THROMBECTOMY IN STROKE PATIENTS

Ramin Pourghorban [1,*]

[1] *Department of Radiology, Imam Khomeini Hospital Complex, Tehran University of Medical Sciences, Tehran, Iran*

[*] *Corresponding author: Ramin Pourghorban, MD, Department of Radiology, Imam Khomeini Hospital Complex, Tehran University of Medical Sciences, Tehran, Iran. E-mail: Kumssalehi@yahoo.com*

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Abstract:

Mechanical thrombectomy has shown promising results in large vessel ischemic stroke, with recent large trials changing to guidelines worldwide. In this presentation, results from the five recent randomized trials will be discussed. There is an ongoing debate on the inclusion and exclusion criteria of mechanical thrombectomy. It can be done in large vessel occlusions, including up to M2 middle cerebral artery (MCA), anterior cerebral artery (ACA), basilar artery, and posterior cerebral artery (PCA). The effect of time window, age, prior intravenous thromblysis on patients'selection will be discussed. An elaboration on the effect of National Institutes of Health Stroke Scale (NIHSS) score in the clinical setting, Alberta stroke program early computed tomography score (ASPECTS) on non-contrast CT, presence of collaterals on CT angiography (CTA), and presence of penumbra on CT perfusion or post contrast MRI will be given as well. The pros and cons of general anesthesia versus conscious sedation during mechanical thrombectomy and aspiration technique versus stent-retriever will be reviewed. The usual devices used in mechanical thrombectomy and practical tips of endovascular treatment will be discussed. Finally, modified treatment in cerebral ischemia (mTICI) score after thrombectomy will be shown.

• 1051

ENDOVASCULAR TREATMENT OF STROKE PATIENTS

Joachim Berkefeld [1,*]

[1] *Leading Physician, Head of Interventional Neuroradiology, Institut fur Neuroradiologie, Klinikum der Goethe-Universitat, Schleusenweg, Frankfurt, Germany*

[*] *Corresponding author: Joachim Berkefeld, Leading Physician, Head of Interventional Neuroradiology, Institut fur Neuroradiologie, Klinikum der Goethe-Universitat, Schleusenweg, Frankfurt, Germany. E-mail: joachimberkefeld@me.com*

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Abstract:

Stroke patients with proximal occlusions of the main stems of cerebral arteries are no optimal candidates for i. v. thrombolysis. For many years interventional stroke treatment could not be established as alternative. This changed with the introduction of stent retrievers and flexible large lumen aspiration catheters. Randomized trials now proved a significant benefit from intervention for a wide spectrum of severely compromised stroke patients in time windows of up to 8 hours. However, the randomized trials leave open questions concerning proper patient selection. The benefit for patients with larger infarcts with an ASPECTS between 3 and 5 or patients in time windows above 8 hours is still uncertain.

Especially for critical candidates imaging for reliable detection of the ischemic core and surrounding salvageable brain tissue plays an important role.

Technically equivalence between new aspiration techniques as alternative to the use of stent-retrievers is not finally proven. Recanalization of tandem occlusions with the necessity of acute stenting demands better materials for plaque coverage and thrombus withhold.

Management of cases with occlusions due to intracranial atherosclerosis is also debatable.

The positive trial results provide especially new challenges to establish countrywide neurointerventional services. Even in developed countries recruitment and training of interventional radiologists as well as priority transportation of stroke patients is challenging to organize.

• 1052

ENDOVASCULAR TREATMENT OF INTRACRANIAL ANEURYSMS

Joachim Berkefeld [1,*]

[1] *Leading Physician, Head of Interventional Neuroradiology, Institut fur Neuroradiologie, Klinikum der Goethe-Universitat, Schleusenweg, Frankfurt, Germany*

* *Corresponding author: Joachim Berkefeld, Leading Physician, Head of Interventional Neuroradiology, Institut fur Neuroradiologie, Klinikum der Goethe-Universitat, Schleusenweg, Frankfurt, Germany. E-mail: joachimberkefeld@me.com*

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Abstract:

Interventional treatment of ruptured intracranial aneurysms in patients with subarachnoid hemorrhage is a standard therapy based on evidence from randomized trials.

Simple coiling is still used for most of the cases. Modern coil technology provides a wide variety of complex shaped coils for faster procedures and reliable dense packing. The assistance of stents and balloons widens the indication towards wide-neck-aneurysms.

A major drawback of coiling and reason for recent debates about clipping vs. coiling is the lack of long term stability due to recanalization. Especially size above 10 mm and aneurysm location with direct inflow-jet at a bifurcation may favour reperfusion and the necessity for repeated controls for a long time. However, most of the adequately coiled aneurysms remain stable and rebleeding is confined to very few single cases.

Flow-divertes placed in the parent vessel across the aneurysms neck or as nitinol basket within the aneurysm sac provide new treatment options for large, wide neck and fusiform aneurysms. Successful treatment demands careful patient selection and adequate sizing of the devices to induce reliable thrombosis within the aneurysms and "healing" of the vessel wall defect by coverage of the neck by endothelium and connective tissue.

Prophylactic treatment of unruptured aneurysms should be associated with low complication rates, good angiographic results and long term stability. Interdisciplinary decision making and counseling, treatment and follow-up of patients in a neurovascular center are new challenges for interventional neuroradiologists.

• 1053

MANAGEMENT OF LOCO-REGIONAL INTERVENTIONS IN HCC

Hazhir Saberi [1,*]

[1] *Radiology Professor of Tehran University of Medical Sciences*

* *Corresponding author: Hazhir Saberi, Radiology Professor of Tehran University of Medical Sciences. E-mail: hazhir_saberi@hotmail.com*

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Abstract:

Some patients are more susceptible to HCC (like HBV, Cirrhosis and …). In these patients screening imaging (ultrasound) is highly recommended. In positive cases next step would be 4-phasic CT scan or dynamic MRI for confirm diagnosis and also staging.

If there are typical signs of HCC (wash in, wash out), biopsy is not necessary in susceptible populations. Gold standard treatment of HCC is surgery (resection or liver transplantation). In thosecases which are not candidate for surgery, Loco-Regional treatments are key players. The mostnoticeable of these are: TACE (trans arterial chemoembolization) and local ablations (RF, microwave, alcohol injections and …). Site and size of tumors should be considered in decision forablative techniques. Limitations for RF are 1) tumors more than 3 cm or 2) subcapsular locationor 3) neighboring to large vessels, but there are less limitations in microwave. TACE is one of thetreatment of choice in cases which are not candidate for surgery or thermal ablations (intermediate stage). There are also some limitations for TACE which the most important one is decompensated cirrhosis (child B8, 9 and C). In this technique there are two factors (ischemia and chemotherapy) attenuating the tumors with synergistic effect.

Generally TACE has a palliative situation in the guidelines but could be used as a bridge for curative plan (surgery or liver transplantation) alone or in combination with ablation techniques.

• 1054

WHAT SHOULD WE KNOW IN BIPPS

Rambod Salouti [1,*]

[1] Tehran University of Medical Sciences

* Corresponding author: Rambod Salouti, MD, Tehran University of Medical Sciences. E-mail: dr.salouti@gmail.com

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Abstract:

Cushing's syndrome is a rare endocrine disease characterized by hypercortisolemia caused by excess ACTH secreted by the pituitary. Distinguishing pituitary sources from the ectopic sources of ACTH is challenging because of the limited accuracy of noninvasive assays. The test that offers the highest sensitivity and specificity is bilateral inferior petrosal sinus sampling (BIPSS). In patients without a suggestive pituitary lesion on MRI of greater than 1 cm in size, inferior petrosal sinus sampling provides excellent specificity and higher sensitivity than other available biochemical testing strategies. BIPSS is an interventional radiology procedure in which ACTH levels obtained from venous drainage very near the pituitary gland are compared to peripheral blood levels before and after corticotropin hormone (CRH) stimulation. A gradient between these two locations indicates pituitary Cushing's, whereas the absence of a gradient suggests ectopic Cushing's. In some cases, intrapituitary gradients from side-to-side can be helpful to localize small adenomas within the sella. BIPSS has rare complications and is considered safe.

• 1055

RADIOFREQUENCY ABLATION OF BENIGN THYROID NODULES: INITIAL CLINICAL EXPERIENCE IN IRAN

Hojat Ebrahiminik [1,*]; Ali Mosaddegh Khah [2]; Ahmadreza Soroush [3]; Narges Fadaei [4]; Babak Shekarchi [5]; Noor Fattah [6]

[1] MD, Interventional Radiologist, Assistant Professor of Radiology, AJA University of Medical Sciences, Tehran, Iran

[2] MD, Endocrionologist, AJA University of Medical Sciences, Faculty of Medicine

[3] MD, General Surgeon, Professor of General Surgery, Shariati Hospital

[4] MD, General Physician

[5] MD, Radiologist, Associated Professor of Radiology, AJA University, Emam Reza Hospital Imaging Center

[6] Resident of General Surgery Ward, Shariati Hospital

* Corresponding author: Hojat Ebrahiminik, MD, Interventional Radiologist, Assistant Professor of Radiology, AJA University of Medical Sciences, Tehran, Iran. E-mail: dr_ebrahiminik@yahoo.com

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Abstract:

Prevalence of thyroid nodules diagnosed by ultrasonography has been reported to be high (about 50%) probably due to iodine deficiency in our region. Most thyroid nodules benign but some require treatment for cosmetic reasons or subjective symptoms. The conventional method of treatment in Iran is surgery.

For the first time in Iran, from February 2016, 50 patients with 63 nodules (solid or cystic) were successfully treated by radiofrequency (RF) ablation. The procedure was performed under local anesthesia with no need for hospitalization. At one and three months post-ablation follow ups 40 to 67% reduction in nodule volume was observed. No hormone imbalance or voice changes were seen in none of the patients. Indication of RF ablation includes benign confirmed nodules (at least 2 times Fine needle aspiration or biopsy) neck pain, dysphasia, foreign body sensation, discomfort, cough, cosmetic problems, or thyrotoxicosis in cases of autonomously functioning thyroid nodules (AFTNs).

Compared with surgery, RF ablation as a minimally invasive approach provided significantly lower rate of complications regarding thyroid function which well-maintained after procedure also no external scar was formed. Pain and inflammation during the first 3 to 7 days after RF ablation and long term treatment results (1 to 6 months) are of disadvantages. We recommend RF ablation to be considered as possibly the first-line treatment for benign thyroid nodules.

Disclosure: Nothing to disclose

Keywords: Thyroid Nodule, Radio Frequency, Ablation, Iran, RF

• 1056

PERICARDIOCENTESIS AND PERICARDIAL CATHETERIZATION

Babak Rafiee [1,*]

[1] MD, Radiologist

* Corresponding author: Hojat Ebrahiminik, MD, Radiologist. E-mail: babakraf@yahoo.com

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Abstract:

Pericardoicentesis and catheterization can be a life saving procedure in a patient with cardiac tamponade and also may be performed for diagnostic purposes. Tamponade may be a complication of IR procedures'like tumor ablation and knowledge about the procedure is essential, because of emergent and life threatening nature of tamponade. Interventional radiologists also may be asked for Pericardiocentesis for diagnostic purposes.

The procedure can be done by ultrasound and CT scan guidance. Cardiac monitoring is preferred during the procedure, because of risk of dysrhythmia.

Complications include dysrhythmia, false positive and negative punctures, traumatization of internal mammarian artery, subcostal arteries or coronary arteries, hemothorax, pneumothorax and recurrence.

Some authorities believe that surgical approach is first choice for traumatic cardiac tamponade.

• 1057

LIRADS 101 - FUNDAMENTALS

Bijan Bijan [1,*]

[1] *Professor of Nuclear Medicine and Radiology Radiology and Nuclear Medicine / PET Divisions, University of California Davis Medical Center, Sacramento, California, USA*

[*] *Corresponding author: Bijan Bijan, MD, MBA, CIIP, Professor of Nuclear Medicine and Radiology Radiology and Nuclear Medicine / PET Divisions, University of California Davis Medical Center, Sacramento, California, USA. E-mail: bbijan2002@yahoo.com*

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- Prerequisites: Familiarity with diagnosis and reporting of liver lesion suspicious for HCC

- Objectives:

What is LIRADS: 5 minutes

Review of fundamental features of LIRADS: 5 minutes

The physiologic basis of LIRADS features: 10 minutes

Ancillary features affecting the LIRADS scoring: 5 minutes

Case-studies: 5 minutes

Abstract:

- LIRADS is the basis of structured reporting of liver lesions in high-risk patients for developing HCC.

- LIRADS committee aims at unifying the scanning technique/parameters, the way we characterize and the way we report such lesions.

- It aims to decrease the inter-observer and intra-observer variability.

- It aims to facilitate communication between different disciplines involved in management of such patients, including medical imagers, interventional radiologists, hepatologists, pathologists, transplant surgeons, etc.

- It aims to facilitate data accumulation for the purpose of systematic research.

• 1058

DYNAMIC IMAGING OF PELVIC FLOOR MUSCULATURE

Bijan Bijan [1,*]

[1] *Professor of Nuclear Medicine and Radiology Radiology and Nuclear Medicine / PET Divisions, University of California Davis Medical Center, Sacramento, California, USA*

[*] *Corresponding author: Bijan Bijan, MD, MBA, CIIP, Professor of Nuclear Medicine and Radiology Radiology and Nuclear Medicine / PET Divisions, University of California Davis Medical Center, Sacramento, California, USA. E-mail: bbijan2002@yahoo.com*

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- Prerequisites: Familiarity with male and female pelvic anatomy

- Objectives:

Review of salient features of pelvic floor musculature: 5 minutes

Review of imaging guidelines for pelvic floor evaluation: 5 minutes

Review of common pathologies and their imaging hallmarks: 10 minutes

Abstract:

- Pelvic floor relaxation is one of the most common and underdiagnosed conditions

- Reasons: underdiagnoses by clinicians as well as imagers!

- US and MR being the best modalities

- Most of initial US/CT/MR were performed in supine position without any stress maneuvers - one of the main causes of under-diagnosis

- Dynamic MR/US imaging: superior imaging modality

- Familiarity with unified categorization and reporting: key to success

- Open communication with the referring specialties, including OB/GYN, Urologists, general surgeons

• 1059

DIAGNOSTIC IMAGING OF LUNG CANCER

Mehrdad Bakhshayesh Karam [1,*]

[1] *Radiologist, Pediatric Respiratory Diseases Research Center, National Research Institute of Tuberculosis and Lung Diseases (NRITLD), Shahid Beheshti University of Medical Sciences, Tehran, Iran*

[*] *Corresponding author: Mehrdad Bakhshayesh Karam, MD, Radiologist, Pediatric Respiratory Diseases Research Center, National Research Institute of Tuberculosis and Lung Diseases (NRITLD), Shahid Beheshti University of Medical Sciences, Tehran, Iran. E-mail: mehrdadbakhshayesh@yahoo.com*

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Abstract:

1- Introduction:

1-1- Lung cancer

1-2- Leading cause of cancer death in the United States

1-3- 228,190 new cases (11,080 in men and 110, 110 in women)

1-4- 159,480 deaths (87,270 in women)

1-5- 5 Years survival: 15.6%

1-6- Smoking tobacco as the primary risk for lung cancer accounts for more than 58% - 90% of all lung cancer-related death

2- Radiological Characteristics by Cell Type:

2-1- Adenocarcinoma

2-1-1- 31% of all lung cancer, including bronchoalveolar carcinoma

2-1-2- Typically; peripherally located and < 4 cm

2-1-3- Cavitation: only 4%

2-1-4- Hila or hila and mediastinal involvement: 51% of cases on CXR

2-1-5- CT:

2-1-5-1- Localized GGO (grow slowly)

2-1-5-2- A solid mass (grow more rapidly)

2-2- Bronchoalveolar carcinoma

2-2-1- Subtype of adenocarcinoma, 2% - 10% of all primary lung cancers

2-2-2- 3 Characteristic presentations:

2-2-2-1- Single pulmonary nodule or mass

2-2-2-2- Multicentric or diffuse disease

2-2-2-3- Localized area of parenchymal consolidation

2-2-3- Hilar or mediastinal LAP: Uncommon

2-2-4- CT: Bubble-like areas of low attenuation within the mass

2-3- Squamous cell carcinoma

2-3-1- 30% of all lung cancers

2-3-2- Centrally located, may grow > 4 cm

2-3-3- Cavitation: up to 82%

2-3-4- Central location and relative frequency: Commonly segmental or lobar lung collapse

2-4- Small cell lung cancer (SCLC)

2-4-1- 18 % of all lung ca

2-4-2- Present: often; bulky hila and mediastinal lymph node masses

2-4-3- A noncontiguous parenchymal mass: up to 41% at CT

2-4-4- Cavities: very rarely

2-4-5- Characteristics: A mass in or adjacent to the hilum

2-4-6- Tumor may well show mediastinal invasion

2-4-7- SCLC- Malignant end of spectrum of NE lung carcinomas with typical carcinoid tumors being at the more benign end

2-5- Carcinoid tumor

2-5-1- 1% of all lung cancer

2-5-2- Typical: endobronchial growth and obstruction

2-5-3- Atypical: larger (> 2.5 cm at CT)

2-5-4- Central

2-5-5- Calcification: 26% - 33%

2-5-6- 5-yr survival: Atypical ~ Typical (57% - 66% ~ 95%)

2-6- Larg cell carcinoma

2-6-1- 9% of all lung ca

2-6-2- Grow extremely rapidly large size

2-6-3- Metastases: mediastinum and brain

2-6-4- Imaging techniques

2-6-5- CXR

2-6-6- Computed tomography (CT)

2-6-7- Magnetic resonance imaging (MRI)

2-6-8- Positron emission tomography (PET)

• 1060

FUNDAMENTAL OF CHEST IMAGING

S Zahirifard [1,*]

[1] *Radiologist, Erfan Hospital*

[*] *Corresponding author: S Zahirifard, MD, Radiologist, Erfan Hospital.*

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Abstract:

Learning objectives:

1- To understand the anatomy and normal variant of the respiratory system, heart, vessels, mediastinum and chest on radiographs, CT and MRI

2- To understand the technical aspects, exposure doses and post-processing of radiographs and CT of the chest

3- To have an in-depth understanding of the most common chest radiography signs

4- To describe the appurtenance and correct position of monitoring and support devices

5- Review of the anatomy of the lungs

• 1061

HOW TO ANALYZE AND INTERPRET FINDINGS IN NORMAL AND ABNORMAL CHEST RADIOGRAPHY AS A SYSTEMATIC APPROACH

Arshid Azarine [1,*]

[1] *CT and MR Cardio-Vascular Imaging, Department of Radiology, Hopital Paris-Saint Joseph, Paris, France*

[*] *Corresponding author: Arshid Azarine, MD, CT and MR Cardio-Vascular Imaging, Department of Radiology, Hopital Paris-Saint Joseph, Paris, France. E-mail: drazarine@gmail.com*

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Abstract:

Cardio-vascular features and measurements in chest imaging

A- Heart and great vessels: how, why, when? Arshid Azarine

1- To recognise different relevant cardio-vascular features radiologist should know.

2- To review the most useful measurements on cross-sectional imaging of the heart and great vessels.

3- To learn how to accurately perform these measurements.

4- To know when the measurements are of clinical importance.

• 1062

IMPACT OF LOW DOSE EXPOSURE ON POPULATION GENETICALLY, SIGNIFICANT DOSE (GSD) AND CANCER RISK

Hossein Mozdarani [1,*]

[1] *Professor of Medical Genetics, Faculty of Medical Sciences, Tarbiat Modares University, Tehran, Iran*

[*] *Corresponding author: Hossein Mozdarani, Ph.D, Professor of Medical Genetics, Faculty of Medical Sciences, Tarbiat Modares University, Tehran, Iran. E-mail: Mozdarah@modares.ac.ir*

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Abstract:

The growing trend of cancer and genetic diseases in developed and developing countries is a main concern for proper use of ionizing radiation (IR) in medical practice. Use of IR in medicine both in the aspects of imaging and therapy has led to the exposure of many individuals to low-level IR occupationally or at general population. IR is a potent inducer of DNA damage in somatic and germ cells directly or indirectly via free radical generation. The initial radiation induced DNA damage undergo various repair processes, however un-repaired or mis-repaird DNA damages are converted into mutations, chromosomal aberrations, cell death and cellular transformation. GSD a representation of dose received by gonads, if increased in a population would lead to higher incidence of genetic abnormalities in next generation and cancer. The effects of low dose radiation risks are primarily stochastic and is commonly believed that "any radiation dose, no matter how small, can cause stochastic effects (linear model)." Radiation apparently does not cause unique types genetic diseases or cancer, but simply increases their rates above their natural rate of occurrence. The dose-response curve for stochastic effects at low doses below 100 mSv does not follow linear model due to a number of novel radiobiological phenomena. Among these biological phenomena, low-dose hypersensitivity has been shown to occur for cell killing, in vitro and in vivo, which might be the result of an inefficient repair of DNA damage following irradiation. Adaptive response, believed as a beneficial low dose effect might affect LNT concept for radiation induced stochastic effects. Observations of bystander effects in neighboring cells that have not been directly hit have led to suggestions that at low doses these non-targeted effects could contribute to the adverse consequences of low dose radiation exposure. Therefore, there should be a justification for use of IR no matter how small and any use of IR should be based on a risk- benefit estimation.

Keywords: Low Dose Exposure; Stochastic Effects; Cellular Response; GSD; Cancer Induction

• 1063

ACCURACY OF ULTRASOUND AND MAGNETIC RESONANCE IMAGING (MRI) IN PENILE FRACTURE MAPPING FOR MODIFIED SURGICAL REPAIR

Mohammad Zare Mehrjardi [1,*]; Mohsen Darabi [2]; Seyed Morteza Bagheri [2]; Shaghayegh Sadat Khabbaz [1]

[1] *Department of Radiology, Shahid Beheshti University of Medical Sciences (SBMU)*

[2] *Department of Radiology, Iran University of Medical Sciences, Tehran, Iran*

* *Corresponding author: Mohammad Zare Mehrjardi, Department of Radiology, Shahid Beheshti University of Medical Sciences (SBMU). E-mail: zare@sbmu.ac.ir*

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Abstract:

Objective: To investigate accuracy of ultrasound and magnetic resonance imaging (MRI) in penile fracture diagnosis and preoperative mapping.

Background: Penile fracture is a relatively rare urologic emergency. It is defined as traumatic rupture in tunica albuginea of corpus cavernosum. Traditionally, surgeon explores the penis in full-length by complete degloving of its skin and repairs any defect in the tunica. Imaging modalities such as ultrasound and MRI may be of help to reveal the exact site of tunica defect preoperatively for tailoring the surgical repair by making a direct incision over the defect. Tunica albuginea is a hyperechoic layer in ultrasound covering corpora cavernosa, and its tear appears as a hypoechoic defect in this band. In MRI, tunica is seen as a low-signal intensity layer in all conventional pulse sequences around the corpora cavernosa, and its tear is evident as a discontinuity in this layer (Figure 1). In addition, imaging modalities may demonstrate associated injuries such as hematoma, urethral rupture, and corpus spongiosum injury.

Methods: 18 consecutive patients included in the study during two years prospectively. Ultrasound and MRI were performed in all patients and interpreted by two expert radiologists independently. The defect site was mapped on a designed platform preoperatively using each modality blinded to the result of other modality. All patients were explored surgically by an expert surgeon using complete degloving of the penis technique, which was the routine procedure in our tertiary referral center. The surgeon was blinded to the radiologic mapping, and the surgical results were considered as the gold-standard. Detection rate, and agreement between preoperative imaging mapping and surgical result were determined for each modality.

Results: Mean age of patients was 28.2 ± 7.3 years-old. Most penile fractures were occurred during sexual intercourse (89%). Most common location of tunica rupture was mid-shaft of penis (67%), and mean length of tunica defect was 14.8 ± 3.2 mm. All patients had associated hematoma, but no one revealed urethral injury. Detection rate of ultrasound and MRI was 89% and 100%, respectively. Ultrasound was unable to detect tunica rupture in 2 patients (11%), all of which revealed tears at the penile base in MRI and during surgical exploration. Ultrasound mapped tear location correctly in 13 patients (kappa, 0.26; P = 0.045), while MRI mapped it precisely in 17 cases (kappa, 0.89; P = 1.00).

Conclusions: Both imaging modalities may be used for detecting tunica tear especially in atypical cases that physical examination is equivocal. However, MRI is more accurate in preoperative mapping of rupture location for performing a modified less invasive surgery.

• 1064

THE COMPARISON OF MULTI-SLICE CT-SCAN AND LAPAROTOMY FINDINGS IN BLUNT SPLENIC AND HEPATIC TRAUMA

Hamidreza Haghighatkhah [1]; Hesameddin Hoseini Tavassol [2,*]; Reyhane Kazemi [3]; Shaghayegh Sadat Khabbaz [3]

[1] *Shohada-e-Tajrish hospital, Shahid Beheshti University of Medical Sciences, Tehran, Iran*

[2] *Shahid Beheshti University of Medical Sciences, Tehran, Iran*

[3] *Department of Radiology, Shahid Beheshti University of Medical Sciences, Tehran, Iran*

* *Corresponding author: Hesameddin Hoseini Tavassol, Shahid Beheshti University of Medical Sciences, Tehran, Iran. E-mail: Hesam.tavasol.md@gmail.com*

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Abstract:

Background: Liver and spleen are the most common injured organs in abdominal blunt trauma which can lead to life threatening bleeding. Fast and reliable evaluation of these injuries is important to

manage them immediately. In this study, the level of agreement between multidetector CT scan and surgical findings is evaluated.

Methods: Multidetector CT-scan and explorative laparotomy of the patients with blunt abdominal trauma were assessed retrospectively. Characteristics of the injuries were categorized on the basis of the American association for the surgery of trauma (AAST) grading system and the findings were analyzed using kappa test.

Results: The findings of 35 patients were analyzed. According to the kappa test, there were "Moderate" agreement between CT-Scan and surgery in evaluation of lacerations, location and AAST grade of splenic injuries, and disagreement in evaluation of splenic hematoma. In assessment of lacerations and AAST grading of hepatic injuries, there was only "Fair" agreement between CT scan and surgery.

Conclusion: Multidetector CT scan is an appropriate method for evaluating splenic and hepatic blunt trauma, even more accurate than surgery in some limited cases. However, only "Moderate" and "Fair" agreements, indicate that initial measures such as history taking and abdominal physical examination, specifically for unstable patients that they not have enough time to do CT scan, should be properly considered before using this method. Furthermore, in case of other organ injuries, CT scan can be an appropriate method for prioritizing other damages to splenic and hepatic injuries or vice versa, on the basis of intensity, characteristics and the grade of injury.

• 1065

IMPORTANCE OF EVALUATION OF EXTRA CARDIAC FINDINGS IN PATIENTS UNDERGOING MDCT CORONARY ANGIOGRAPHY

Mohammad Momeni [1,*]; Maryam Farghadani [1]; Fatemeh Momeni [1]

[1] *Isfahan University of Medical Sciences*

[*] *Corresponding author: Mohammad Momeni, Isfahan University of Medical Sciences. E-mail: dr.m.momeni@gmail.com*

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Abstract:

Background: Although the aim of cardiac computed tomographic angiography (CTA) is to visualize the cardiac, coronary, and great vessels, portions of noncardiac structures such as lung, mediastinum, bones and abdomen are visible on the scan. Some have suggested that the scans should be evaluated in all field of view. Some other believe that reporting accidental findings can lead to unnecessary follow up and anxiety. prevalence and seriously of the findings can guided the need for reporting the accidental findings or not. The aim of our study was to evaluate the prevalence and seriously of accidental extracardiac findings on MDCT angiography of coronary arteries.

Methods: A total of 411 patients with suspected coronary artery disease were evaluated with MDCT during injection of contrast material. Images were reviewed for extracardiac findings which were classified as therapy needed, further work up needed, follow up needed and no further action needed.

Results: Extracardiac findings were detected in 24.33% patients. Findings were classified as needed therapy (1.94%), needed work up (8.02%), needed follow up (10.94%), no further action needed (3.40%). Among the findings, which needed treatment, were lung infiltration and pulmonary emboli and one case of malignancy. Hiatal hernia was the most common finding, followed by pulmonary nodules which were seen in (2.9%) of patient.

Conclusion: Coronary artery MDCT can reveal important findings and disease in extracardiac structures. On other hand the prevalence of noncardiac findings on cardiac MDCT was significant. To avoid missing clinically important findings, all the field of cardiac MDCT should be evaluated carefully.

Keywords: Coronary CT Angiography; Extra-Cardiac Findings; Lung Diseases; Chest

• 1066

ASSESSMENT OF FUNCTIONALITY AND DIAGNOSIS PRECISION OF DIGITAL BREAST TOMOSYNTHESIS IN COMPARISON WITH BREAST ULTRASOUND AMONG WOMEN IN RISK OF BREAST CANCER

Ali Ghafari [1,*]; Ammar Nabiloo [2]

[1] *Tabriz Paramedical School, Tabriz, Iran*

[2] *Tabriz University of Medical Sciences, Tabriz, Iran*

[*] *Corresponding author: Ali Ghafari, Tabriz Paramedical School, Tabriz, Iran. E-mail: Aligh1101291@gmail.com*

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Abstract:

Introduction: Tomosynthesis is a new technology of digital mammography that enables the acquisition of a three - dimensional image and allows visualization of cancers not apparent by conventional mammography. Ultrasound (US) is also used for tumor monitoring, which is highly operator dependent and has some problems with reproducibility. US is also an easily available and noninvasive modality. Our goal is to have a comparison between breast ultrasound and tomosynthesis to determine which modality is better.

Methods: In a prospective study of 200 consecutive women using the DBT and MRI added to digital mammography (DM) and ultrasound (US) imaging techniques. Accuracy measurements were estimated using a lesion-by-lesion analysis for unifocal, multifocal/multicentric, bilateral and all carcinomas. They also calculated sensitivity according to breast density.

Results: DBT had a higher sensitivity than digital mammography alone and also had higher sensitivity in non-dense breast compared to dense breasts. Ultrasound had higher sensitivity in dense breasts. Ultrasound may result in false-negative findings, especially in the absence of a discrete mass. Digital breast tomosynthesis enables the production of images that eliminate the problem of superimposition of breast tissue, particularly in women with dense breast parenchyma.

Conclusion: Ultrasound had better detection functionality in dense breasts while it was unable to discriminate between lesion types due to tissue overlap requiring biopsy for further examinations. DBT is designed for the purpose of resolving tissue overlap especially when ultrasound modality was unable to determine lesion types. Further examinations and studies should be hold to determine which modality has better overall economical and detection efficiency.

Keywords: Tomosynthesis; Ultrasound; Breast Cancer; Mammography

• 1067

COMPARING THE DIAGNOSTIC PERFORMANCE OF INTEGRATED 18F-FDG PET-MRI AND MRI FOR THE IDENTIFICATION OF LOCAL RECURRENCES OF SOFT TISSUE SARCOMAS

Youssef Erfanian [1,*]; Johannes Gruneisen [1]; Lars Podleska [1]; Torsten Poeppe [1]; Lale Umutlu

[1] *University Hospital Essen*

[*] *Corresponding author: Youssef Erfanian, University Hospital Essen. E-mail: Youssef.Erfanian@uk-essen.de*

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Abstract:

Purpose: To assess the diagnostic accuracy of PET-MRI and MRI alone for the detection of local recurrences of soft tissue sarcomas (STS) after initial surgical resection of the primary tumors.

Methods: A total of 41 patients with a clinically suspected tumor relapse of STS underwent an 18F-FDG-PET-MRI examination for assessment of local recurrence. Two experienced physicians interpreted the MRI data and subsequently the PET-MRI datasets in two separate reading sessions and were instructed to identify potential local tumor recurrences. Additionally, the diagnostic confidence in each reading for the identification of malignant lesions was determined. A McNemar test was applied to test for differences of both ratings and a Wilcoxon signed-rank test was used to identify differences of the confidence levels. Histopathological verification as well as follow-up imaging was applied as the standard of reference.

Results: A tumor relapse was present in 27 / 41 patients. Calculated sensitivity, specificity, positive predictive value, negative predictive value and diagnostic accurary for the detection of local tumor recurrence was 81%, 85%, 91%, 70%, 82% for MRI and 96%, 75%, 89%, 91%, 90% for PET-MRI ($P > 0.05$). Furthermore, PET/MRI showed significantly higher confidence levels ($P < 0.05$) for the determination of malignant lesions.

Conclusion: Our results demonstrate 18F-FDG PET-MRI to be an excellent imaging method in the evaluation of recurrent STS after surgical excision, as it displays superior detection accuracy as compared to routine MRI follow-up examinations.

• 1068

THE IMPORTANCE OF DIFFUSION WEIGHTED IMAGING IN BREAST MRI

Maryam Noori [1,*]; Bahareh Siahlou; Hamidreza Salighehrad; Anahita Fathi; Mohammad Fathi

[1] *MD, Radiologist, Paytakht*

[*] *Corresponding author: Maryam Noori, MD, Radiologist, Paytakht. E-mail: m_noori5005@yahoo.com*

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Abstract:

Aim: the aim of this study was to evaluate the value of diffusion weighted imaging in Diffusion weighted imaging in distinguishing between in benign and malignant breast lesion.

Methods: There were 37 female patients with 47 lesions.

Sixty seven female subjectd (40 mean age) ,age ranges 17 - 69 , with histopathologically proven breast lesions underwent DWI of breasts with a single shot echo planar imaging (EPI)sequence .the computed mean apparent diffusion cofficients (ADCs) of the breasts lesion and cell density were then correlated.

Results: The ADC varied substantially between benign breast lesions ($(1.52 \pm 0.26) \times 10^{-3}$ mm^2/second). And malignant breast lesions ($(0.94 \pm 0.21) \times 10^{-3}$ mm^2/second). The AUC with ROC analysis was 0.896 and the threshold for ADC was 1.17×10^{-3} mm^2/s with a sensitivity and specificity of 90% and 85%, respectively. The mean ADC of malignant breast lesions was statistically lower for benign lesions (P value less than 0.01).

Conclusion: The ADC would be a effective parameter in distinguishing between malignant and benign breast lesions.

• 1069

ACCURACY OF MRI IN RECTAL CANCER AFTER PREOPERATIVE NEOADJUVANT CHEMORADIOTHERAPY

Saeed Naghibi [1,*]

[1] *Islamic Azad University*

[*] *Corresponding author: Saeed Naghibi, Islamic Azad University. E-mail: naghibisaeed42@gmail.com*

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Abstract:

Background: about 1/4 colorectal cancers are related to the rectum. There 40,000 patients with the mean age of 50 years diagnosed with rectal cancer in USA. The symptoms are in a wide spectrum such as rectal bleeding, changing of defecation habits, pain, incontinenecy in the case of esphincter invasion. The diagnosis depends on getting a detailed history and a physical examination. For years the main treatment of rectal cancer was abdominoperineal resection with permanent clostomy. Today's treatment plan includes less invasive surgical techniques combined with neoadjuvant chemoradiotherapy which results in less recurrent rates. MRI is a reliable modality in staging primary tumors but there has been conflicts about its accuracy for restaging after neoadjuvant chemoradiotherapy. In this study, accuracy, sensitivity and specifity of MRI will be discussed.

Methods: study on 34 patients diagnosed with rectal adenocarcinoma referred to oncology clinic was conducted. The treatment plan included 4050 cGY radiotherapy and 5FU, Xeloda chemotherapy. All patients were assessed with 1/5 T MRI 6 to 8 weeks after treatment. T1 and T2 images with sagittal, cronal and axial planes with and without contrast agent were obtained and interpreted by two radiologists and compared with pathologic specimens as a gold standard.

Result: the demographic information was: mean age of 65/26 years, 19 men (55/9%), 15 women (44/1%). Accuracy of MRI at T and N staging were 38/2 % and 61/8% with the highest sensitivity of T3NM0 and specifity of T1N2.

Conclusion: MRI can be used for assessing rectal tumors and restaging after preoperative chemoradiotherapy.

Keywords: MRI; Rectal Cancer; Neoadjuvant Radiochemotherapy

• 1069

COMPARISON OF LOW DOSE AND STANDARD DOSE ABDOMINAL CT SCAN IN BODY STUFFERS

Zahra Mahboubifooladi [1,*]; Hooman Bahramimotlagh

[1] *Shahid Beheshti University of Medical Sciences, Tehran, Iran*

[*] *Corresponding author: Zahra Mahboubifooladi, Shahid Beheshti University of Medical Sciences, Tehran, Iran. E-mail: mahboubiz@yahoo.com*

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Abstract:

Introduction: body stuffer determination is an important concern in emergency departments for referred patients with suspicion of swallowing drug packets. Because of small packet size, plain radiography is of little value in most patients. On the oth-

er hand, abdominal and pelvic CT scan is burdened by high cost and radiation dose. This study was performed to evaluate the sensitivity of low-dose CT scan in comparison with conventional one. So, the former can be used as an alternative screening and follow up tool for suspected body stuffers.

Methods: in this prospective study, suspected body stuffers who were referred to radiology department, underwent two different protocols of abdominal and pelvic non-contrast CT scan: low-dose (equivalent dose of conventional abdominal X-ray) and standard dose. Standard dose CT scan was considered as the gold standard and low-dose protocol was compared with that for image quality and packet detection rate.

Results: the study consisted of 40 patients (all men, with mean age of 33.38 ± 7.4 years). CT evaluation with standard dose were positive in 22 patients (55%). Only 1 (2.5%) CT scan assigned as unacceptable by each radiologist in low-dose group. Noise average of low-dose protocol, was approximately 7 times greater than standard dose group, while DLP and ED are 9.7 times smaller. In comparison with standard dose CT scan, low-dose group had a sensitivity of 86.46%, specificity of 100%, PPV and NPV of 100% and 85.71%.

Discussion: accuracy of low-dose CT scan for detection of baggies larger than 1 cm, approaches 100%. Therefore, it looks an appropriate screening method for body stuffers, especially when the packages are larger.

• 1070

ULTRASOUND-GUIDED FINE-NEEDLE ASPIRATION OF THYROID NODULES: RELATION BETWEEN RADIOLOGY THYRADS SCORE AND BETHESDA PATHOLOGY SCORE SYSTEM

Reza Nafisi Moghadam[1]; Mohammad Ghadrian [2,*]; Seyad Kazem Aghili; Mohammad Sobhanardekani; Mohammadhosein Ahraryazdi; Kazem Razavi

[1] *Yazd University of Medical Sciences, Yazd, Iran*

[2] *Resident of Radiology*

[*] *Corresponding author: Mohammad Ghadrian, Yazd University of Medical Sciences, Yazd, Iran. E-mail: Ghadrmed@gmail.com*

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Abstract:

Background: although fine-needle aspiration biopsy (FNAB) is considered the standard for preoperative evaluation of thyroid nodules, the value of this has been questioned for different thyroid nodules size. Different pathology and radiological scoring may improve the accuracy of preoperative diagnosis of thyroid nudoles. The aim of this study was to evaluate the relation between radiology Thyrads score and Bethesda pathology score system size in two group size (= < 10 mm and > 10 mm) of thyroid nodule in US-FNAB.

Methods: there were 183 thyroid nodules between 3 mm to 35 mm who underwent US-FNAB from January 2015 to November 2016 in Shaheed Sadoughi hospital- Yazd. They were divided in to two groups (group A, 3 - 10 mm; group B, 11 - 35 mm). The patients were studied according radiology Thyrads score and Bethesda pathology score system. The relation between radiology Thyrads score and Bethesda pathology score system according groups size was analyzed by SPSS21.

Results: the mean age (± standard deviation) of patients was 44.5 (±12.8 years). Most of them were female 138 (83.6%). The frequency of final pathology diagnoses were; 35 (21.2%) non diagnostic, 107 (64.8%) benign, 13 (7.9%) malignant and 10 (6.1%) suspicious. no statically significance relation between thyrads score and nodule characteristics (solid/cyst (P value: 0.555), calcification (P value: 0.558), lymph-adenopathy (P value: 0.521), ecogenicity (P value: 0.236), margin (P value: 0.149)). The spearman correlation between radiology thyroids score and Bethesda pathology score system was statistically significant.'(correlation coefficient:0.202,P value: 0.004).

Conclusion: there was a statistically significance correlation between Thyrads score and pathologic Bethesda scoring system. Decision making basis on the radiologic Thyrads score can improve the radiological diagnosis precision in nodular goiter patients.

Keywords: US-Guided Fine-Needle Aspiration Biopsy; Thyroid Nodules; Cytopathology; Bethesda Score System; Thyrads Score

• 1071

FUTURE OUTCOME OF SONOGRAPHY BI-RADS CATEGORY 3 LESIONS

Afsaneh Alikhassi [1,*]

[1] *Tehran University of Medical Sciences, Tehran, Iran*

* Corresponding author: Afsaneh Alikhassi, Tehran University of Medical Sciences, Tehran, Iran. E-mail: afsanehalikhassi@yahoo.co.uk

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Abstract:

Objective: this study aims to find the frequency and the malignancy rate of BI-RADS category 3 lesions detected on screening breast ultrasound and to evaluate whether they fullfilled the requirements of the latest American College of Radiology Imaging and Reporting System.

Methods: of 500 asymptomatic women who came to our center for screening sonography themselves or referred by their clinician, patients for whom BI-RADS category 3 lesions were seen on the ultrasound were selected. Clinical outcome of these lesions using one year follow up, biopsy or a combination of both were evaluated.

Results: the frequency of BI-RADS category 3 lesions detected on screening ultrasound was 18% (90/500). Of these patients, one was eventually proven to have malignancy with malignancy rate of 1.1%. This detected malignancy was early breast cancer with no lymph node metastasis.

Conclusion: although the frequency of ultrasound BI-RADS category 3 lesions is considerably high (18 %), the malignancy rate is low (1.1%). Therefore careful assessment and follow up of BI-RADS category 3 can avoid unnecessary biopsy or surgery.

• 1072

COMPARISON OF COLOR DOPPLER ULTRASONOGRAPHY AND CLINICAL GRADING OF VARICOCELE IN PATIENTS REFERRED TO SHAHID FAGHIHI HOSPITAL IN SHIRAZ

Amin Abolhasani Foroughi [1,*]; Ehsan Iazdanpanah [1]; Ali Ariafar [1]

[1] Shiraz University of Medical Sciences, Shiraz, Iran

* Corresponding author: Amin Abolhasani Foroughi, Shiraz University of Medical Sciences, Shiraz, Iran. E-mail: amin.a.foroughi@gmail.com

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Abstract:

Background: varicocele is one of the most common causes of infertility in men. Although physical examination is the standard method for the diagnosis of varicocele, but in some cases, diagnosis of the disease only by clinical examination is difficult and diagnosis confirmed by ultrasonography. The aim of this study was to compare color Doppler ultrasonography and clinical grading of varicocele.

Methods: in this cross-sectional study, 66 patients suspected of varicocele referred to urology clinic of ShahidFaghihi hospital in Shiraz were assessed. After physical examination and clinical grading of varicoceles, the patients underwent color Doppler ultrasonography was graded based on Sarteschi system. The collected data were analyzed using SPSS-24 statistical software.

Results: the mean age of patients was 23.16 ± 6.92 years. 60 cases (91%) had clinical varicocele and 6 cases (9%) were healthy and in ultrasonographic assessment, 63 cases (90%) had varicocele. Clinically, 40 testes were normal(grade0) and 36 testes (27.3%) had grade 1 of varicocele, 36 testes (27.3%) grade 2 and 20 testes (15.2%) had grade 3 and in ultrasound evaluation, 4 testes (3%) were normal (grade0) and 10 testes (7.6%) were in grade 1 of varicocele, 26 testes (19.7%) were in grade 2, 41 testes (31.1%) in grade 3, 53 testes (26.5%) in grade 4 and 16 testes (12.1%) in grade 5. There was a direct consistency between two systems of clinical and ultrasonographic grading ($P < 0.05$). Also there was a direct correlation with diameter of varicose veins and clinical grade of varicocele (< 0.05). In terms of age, no significant difference in clinical and ultrasonographic grading of varicoceles was observed ($P = 0.36$).

Conclusion: the results showed that clinical and ultrasonographic grading to diagnose varicoceles is directly consistent together and it is possible to make them equivalent together. In addition, the age factor has not a significant impact on disease grading.

• 1073

COMPARISON OF MRI AND ARTHROSCOPY DIAGNOSTIC RESULTS IN PATIENTS WITH SUSPECTED MENISCAL TEARS AND RUPTURES OF ACL AND PCL OF KNEE JOINT

Ahmad Soltanishirazi [1,*]

[1] Jundishapour University of Medical Sciences, Ahwaz, Iran

* Corresponding author: Ahmad Soltanishirazi, Jundishapour University of Medical Sciences, Ahwaz, Iran. E-mail: dr.a.soltanishirazi@gmail.com

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Abstract:

The knee joint is the most vulnerable complicated and the largest joint in the human body.so the bulk of orthopaedic surgeries are related to the knee joint injuries ,while it is aggressive and many complications associated with it ,but the arthroscopy is the gold standard for diagnosis.

Nowadays MRI has become an important tool in the diagnosis of considered health problems .so more studies are determine the diagnostic value of MRI in comparison with Arthroscopy.

Results: in this study 90 patients were examined. 85% of them were male .MRI sensitivity for ACL, MM LM, PCL evaluated 94.7%, 93.5%, 65%, and 100% respectively .also MRI specificity for these injuries measured 81%, 77%, 90.9% and 96.3% accordingly.

Conclusion: although MRI diagnostic value in the evaluation of knee associated injuries is relatively high but does not eliminate the need to perform arthroscopy .therefore it is recommended that in future studies designing solutions in order to improving the diagnostic value of MRI must be considered.

• 1074

CAROTID INTIMA MEDIA THICKNESS IN LEUKOARAISIS PATIENTS

Mona Kharraji [1,*]; Reza Nafisi Moghadam [1]; Kazem Razavi[1]; Mohammad Sobhanardekani [1]; Mohammadhosein Ahraryazdi [1]

[1] *Shahid Sadiughii University of Medical Sciences, Yazd, Iran*

[*] *Corresponding author: Mona Kharraji, Shahid Sadiughii University of Medical Sciences, Yazd, Iran. E-mail: Kharraji@gmail.com*

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Abstract:

Background: duplex ultra-sonography is a non-invasive, non-expensive screening test for carotid disease. Intima media thickness (IMT) is appropriate for atherosclerosis process diagnosis. Leukoaraisis (LA) increase the risk of cerebrovascular accident (CVA). LA patients need preventive medication for CVA. IMT is a non-invasive diagnostic and prognostic test in LA.

Aim: the aim of this study was comparison of carotid IMT in LA patients and control group.

Method: the case-control study was done on 100 LA patients and 100 controls. They were selected by simple sampling method in Shaheed Sadoughi MRI unit. Two groups member were matched by age and sex. The patient's information (age, sex, weight, height, past medical history, smoking history, ischemic heart disease (IHD), CVA and past medication) according the study checklist was collected. All statistical analysis were done by SPSS21.

Result: totally 200 patients were studied, 102 in normal group and 98 in ILA group. The mean age of patients was 64.39 (± 9.12) and 47% participants were male. There were no statistical differences between hypertension and hyperlipidemia frequency in two groups (P value > 0.05). The mean of left CIMT was 0.856 (± 0.202) in normal and 0.962 (± 171) in LA groups (P value: 0.026). The mean of right CIMT was 0.853 (± 0.215) in normal and 0.973 (± 188) in LA groups (P value: 0.024).

Conclusion: LA increases the risk of CVA and dementia. The LA pathology is unknown. The epidemiological studies revealed the age, diabetes, smoking and atherosclerosis are related with LA. Our findings showed that CIMT as an atherosclerosis marker was higher in LA patients than control group.

Keywords: Leukoaraisis; Intima Media Thickness; Duplex Ultra-Sonography

• 1075

THE VALUE OF CORONARY ARTERY CALCIUM SCORING IN EARLY DIAGNOSIS OF RADIATION-INDUCED CORONARY ARTERY DISEASE IN BREAST CANCER PATIENTS FOLLOWING RADIATION

Abbas Arjmand Shabestari [1]; Robab Anbiaee [1]; Taraneh Faghihi Langroudi [1]; Hooman Bakhshandeh [1]; Maryam Heydari-Sooreshjaany [1,*]

[1] *Shahid BeheshtiUniversity of Medical Sciences, Tehran, Iran*

[*] *Corresponding author: Maryam Heydari-Sooreshjaany, Shahid BeheshtiUniversity of Medical Sciences, Tehran, Iran. E-mail: mariam_heidari@yahoo.com*

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Abstract:

Background: breast cancer (BC) mortality rate has significantly decreased during the past decades by introducing adjuvant chemotherapy and/or radio-

therapy (RT) in addition to surgery. However, as an emerging phenomenon, the corresponding therapeutic side effects caused non-malignant morbidity and mortality. Coronary artery disease (CAD) is the leading non-malignant cause of death in BC patients. It is established that chest RT has a role in atherosclerotic plaque formation in the coronary arteries. Newer techniques of RT like three-dimensional conformal radiotherapy (3D-CRT) use technical methods in which less radiation doses are given to the non-cancerous tissues. Non-invasive technique of coronary artery calcium score (CACS) can detect atherosclerotic plaques long before the plaques become symptomatic, helping to treat them in early stages, so improve BC patients' outcome. The aim of this study is to assess and compare CACS in BC patients with a history of 3D-RT and non-BC women in the same age range with no history of RT.

Methods: CACS of fifty BC patients (age range: 34 - 70 years) with different time intervals from RT (range: 3 - 9 years) and CACS of fifty age-matched control group of non-BC women with no history of chest RT, using 64-slice ECG-gated CT scan were calculated and presented as the quantitative value of Agatston score (AS). The risk factors contributing to CAD (hypertension, hyperlipidemia, diabetes mellitus, smoking), and the Framingham's 10-year risk score, as well as the age-matched CACS percentiles, were evaluated.

Results: no correlation between AS and history of RT, RT-to-follow-up time interval, laterality of BC, Framingham's 10-year risk score or traditional CAD risk factors were detected. Increase in CACS related to the senile atherosclerotic process was shown ($P < 0.001$).

Conclusion: no difference between CACS was noted between BC patients with a history of 3D-CRT and the non-BC women without a history of RT. Although cardiac radiation dose reduction in 3D-CRT technique can justify the findings, as multiple studies have shown increase of CAD in BC patients with history of old RT techniques, but some studies show no difference in CACS between new and old RT techniques, other reason would be non-calcified atherosclerotic plaques after RT or myocardial microvascular disease due to reduced cardiac doses after 3D-CRT rather than calcified atherosclerotic plaques seen naturally by aging.

Keywords: Breast Cancer, Three-Dimensional Conformal Radiotherapy, Calcium Score, Coronary Artery Disease

• 1076

THE ROLE OF 18F FDG PET/CT IN CLINICAL MANAGEMENT OF BREAST CANCER; ADDITIONAL VALUE OVER CONVENTIONAL IMAGING MODALITIES

Mehrdad Bakhshayeshkaram [1,*]; Soheyla Zahirifard; Farahnaz Aghahosseini [2]; Abtin Doroudinia [3]; Mojtaba Ansari; Maryam Hassanzad; Hamid Reza Jamaat

[1] *Masih Daneshvari Hospital, Pediatric Respiratory Diseases Research Center, Tehran, Iran*

[2] *Masih Daneshvari Hospital, Sahid Beheshti University of Medical Sciences, Tehran, Iran*

[3] *MasihDaneshvari Hospital, Chronic Respiratory Diseases Research Center, Tehran, Iran*

[*] *Corresponding author: Mehrdad Bakhshayeshkaram, Masih Daneshvari Hospital, Pediatric Respiratory Diseases Research Center, Tehran, Iran. E-mail: mehrdadbakhshayesh@yahoo.com*

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Abstract:

Background: the aim of the present study was to investigate the potential improvement in detection rate of nodal and distant metastasis and the resultant impact on clinical management by PET-based diagnostic work up in comparison with conventional imaging modalities in various clinical settings in patients with breast cancer.

Method: of a total 256 patients with breast cancer who were referred to PET/CT division, Masih Daneshvari Hospital between May 2013 and Mar. 2016, 123 cases were included. Definitely-positive PET/CT findings in primary site as well as N1 (level I, II ipsilateral axillary nodes), N2 (ipsilateral internal mammary), N3 (ipsilateral internal mammary + level I, II ipsilateral axillary, ipsilateral level II axillary, ipsilateral supraclavicular node) and distant metastasis (distant node and viscera) and related impact on clinical management (upstaging or downstaging) were retrospectively identified from the report archive and then compared with the results of baseline imaging modalities including CT scan, sonography, bone scan, C-X ray, MRI, MRM and mammography obtained from patient medical records. The most typical imaging pattern was considered as the reference standard. Indeterminant and equivocal PET positive lesion were not included in the study.

Results: fourteen (11.38%) and 109 (88.62%) out of 123 patients were referred for staging and restaging/recurrence/surveillance, respectively. Mean age were

51.42 (34 - 62) and 52.66 (29 - 79) for staging and restaging groups, respectively. In staging group, 18 F FDG PET/CT recognized definitely positive additional nodal involvement in 21.4% of patients all of them related to the supraclavicular level and hence result in change N staging to N3. Additional metastatic lesions on a per lesion-basis and a per organ-basis were identified as 28.6% and 14.3%, repsectively. A significant change in patient management occurred in 42.9% (35.7% upstaging, 7.2% down staging). In restaging group, locoregional detection rate in biopsy proved recurrence was 100%. Additional nodal detection and the resultant change in N staging were 29.6% and 28.7%, respectively. Supraclavicular node detection contribute in 53.12% of overall change in N staging followed by axillary node and internal mammary equally (15.62%). Additional metastatic lesions on a per lesion-basis and per organ-basis were identified in 53.2% and 44%, respectively. Ultimate change in patients' management was found in 42.9%.

Conclusion: 18 F FDG PET/CT is a valuable imaging tool in initial and subsequent treatment strategy in patients with breast cancer by providing additional nodal and distant metastasis and may have the promising future potential to be as the imaging modality of choice for accurate assessment of disease extension in breast cancer in routine clinical practice.

Keywords: 18F FDG PET/CT; Breast Cancer; Conventional Imaging; Clinical Management

• 1077

MRI FOR ASSESSMENT OF ANAL FISTULA

Saeed Naghibi [1,*]

[1] *Islamic Azad University*

** Corresponding author: Saeed Naghibi, Islamic Azad University. E-mail: naghibisaeed42@gmail.com*

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Abstract:

A fistula-in-ano is the passage between the skin around the anus and anal canal that usually caused by a previous anorectal abscess and an obvious sign of that is continuous discharge. Although it's not the common disease in GI tract but it has caused considerable morbidity. The outbreaks have almost 11 per 111, 111, and 2 - 4 times more frequent in men and if it's not diagnosed and treated on time, it can be a high risk of recurrence and fecal incontinence and associated risk of sepsis and abscesses.

Aims: the purpose of the study was to evaluate the role of magnetic resonance imaging in detection and characterization of perianal fistulae and correlating it with surgical findings.

Methods: in this study, 14 patients with clinical and physical examination of perianal fistulas were prospectively selected for MRI evaluation, with specific MRI sequence T1W, T2W, T1 Fat Sat or T2 Fat Sat, T1 + contrast, etc, and with special coils plans axial, coronal, sagittal. MRI findings were recorded. The surgery was performed and the results were also recorded and eventually the consistency and effectiveness of MRI were compared with the results after surgery.

Results: Amongst the total of 14 patients,in 1 patient (7117) Transsphincteric fistula, 11 patients (78167) Intersphincteric fistula and 2 patients (14137) Suprasphincteric fistula were diagnosed and in surgery findings,1 (7117) Transsphincteric fistula, 11 (71147) Intersphincteric fistula and 2 (14137) Suprasphincteric fistulas were detected and in one case no fistula was observed. An agreement between two detection methods was 82177 and sensitivity of MRI in the diagnosis of intersphincteric, transsphincteric and suprasphincteric fistulas were 1117 and the specificity was 757 in the detection and diagnosis of intersphincteric fistulas and 1117 for transsphincteric and suprasphincteric fistulas 1

Conclusion: based on the results of this study and according to the 1117 sensitivity of MRI, it's useful to locate the perianal fistulas, reduce the chance of recurrence and postoperative complications and can contribute the healing process better than other diagnostic methods.

• 1078

THE INFLUENCE OF CANCER-RELATED CHARACTERISTICS ON BROWN ADIPOSE TISSUE AT (18 F)DG PET/CT

Mehrdad Bakhshayeshkaram [1]; Soheyla Zahirifard; Farahnaz Aghahosseini [2,*]; Abtin Doroudinia [3]; Maryam Hassanzad; Zahra Dehghani; Mojtaba Ansari; Hamid Reza Jamaati

[1] *Masih Daneshvari Hospital, Pediatric Respiratory Diseases Research Center, Nat*

[2] *Masih Daneshvari Hospital*

[3] *Masih Daneshvari Hospital, Chronic Respiratory Diseases Research Center, Nationa*

** Corresponding author: Farahnaz Aghahosseini, Masih Daneshvari Hospital. E-mail: kfaghahosseini@gmail.com*

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Abstract:

Background: the present study aimed at investigating the influence of cancer related characteristics in association with environmental factors and patients demographics and on the prevalence of brown adipose tissue at 2-deoxy-2-(18F) fluoro-Dsglucose (18F-FDG) as well as the level of metabolic activity.

Method: a total 3762 (18 F)DG PET/CT scans were retrospectively reviewed to identify BAT related (18 F) DG uptake. Demographics, anthropometrics, outdoor temperature, daylight exposure in addition to cancer related characteristics including type of cancer, reason for referral, history of recent treatment, the presence of malignant lesion were recorded. Anatomical distribution of FDG detectable BAT and related SUVmax were also determined. Control groups consisted of patients without FDG detectable BAT was randomly selected and matched for age, gender and mean outdoor temperature for all groups and for type of cancer, reason for referral and presence of active disease, as appropriate. Descriptive quantitative variables were expressed as either frequency or mean. Independent T test, Mann-Withney U test, Pearson correlation coefficients, one-way analysis of variance and linear regression test (SPSS ver.23) were used as appropriate (P value < 0.05).

Results: one-hundred eighteen studies were recognized to demonstrate foci of FDG BAT uptake (3.1%, mean age: 22.7 years). There were statistically significant higher rate of BAT occurrence in female, younger patients, normal/low BMI and body fat-based categorical weight, lower temperature and shorter daylight duration. In the context of cancer related characteristics, lymphoma and evaluation of treatment response were found as the most prevalent cancer type and reason for referral, respectively. Univariate analysis demonstrated strong correlation between the prevalence of FDG-detectable BAT and associated metabolic activity and age, gender, BMI and BF-based categorical weight, daylight as well as the nonactive underlying malignancy and recent history of treatment. Multivariate analysis revealed age, gender, daylight duration and recent history of treatment as independent influencing factors on BAT recruitment and the level of metabolic activity.

Conclusion: recent treatment, in addition to age, gender and daylight duration were proved as strong independent determinants on BAT development and the level of metabolic activity at (18 F)DG PET/CT and should be considered as an important confounding factor in future researches.

Keywords: (18 F)DG PET/CT PET/CT; Brown Adipose Tissue; Cancer Status; SUV Max

• 1079

ROLE OF FDG PET/CT SCAN IN HEAD AND NECK CANCER PATIENTS

Mehrdad Bakhshayesh Karam [1]; Abtin Doroudinia [2,*]; Farahnaz Aghahosseini [3]; Fatemeh Kaghazchi [2]; Payam Mehrian [2]

[1] *Masih Daneshvari Hospital, Pediatric Respiratory Diseases Research Center*

[2] *Masih Daneshvari Hospital, Chronic Respiratory Diseases Research Center*

[3] *Masih Daneshvari Hospital*

[*] *Corresponding author: Abtin Doroudinia, Masih Daneshvari Hospital, Chronic Respiratory Diseases Research Center. E-mail: abtin1354@gmail.com*

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Abstract:

Background: PET/CT scan has emerging role in head and neck oncology with a few well-established indications, including: detection of unknown primary tumor site, tumor staging, radiotherapy planning, treatment response assessment and detection of recurrent disease. The purpose of this study is reporting PET/CT findings in head and neck cancer patients to emphasize on its role in head and neck oncology.

Methods: we reviewed our PET/CT date-base retrospectively and found 94 patients, referred with primary head and neck cancer. This is a descriptive report of PET/CT scan findings in head and neck cancer patients referred to Masih Daneshvari hospital since 2013 to 2016.

Results: the most common primary tumor sites were oral cavity (27%) and nasopharynx (22%). The most common indication for referral was tumor restaging (76%) including treatment response evaluation and differentiation between recurrence and post-treatment fibrosis. In 60% of patients with negative primary tumor site, PET/CT was able to detect evidence of regional or distant metastasis. PET/CT was able to localize the primary tumor site in 66% of patients with unknown primary tumor site. We had

also 19 patients with primary head and neck cancer referred for initial staging, demonstrating evidence of metastasis in 66.2% of all cases.

Conclusion: most patients are referred for restaging and demonstrate evidence of regional or distant metastasis with significant value for further treatment planning. Providing insurance coverage and familiarizing referring physicians about appropriate indications of this relatively new diagnostic modality will be to the best interest of head and neck cancer patients in long term.

Keywords: Head and Neck Cancers; PET/CT; Staging; Re-staging

• 1080

COMPARISON OF BEDSIDE SONOGRAPHY WITH CT SCAN IN DIAGNOSIS OF PNEUMOTHORAX

Manizhe Ataei [1,*]

[1] *Bandarlenge Hospital, Iran*

** Corresponding author: Manizhe Ataei, Bandarlenge Hospital, Iran. E-mail: manizhe.ataei64@gmail.com*

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Abstract:

Background: ultrasound is the choice modality in the unstable patients and after performing certain procedures, such as a thoracentesis or the placement of a central venous line, which helps to rule out an iatrogenic pneumothorax.

Upright AP radiograph has less sensitivity in diagnosing pneumothorax in comparison with ultrasound. CT scan is more sensitive in diagnosis occult pneumothoraces but Bedside ultrasound is prefferedt in unstable situations without any radiation exposure.so we aimed to compare sensitivity of sonography with CT scan in patients who are suspicious to pneumothorax after thoracentesis or the placement of a central venous line or intubatin.

Methods: a radiologist performed bedside sonography first and then chest chestct scan was performed for 40 patients and was interpreted without knowing ultrasound results Absence of lung sliding, loss of 'comet-tail artifacts and Lung-point sign were assumed as sonographic criteria for diagnosis pneumothorax.

Results: the result of CT and sonography was the same in 38 case (18 case pneumothorax and20 case without pneumothorax).

2 cases with small occult pneumothorax were not diagnosed with sonography but pneumothorax was reported at CT scan.

Conclusions: sonography is valuable method in diagnosis pneumothorax in unstable patients after invasive thoracic procedures.

• 1081

THE NORMAL VALUE OF TIBIAL TUBERCLE TROCHLEAR GROOVE DISTANCE IN PATIENTS WITH NORMAL KNEE EXAMINATIONS USING MRI

Mohammad Sobhan Ardekani; Reza Nafisi Moghadam [1]; Mohamadreza Sobhan; Sepehr Nabavinejad; Zoheira Arefmanesh [2,*]; Mani Habibilashgary; Mahtab Amirheidari

[1] *Yazd University of Medical Sciences, Yazd, Iran*

[2] *Resident*

** Corresponding author: Zoheira Arefmanesh, Resident. E-mail: arefmanesh.md@gmail.com*

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Abstract:

Patellar instability is a multifactorial common knee pathology that has a high recurrence rate, and the symptoms continue and ultimately predispose the patient to chondromalacia and osteoarthritis. Tibial tuberosity-trochlear groove distance (TTTG) is very important in the assessment of patellofemoral joint instability. The purpose of this study was to report normal value of TTTG in males and females in different age groups and to assess the reliability of MRI in measuring TTTG. All patients presenting with knee pain and normal examinations of knee joint, with a normal MRI report, referring to Shahid Sadoughi hospital of Yazd, Iran, from April 2014 to September 2014, were included into the study. MR images were studied once by two radiologists and for the second time by one radiologist. Mean value of TTTG was reported for males and females and in three age groups. Intra- and inter-observer reliability was calculated. A total of 98 patients were eligible to evaluate during 6 months (68 male and 30 female). Mean TTTG was 10.9 ± 2.5 mm in total, which was 10.8 ± 2.8 mm and 11.3 ± 2.3 mm in males and females, respectively ($P > 0.05$). Mean TTTG in males ≤ 30 years,

30-50 years and, ≥ 51 years old were 10.8 ± 2.6 mm, 10.8 ±2.7 mm, and 10.8 ± 2.6 mm, respectively; that was 12.1 ± 3.4 mm, 11.4 ± 1.9 mm, and 10.5 ± 1.7 mm in females ≤30 years, 31-50 years and, ≥51 years old, respectively (95 % CI). The coefficient of variation was <10% for both intra- and inter-observer analysis. The results of the present study showed no significant difference in TTTG value between males and females in different age groups. In addition, it demonstrated that MRI is a reliable method in assessment of TTTG and identified normal value for TTTG at 10.9 ± 2.5 mm.

Keywords: Knee; Anatomy; Magnetic Resonance Imaging; TTTG

• 1082

ASSESSMENT OF CORRELATION OF LEFT VENTRICULAR DIASTOLIC FUNCTIONAL INDICES BETWEEN GATED MYOCARDIAL PERFUSION SPECT AND ECHOCARDIOGRAPHY

Lida Peivandi [1,*]; Vahid Reza Dabbagh Kakhki [2]

[1] *Zahedan University of Medical Sciences, Zahedan, Iran*

[2] *Mashhad University of Medical Sciences, Mashhad, Iran*

** Corresponding author: Lida Peivandi, Mashhad University of Medical Sciences, Mashhad, Iran. E-mail: lida.peivandi@gmail.com*

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Abstract:

Background: left ventricular diastolic function assumes as a major morbidity and mortality risk factor in cardio-vascular diseases especially in patients with heart failure with preserved ejection fraction. In myocardial gated perfusion SPECT, both the perfusion and the LV function, specially systolic ones, are evaluated. Though diastolic indices, assessed by SPECT, are often overlooked in reports and they were not compared with the known methods for assessment of LV diastolic function, best of them is echocardiography (Doppler and 2D). The aim of this study was to assess the correlation of LV diastolic indices with echocardiography.

Method: forty-nine consecutive patients referred to Ghaem hospital, Nuclear medicine ward, between 2013 to 2016, were performing both SPECT and echocardiography. Diastolic LV indices in SPECT were calculated with QGS software and all DATA were recorded in SPSS for statistical analysis by performing correlation studies. P value less than 0.05 is defined as significant level.

Results: the population study consisted of 19 male and 30 female with the average age of 58.2 years. There is a mild negative correlation between PFR, MFR/3 and PFR/2 with LA volume, LA diameter and LA index. There is a mild negative correlation between MFR/3 and Posterior wall thickness and also a mild positive correlation between PFR/2 and systolic LV diameter. There is no significant correlation between SPECT diastolic indices with other variables in echocardiography.

Conclusion: in this study there is no correlation between the main LV diastolic indices derived by SPECT and echocardiography, may be due to the main changes in the last version of guidline for assessment of LV diastolic function by echocardiography.

Keywords: Diastolic Dysfunction; Echocardiography; SPECT; Diastolic Indices; Heart Failure

• 1083

NON-CALCIFIED CORONARY ARTERY PLAQUE CHARACTERIZATION BY DUAL ENERGY COMPUTED TOMOGRAPHY (DECT)

Rezvan Ravanfar Haghighi [1,*]; Sabya Sachi Chatterjee [2]; Pratik Kumar [2]; Vani Varadhan Chatterjee [2]; Reza Jalli [1]; Sepideh Sefidbakht [1]; Fariba Zarei [1]; Bijan Bijan [3]

[1] *Shiraz University of Medical Sciences, Shiraz, Iran*

[2] *Indian Institute of Sciences*

[3] *University of California Davis Medical Center, USA*

** Corresponding author: Rezvan Ravanfar Haghighi, Shiraz University of Medical Sciences, Shiraz, Iran. E-mail: ravanhaghighi@yahoo.com*

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Abstract:

Introduction: one of the most important causes of mortality in developed and developing countries is coronary artery disease. Coronary artery disease (CAD) may develop by deposition of lipid, fibrous or calcified debris on the surface of the coronary artery lumen. Fibrous plaque and calcified plaque may cause substantial stenosis of coronary arteries leading to ischemia of heart muscle while lipid core plaque with thin fibrous cap is generally non-stenotic. Lipid core plaques have higher risk of rupture, leading to future cardiovascular events and even sudden death. Single energy, conventional CT scan-

ners may demonstrate the calcified plaques easily but they are of limited use in properly characterizing the plaques, specifically in evaluation of fibrous components, lipid core plaque or evaluation of mixed plaques. The main aim of this study was to characterize non calcified coronary artery plaque utilizing dual-energy computed tomography (DECT) system.

Methods: decomposition of non-calcified coronary artery plaque was done in terms of effective atomic number (Zeff) and electron density (ρe) by utilizing DECT. Calibration was done by CT scanning employing known chemical compounds and mixtures, at 100 and 140 kVp, by dual source dual energy CT system. The inversion algorithm was applied to the CT data of the excised coronary artery (ex-vivo) from the heart of the cadaver and the result was verified with pathological report of these ex-vivo samples.

Results: the results demonstrated that the HU (100) and HU (140) sets of values measured in non-calcified plaque cannot adequately characterize the nature of the plaque. Upon applying our inversion algorithm to non-calcified plaques, the collected data may be able to characterize the type of the plaque into, fibrous plaque, fibro-lipid plaque with micro-calcification, and lipid plaque containing small amounts of micro-calcification. Our results corroborated with histopathology studies in 63% of the cases.

Conclusion: this study (first of this kind) shows that DECT method has potential to characterize the non-calcified coronary artery plaque.

Keywords: Dual-Energy CT; Non-Calcified Plaque; Characterization

• 1084

QUALITY IMPROVEMENT PROJECT: IMPLEMENTATION OF PACS INTEGRATED PEER FEEDBACK FOR RADIOLOGISTS AFTER AN HOSPITAL MERGE

Allard Olthof [1,*]

[1] *Treant healthcare group, Netherland*

[*] *Corresponding author: Allard Olthof, Treant healthcare group, Netherland. E-mail: a.olthof@treant.nl*

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Abstract:

Purpose: peer feedback among radiologists contributes to quality improvement. RadPeer is a commonly used system for peer review. Consensus-oriented group review (COGR) promotes discussion among radiologist to improve reporting quality of all team members. Thresholds to feedback can be technical and personal, that can be augmented by a hospital merge. Making use of the functionality of the picture archiving and communication system (PACS) can help to integrate peer feedback in daily workflow. A good working agreement can augment usage of the feedback system by radiologists.

The purpose of this paper is to demonstrate the implementation of PACS integrated peer feedback after an hospital merge with 3 locations.

Methods: the workflow for peer feedback was designed and the project was approved by all radiologists. We adapted the teaching file function of the PACS to use the RadPeer feedback terminology. The radiologists were instructed how to use the system. Team meetings were scheduled to discuss cases, in line with COGR.

Results: providing and receiving peer feedback was easy to do, without interruption in daily workflow. The system can be used among the three hospital locations of the healthcare group. It was easy to retrieve and demonstrate cases for group discussion and analysis. A side effect was that the feedback project helped to demonstrate to external stakeholder that the radiologists are eager to work on continuous quality improvement.

Conclusion: PACS integrated peer feedback is a valuable tool to improve quality in radiology and feasible to implement, especially in the setting of a hospital merge.

• 1085

A COMPARATIVE STUDY BETWEEN HRCT FINDINGS OF INVASIVE PULMONARY ASPERGILLOSIS WITH SERUM AND BRONCHOALVEOLAR LAVAGE GALACTOMANNAN AND FUNGAL CULTURE IN LUNG-HEART TRANSPLANT RECIPIENTS

Homa Khayatzadeh [1,*]; Payam Mehrian [2]; Payam Tabarsi

[1] *Radiology Resident of Shahid Beheshti University of Medical Science, Tehran, Iran*

[2] *Masih e Daneshvari Hospital, Chronic Respiratory Diseases Research Center*

[*] *Corresponding author: Homa Khayatzadeh, Radiology Resident of Shahid Beheshti University of Medical Science, Tehran, Iran. E-mail: Archi363@yahoo.com*

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Abstract:

Background: due to the impact of threats on the clinical outcome and survival of the lung-heart transplant recipients, such as invasive pulmonary Aspergillosis, we aimed to compare the high resolution computed tomography (HRCT) scan findings with the serum BAL galactomannan and fungal culture in these patients.

Methods: we reviewed the data of lung-heart transplant recipients within a 5 year period at our center. The inclusion criterion was confirmed invasive pulmonary Aspergillosis. Demographic, clinical, radiologic and laboratory characteristics of the patients were retrieved from their files and reported.

Results: we reviewed the data of 30 patients (mean age = 36.1 ± 13.3; Male gender = 22 (73.3%). Seventeen patients (56.7%) patients had double lung transplant, 10 933.3% had single lung transplant and 3 (10%) had heart-lung transplant. Consolidation was the most observed finding in the HRCT (n = 25) (83.3%) and it was more present in the left lower lobe of the lung. Ground glass opacity was observed in 19 (63.3%) of the patients and mostly in the left lower lobe. Pleural thickening and pleural effusion were present in 7 (23.3) and 19 (63.3%) of the patients, respectively. Small-size nodular infiltration (< 5 mm) was present in 19 (63.3%) while large-size nodular infiltration (> 5 mm) was observed in only 5 (16.7%) patients. Twenty-seven (90%) patients had positive culture results, while serum and bronchoalveolar lavage galactomannan was positive in 5 (16.7) and 9 (30%) patients, respectively. Four (13.3%) patients died during the study period. However, there was no association between the HRCT and laboratory characteristics of the study population.

Conclusion: HRCT is helpful in the diagnosis of invasive pulmonary aspergillosis in patients with lung-heart transplant.

• 1086

THE DIAGNOSTIC VALUE OF CURRENT PRACTICE OF PEDIATRIC INTRAVENOUS UROGRAPHY IN AFGHANISTAN IN PRESENCE OF ULTRASONOGRAPHY; CROSS-SECTIONAL ANALYTIC STUDY AT FMIC, KABUL

Hidayatullah Hamidi [1,*]; Najibullah Rasouly [1]

[1] *French Medical Institute for Children (FMIC), Kabul, Afghanistan*

[*] *Corresponding author: Hidayatullah Hamidi, French Medical Institute for Children (FMIC), Kabul, Afghanistan. E-mail: hedayatullah.hamidi@gmail.com*

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Abstract:

Background: intravenous urography (IVU); the oldest imaging method for assessing the upper urinary tract anatomy and function; is now seldom used in the pediatric population. The important concern associated with IVU is the radiation exposure. Due to various reasons, IVU is still widely practiced in pediatrics in Afghanistan. On the other hand, Ultrasonography (USG) is universally accepted as the first-line imaging modality in pediatric uroradiology. It is inexpensive, immediate, painless, radiation-free, non-invasive and widely available.

Objectives:

- To assess the diagnostic value of current practice of pediatric IUV in presence of USG in Afghanistan.

- To compare the validity OF USG, plain abdominal radiograph, and their combination in with IVU in detection of urolithiasis in children.

Methods: a prospective cross-sectional analytic study was conducted on pediatric patients at radiology department of FMIC. First USG of urinary tract was done for all participants, followed by IVU. The statistical analysis was done using SPSS version 23. The diagnostic value of IVU was considered positive when it could provide additional information over USG and negative if it could not give any addition information over USG. Accuracy of USG, plain radiograph and their combination in detection of urolithiasis was calculated taking IVU as reference examination.

Results: the diagnostic value of IVU was found positive in 6.5% while it was negative in (93.5%) cases.

The sensitivity and specificity of USG, Rad and their combination in detection of urolithiasis was calculated as 90.5% and 84.8%, 84.1% and 88.6%; and 98.4% and 4.8% respectively.

Conclusion: IVU can be largely replaced by USG in the pediatric population and if really clinically needed, its indications should always be judged according to clinical context and USG findings.

- In cases of urolithiasis combination of USG and plain radiograph can mostly answer the clinical

question and there may be no need to perform IVU.

Keywords: Intravenous Urography; Pediatric Uroradiology; Ultrasonography

• 1087

DIAGNOSIS OF SOLITARY PULMONARY NODULES USING MRI: A FEASIBILITY STUDY

Reza Jalli; Banafsheh Zeinali-Rafsanjani [1,*]; Mahdi Saeedi-Moghadam

[1] *Medical Imaging Research Center*

[*] *Corresponding author: Banafsheh Zeinali-Rafsanjani, Medical Imaging Research Center. E-mail: b.zeinali.r@gmail.com*

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Abstract:

Solitary pulmonary nodule (SPN) is explained as a separate, well-determined obscurity with the maximum size of 3cm which is enclosed by typical lung tissue and is not related to any other anomalies in the lung or adjacent lymph nodes. Among imaging modalities MRI has more benefits such as high spatial resolution and usage of nonionizing radiation, however, the efficacy of this imaging modality in lung nodules diagnosis has not been well established. Thus CT scan is considered a proper modality for the SPN diagnosis. The objective of this study was to evaluate the accuracy of MRI in the detection of SPNs which has verified by CT scan. The study was conducted as a prospective case-control study. 32 SPN patients whose disease confirmed by CT scan findings and 11 patient with normal CT scan were included in this study. Sensitivity, specificity, positive and negative predictive values of MRI were determined. The location and the size of pulmonary nodules as well as different MRI sequences were evaluated. Statistical analysis revealed that T1w sequences (27%) had the least diagnostic sensitivity, T2w images, and Fat-sat slices had 55% and 36% sensitivity respectively. Specificity of T1w, T2w, and Fat-sat images were 97%, 90% for the last two imaging sequences. According to the results, it can be concluded that although the specificity of different MRI sequences was $\geq$ 90%, low sensitivity and breath holding technique prevents its clinical routine usage for the suspected patients with SPN or early detection of pulmonary nodules in high-risk patients.

• 1088

EVALUATION OF BRONCHITIS CAUSED BY MUSTARD GAS WEAPONS IN THE WAR COMBATANTS

Mahdi Saeedi-Moghadam [1]; Reza Jalli [1]; Banafsheh Zeinali-Rafsanjani [1,*]

[1] *Medical Imaging Research Center, Shiraz University of Medical Sciences, Shiraz, Iran*

[*] *Corresponding author: Banafsheh Zeinali-Rafsanjani, Medical Imaging Research Center, Shiraz University of Medical Sciences, Shiraz, Iran. E-mail: b.zeinali.r@gmail.com*

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Abstract:

Sulfur mustard (SM) gas was used in the Iran-Iraq war (1981 - 1989) as a vesicant chemical warfare against the Iranian warriors. This alkylating agent with the potential of producing chemical injury in the skin, eyes, and lung, may damage both upper and lower respiratory tract, which in turn can cause different types of sequels such as asthma, bronchiectasis, chronic bronchitis and lung fibrosis. This study was performed on 274 patients with documented history of SM gas exposure. All of the participants complained of respiratory problems. Patients with a positive history of cigarette smoking, respiratory problems before the exposure to SM gas, cardiovascular problems, surgery of the lung, and exposure to occupational toxic chemicals were excluded from the study. Results of all chest HRCTs were evaluated by a radiologist. HRCT findings showed that bronchiectasis involved 53 patients (19.34%) of all cases. Varicose bronchiectasis and cystic bronchiectasis was observed in 10 (18.9%) and 6 cases (11.3%) respectively. Among patients with bronchiectasis, the involvement rate of different lobes was as follows: Right upper lobe (RUL) 7.5%, right middle lobe (RML) 11.3%, left upper lobe (LUL) 15.1%, left lower lobe (LLL) 26.4% and right lower lobe (RLL) 39.6%. Findings of chest HRCT demonstrated tubular bronchiectasis was the most frequent type of this disease that involve the chemically injured patients and RLL had been the most frequently involved lobe of the lung with bronchiectasis.

• 1089

CLINICAL IMPLICATION OF INTRA-AMNIOTIC SLUDGE IN PREDICTING OF PRETERM DELIVERY

Narges Afzali [1,*]; Fatemeh Baghalsafa [1]

[1] Islamic Azad University Mashhad Branch, Mashhad, Iran

* Corresponding author: Narges Afzali, Islamic Azad University Mashhad Branch, Mashhad, Iran. E-mail: nafzali2007@yahoo.com

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Abstract:

Background: preterm labor is defined as labor occurring prior to 37 weeks which .There are different factors which can lead to preterm labor including maternal causes, chorioamnionitis, cervical insufficiency and others. Because there is no satisfactory clinical method fop prediction of preterm labor, so it is important to look for some probable predicting markers by para clinical investigation.

The main goal of this study is evaluation of relationship of intra-amniotic sludge in ultrasound exam and preterm delivery.

Methods: in a cohort study included 84 pregnant women in 18 - 32 weeks of gestational age referred to Islamic Azad University of Mashhad hospitals in 2015. Cervical length measurement and intra-amniotic sludge were examined by transvaginal probe. Depending on sludge density the cases were divided to three groups: no amniotic sludge, light sludge and dense sludge. According to gestational age at delivery time the women were classified into two groups: term (delivery after 37 weeks) and preterm (delivery before 37 weeks).

Results: The prevalence of preterm delivery was 14/3%. The frequencies of term delivery in mothers with dense, light and no sludge were 78/6%, 82/1% and 96/4 % respectively, and for preterm delivery they were 21/4%, 17/9% and 3/6% respectively. But there was no statistically significant relationship between term and preterm delivery and type of sludge. Neonatal weight in mothers with sludge, was significantly lower than mothers without sludge.

Conclusion: there is no statistically significant relationship between preterm delivery and type of sludge.

keywords: Intra-Amniotic Sludge; Transvaginal Ultrasound; Preterm Birth; Cervical Length

• 1090

ON THE SELECTION OF REGION OF INTEREST IN MEASUREMENT OF CARDIAC MAGNETIC RESONANCE IMAGING T2* VALUE IN THALASSEMIA MAJOR PATIENTS

Somayeh Gholami Bardeji [1,*]; Mahdi Dodangeh; Zeinab Gholami [2]; Reza Jalli [2]; Mehrzad Lotfi [3]; Mehran Karimi [2]; Rezvan Ravanfarhaghighi; Sepideh Sefidbakht [2]; Bijan Bijan [4]

[1] Postdoc

[2] Radiology Department, Shiraz University of Medical Sciences, Shiraz, Iran

[3] Medical Imaging Research Center, Shiraz University of Medical Sciences, Shiraz, Iran

[4] University of California Davis Medical Center, USA

* Corresponding author: Somayeh Gholami Bardeji, Postdoc. E-mail: s.gholamii@gmail.com

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Abstract:

Purpose: to investigate the correlation between T2* values of different regions of interest (ROIs) in myocardium with the means of semi quantitatively estimating the myocardiac iron content in the thalassemia major patients. In the same setting we tried to design a model to predict T2* value of interventricular septum (septum) based on T2* values of other convenient ROIs in myocardium.

Materials and methods: 130 patients underwent ECG-gated cardiac magnetic resonance imaging (MRI), and T2* values were measured in different ROIs. Full-thickness ROIs are drawn manually in septum, entire left ventricle (LV) wall, the region of the best visual conspicuity (sharp), and LV free wall. The relation between T2* values of these four regions are investigated. Depends on the grade of siderosis, the patients are divided into four groups; severe: $T2^* \leq 10$, moderate: $10 \leq T2^* \leq 15$, mild: $15 < T2^* \leq 20$, and normal: $T2^* > 20$. The statistical analysis carried out using Matlab R2015b.

Results: in patients with the cardiac $T2^* \leq 20$, the statistical analysis confirms a significant correlation ($\alpha = 0.001$) between T2* values of septum and the ROIs named above. Moreover, the statistical results become more concordant with decreasing T2* values. In addition, for patients with a $T2^* > 20$, a weak correlation is noticed between T2* values of different ROIs. Three predictor models are provided to estimate T2* value of septum using T2* values of entire LV wall, sharp region, and LV free wall.

Conclusion: the T2* values of the LV free wall and the entire LV wall are reliable alternatives to estimate the T2* value of septum. The predictor model based on T2* value of entire LV wall provides the most reproducible estimation.

• 1091

ROUTINE VERSUS SELECTIVE USE OF CHEST AND ABDOMINOPELVIC CT-SCAN IN BLUNT TRAUMA: A RANDOMIZED CONTROLLED STUDY

Hamidreza Talari [1,*]; Nushin Moussavi; Abdolhossein Davoodabadi; Sasan Saidfar; Fatemeh Atoof

[1] *Kashan University of Medical Sciences, Kashan, Iran*

[*] *Corresponding author: Hamidreza Talari, Kashan University of Medical Sciences, Kashan, Iran. E-mail: talari2008hr@yahoo.com*

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Abstract:

Background: whole body CT scan (WBCT) is increasingly used in the setting of severe blunt trauma due higher sensitivity for detecting occult injuries in comparison to conventional radiography and ultrasound. But the real impact of routine CT scan on patient outcome is still unclear. Considering the high radiation exposure due to routine CT scan, this study was conducted to assess the effect of performing routine chest and abdominopelvic CT scan on patient admission time and complications in blunt trauma.

Methods: one hundred and forty conscious and hemodynamically stable blunt trauma patients were included in this randomized controlled study. For seventy patients, routine chest and abdominopelvic CT scan was requested in addition to conventional radiography and ultrasound. For the other 70 patients, selective CT scan was ordered according to the clinical presentation. Patient admission times in the emergency room and surgery ward, complications and surgical procedures were assessed. "Missed injuries" defined as additional findings on CT scan which were not evident on radiography or ultrasound were assessed.

Results: admission time in the emergency ward was significantly shorter in the intervention group with 3.7 ± 0.9 hours in comparison to 4.9 ± 0.8 hours in the control group. Also mean admission time in hospital was only 5.4 ± 2.4 in the intervention group in comparison to 7 ± 3.3 days in the control group. On abdominopelvic CT scan, 9 (7.8%) additional injuries were detected. All these 9 patients had a positive clinical examination. Chest CT scan in the intervention group led to additional diagnoses in 17 patients (24.28%) leading to tube thoracostomy insertion in 13 patients (18.57%).

Conclusion: performing routine chest and abdominopelvic CT scan in conscious blunt trauma patients decreases the hospitalization time but has no effect on patient complications and final outcome. Using a selective approach and performing CT scan only for symptomatic patients, would be an appropriate option to decrease radiation dose and facility overuse. Nevertheless, the concern of missing occasionally a life threatening injury still remains. Each trauma center should make the decision whether to perform CT scan or not according to all the pros and contras of this imaging modality.

• 1092

FETAL AND MATERNAL OUTCOMES OF ISOLATED SINGLE UMBILICAL ARTERY

Amirhossein Hashemi Attar [1,*]; Narges Afzali [1]; Fatemeh Hafezi [1]; Zahra Amini [1]

[1] *Isalmic Azad University, Mashhad Branch, Iran*

[*] *Corresponding author: Amirhossein Hashemi Attar, Isalmic Azad University, Mashhad Branch, Iran. E-mail: amh1350@yahoo.com*

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Abstract:

Background: the umbilical cord normally consists of two arteries and one vein. Single umbilical artery (SUA) is a condition in which the cord contains only one artery. SUA may be isolated or associated with congenital anomalies. This anatomic variation can be detected by ultrasound evaluation in approximately 0.5% of pregnancies. The incidence of adverse outcomes primarily depends on whether SUA is an isolated finding or associated with fetal abnormalities and aneuploidy. The aim of this study was to investigate fetal and maternal outcomes of isolated SUA.

Methods: in this cohort study, 21 fetuses with isolated SUA, and 21 fetuses with normal three-vessel umbilical cord were included. All cases were examined by advanced fetal anomaly scan. In addition, cardiac, genitourinary, musculoskeletal, gastrointestinal, and neurologic anomalies were excluded. Two group were monitored during pregnancy, at delivery, and neonatal period. Perinatal and maternal outcomes were recorded.

Results: among 21 fetuses with isolated SUA, the left and right arteries were absent in 12 and 9 fetuses, respectively. Interestingly, the mean head circumfer-

ence at birth was significantly lower in the isolated SUA group compared to the 3-vessel group (33.35 + 2.06 cm vs 35.21 + 1.47 cm, P = 0.002). However, there was no statistically significant difference between the two groups in birth weight and length, as well as incidence of polyhydramnios, oligohydramnios, intrauterine growth retardation, intrauterine fetal death, small for gestational age, preterm delivery, cesarean delivery due to fetal distress, and neonatal intensive care unit admission.

Conclusions: in the absence of associated anomalies, the risk of incidence of adverse events does not appear to be increased significantly with isolated SUA. Therefore, supplementary assessment and invasive tests are not recommended in fetuses with isolated SUA, unless fetal abnormalities are detected in routine evaluations.

Keywords: Fetus; Isolated; Single Umbilical Artery; Ultrasound

• 1093

HOW LOW CAN WE GO DOSE SAVING THROUGH LOW-DOSE EXAMINATION FOR UROLITHIASIS VIA MODERN COMPUTER TOMOGRAPHY WITH TINFILTER

Youssef Erfanian [1,*]; Nika Guberina [1]; Saravanabavaan Suntharalingam [1]; Jens Theysohn [1]; Johannes Haubold

[1] *University Hospital Essen, Germany*

* *Corresponding author: Youssef Erfanian, University Hospital Essen, Germany. E-mail: Youssef.Erfanian@uk-essen.de*

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Abstract:

Purpose: to compare radiation dose and image quality of three different CT devices using low dose abdominal protocols in patients with suspected urolithiasis. Differences in radiation dose due to usage of additional hardware (tin filter) and software (newer generation iterative reconstruction) were evaluated.

Methods and materials: low - dose examinations from two standard CT (Siemens AS +, Siemens Flash) devices with a tin - filter CT (Siemens Force) were compared regarding dose-length product (DLP) and computed tomography dose index volume (CTDIvol). Image quality of each CT scan was assessed using a five point Likert scale (0 = major blurring, 4 = excellent depiction). Kruskal - Wallis analysis was performed to test for significant subgroup differences in DLP, CTDIvol and image quality. An interrater agreement concerning image quality was evaluated.

Results: CT examinations of a total of 143 patients were assessed. DLP of Force was 56% and 55% lower in comparison to AS+ and Flash, (74.3, 166.1 and 164.6 mGycm respectively; P < 0.001). CTDIvol of Force showed 60% and 58% significantly lower values as compared to AS + and Flash, respectively (1.4 vs. 3.5vs. 3.3 mGy; P < 0.001). Image quality in Force proved to be slightly higher as compared to Flash and AS + (3.67, 3.50 and 3.59 respectively; P > 0.05). Interrater agreement regarding image quality was substantial for all CT - devices ($\kappa = 0.75$, n = 143).

Conclusion: modern CTs with the innovative technology of a built-in tin filter allow for significant reduction of radiation exposure in patients with suspected urolithiasis by optimizing the X-ray spectrum with image quality as high as in standard CT devices

• 1094

DIAGNOSTIC VALUE OF DOPPLER SONOGRAPHIC FINDINGS IN NEONATAL HYPOXIC ISCHEMIC BRAIN DAMAGE

Fatemeh Yarmahmoodi [1,*]; Parisa Pishdad [2]; Seyyed Mostajab Razavinejad [2]

[1] *MD, Radiologist*

[2] *Shiraz Universities of Medical Sciences, Shiraz, Iran*

* *Corresponding author: FatemehYarmahmoodi, MD, Radiologist. E-mail: yarmahmoodif@gmail.com*

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Abstract:

Significant improvements were done in perinatal and neonatal care in last decades. But Hypoxic - Ischemic Encephalopathy (HIE) in neonates is still the important couse of neonatal mortality end adverse developmental sequelas.

Neonatal HIE is defined when there is evidence of fetal distress, metabolic acidosis of neonate (PH < 7.1 and base deficit more than 12) and presence of encephalopathy.

HIE can be diagnosed by presenve of some clinical Finding (Sarnat- Sarnat staging) and diagnostic imaging.

Although magnetic resonance imaging (MRI) is the gold standard and prefered modality for diagnosis of HIE, but it is not possible to do for ill and critical babies who are admitted in neonatal intensive care unit (NICU).Availability and safety of sonography make it a useful tool for early diagnosis of HIE, that helps physicians to do early and proper treatment.

Materials and methods: in this study we choose 32 neonate according to inclusion criteria of HIE.

Doppler sonography of brain arteries was done in first 24 hours after birth. Brain MRI was done as soon as possible when clinical canditions permits doing it.

Results: this study showed there is significant linear correlation between severity of HIE that is defined by sonographic finding compaired with severity of HIE showed by MRI finding and clinical date.

Cut off point of resistive Index (RI) for all three brain arteries (ACA.MCA and BA) WAS 0.62, the point of optimal sensitivity and specifity for diagnosis of HIE.

Conclusion: Sonography is the excellent screening diagnostic modality for determination of severity and predicition of prognosis in neonatal HIE. Modern sonographic equipment can detect many brain abnormalities.

Measuring cerebral blood flow velocities (BFV) and RI of brain arteries with Doppler sonography is useful for predicition of severity of HIE. Use of this modality is helpful for early diagnosis and therapy of neonates with critical condition, that could decrease sequala of disease. Although MRI can detect more details and must be done when the babies clinical condition is appropriate for transport to MRI unit.

Keywords: Neonatal Hypoxic Ischemic Encephalopathy; Brain Doppler Sonography; Brain MRI

• 1095

EFFICACY OF THREE-DIMENSIONAL TRANSVAGINAL SONOGRAPHY IN DIAGNOSIS OF UTERINE CAVITY ABNORMALITIES AMONG INFERTILE WOMEN: A CROSS-SECTIONAL STUDY

Firoozeh Ahmadi [1,*]; Maryam Javam [1]; Fatemeh Niknejad [1]

[1] *Department of Reproductive Imaging, Reproductive Biomedicine Research Center, Royan Institute for Reproductive Biomedicine, ACECR, Tehran, Iran*

[*] *Corresponding author: Firoozeh Ahmadi, Department of Reproductive Imaging, Reproductive Biomedicine Research Center, Royan Institute for Reproductive Biomedicine, ACECR, Tehran, Iran. E-mail: dr.ahmadi1390@gmail.com*

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Abstract:

Objectives: to evaluate the efficacy of three-dimensional transvaginal sonography (3D-TVS) in diagnosis of uterine cavity abnormalities among infertile women.

Methods: this was a cross-sectional study at Royan Institute, Tehran, from April 2012 and March 2013. All infertile women who were booked for hysteroscopy during this period of time were recruited in the study. Patients underwent preoperative 3D-TVS by an expert radiologist and hysteroscopy was performed by an expert surgeon. Patient's history, 3D-TVS findings and hysteroscopy results were assessed to collect data. Agreement between sonography findings and hysteroscopy results, sensitivity, specificity, positive and negative predictive values, and efficacy of 3D-TVS in diagnosis of congenital and acquired uterine disorders were calculated by SPSS18 software using Cross-tabs, Kappa test, and other statistic analysis.

Results: totally, 153 women were recruited in the investigation. Patients aged 30.78 ± 4.79 years in average and the duration of infertility was 4.2 ± 2.91 years among them. Uterine abnormalities were grouped as "congenital" and "acquired". Overall efficacy of 3D TVS in diagnosis of uterine disorders was calculated 92.8% with Kappa value of 82.3, indicating a good agreement between ultrasound findings and hysteroscopy results. Efficacy of 3D TVS in diagnosis of congenital and acquired uterine lesions was calculated 92.1% and 87.6% respectively.

Conclusion: our study demonstrated that 3D TVS has a good efficacy and reliable agreement with hysteroscopy in diagnosis of uterine lesions among infertile women. Therefore, it can decrease the number of diagnostic hysteroscopies.

Keywords: 3D Ultrasound; Uterus; Infertility

• 1096

THE ROLE OF IMAGING FOR CHARACTERIZATION OF INCIDENTAL SPLENIC LESIONS

Alireza Abrishami [1,*]; Soheil Kooraki [1]; Lars Grenacher [2]; Hans-Ulrich Kauczor [3]

[1] *Department of Radiology, Shariati Hospital, Tehran University of Medical Science*

[2] Diagnostic Imaging Center, Diagnostik Muenchen, Munchen, Germany

[3] Department of Diagnostic and Interventional Radiology, University Hospital, Heid

* Corresponding author: Alireza Abrishami, Department of Radiology, Shariati Hospital, Tehran University of Medical Science. E-mail: abr.alireza@yahoo.com

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Abstract:

Background: with ever-increasing use of cross-sectional imaging, radiologists face with the challenge of characterizing incidental splenic lesions. Currently there is no guideline to manage these lesions. This study was conducted to characterize the incidental splenic lesions on cross-sectional imaging and to assess the role of various imaging factors to differentiate benign from malignant lesions.

Methods: this retrospective study was performed in a tertiary referral center. Data of patients with incidental spleen lesions in their cross sectional imaging were assessed. Over a course of three years, one hundred sixty one patients were included. Follow-up imaging was available in 122 individuals with mean (SD) follow-up time of 16.4 (16) months (ranged 1 - 96 months). Patients' demographic data, morphologic features and enhancement pattern on available CT scan and MRI were carefully reviewed and compared.

Results: of 161 patients with splenic lesion (54% male, mean age (SD): 59.7 (15.4). ranged: 8 - 88 year), 134 (83.2%) were solitary and 89 (55.3%) were subcapsular. Benign lesions were more likely to be homogenous (59.7% vs. 29.7%, P: 0.002). Ill define and lobulated borders had significantly higher prevalence in malignant lesions (73% vs. 53.2%, P: 0.03). Malignant lesions had significantly larger size (21.7 vs. 15.5 mm, P: 0.03). None of the benign lesions showed restricted diffusion in DWI/ADC, while 50% of malignant lesions had restriction (P: 0.003). Stable lesion size in follow-up imaging was strongly associated with benign nature of the lesion (86.2% vs. 11.4 $P < 0.001$). Lesion distribution, Hounsfield unit (HU) and enhancement pattern on imaging were not strong enough to differentiate benign from malignant lesions.

Conclusion: small size, smooth lesion border and homogeneity favor benign nature of the incidental splenic lesions, while restricted diffusion might be a feature of malignancy. Follow-up imaging might be helpful in a subset of patients to discriminate benign and malignant incidental splenic lesions.

• 1097

ULTRASOUND TECHNIQUE IN EVALUATION OF ABDOMINAL WALL HERNIA

Hosein Rezaei [1,*]; Bita Abbasi [1]; Farrokh Seilanian Tossie [1]

[1] Mashhad University of Medical Sciences, Mashhad, Iran

* Corresponding author: Hosein Rezaei, Mashhad University of Medical Sciences, Mashhad, Iran. E-mail: rezaiH@mums.ic.ir

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Abstract:

Introduction: some sonographic positions for detection of abdominal wall hernias needed .In this paper we described the sonographic technique of abdominal wall hernia.

Material and methods: from June 2013 to July 2016, three hundred seventy four patients referred in our department for evaluation of abdominal wall hernia (median age, 38 years ; range 2 - 86 years). One hundred and ninety patients had abdominal hernia, 85 in inguinal-femoral regions, 58 in epigastria and Para-umbilical, 34 incisional and 13 Spigelian. Men most referred for inguinal regions, the women frequently referred for femoral, Para-umbilical and inscional hernia. All the patients are examined by one instrument with linear and convex multi-frequencies probes. Sononography performed first in supine position with and without valsalva manor, sitting and if possible standing view then added. Patients who operated after sonography the surgery reports compared with our findings.

Conclussion: although sonography routine request for diagnosis of abdominal wall hernia, experience and various positions needed for correct diagnosis. In this paper we described our experience in sonography of abdominal wall hernia.

Keywords: Hernia; Sonography; Abdominal Wall

• 1098

PREDICTIVE VALUE OF TRANSVAGINAL ULTRASOUND IN DIAGNOSIS OF ENDOMETRIOSIS: A THREE YEAR STUDY

Maryam Niknejadi [1,*]; Maryam Javam [2]; Mohammad Chehrazi [3]

[1] MD, Radiologist, Department of Reproductive Imaging, Reproductive Biomedicine Research Center, Royan Institute for Reproductive Biomedicine, ACECR, Tehran, Iran

[2]. BSC, Department of Epidemiology and reproductive health, Reproductive Biomedicine Research Center, Royan Institute for Reproductive Biomedicine, ACECR, Tehran, Iran

[3] PhD, Department of Epidemiology and reproductive health, Reproductive Biomedicine Research Center, Royan Institute for Reproductive Biomedicine, ACECR, Tehran, Iran

* Corresponding author: Maryam Niknejadi, MD, Radiologist, Department of Reproductive Imaging, Reproductive Biomedicine Research Center, Royan Institute for Reproductive Biomedicine, ACECR, Tehran, Iran. E-mail: mniknezhady1390@gmail.com

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Abstract:

Background: to assess the predictive value of various transvaginal sonography findings in characterizing endometriosis.

Patients and method: this prospective investigation was conducted at Royan Institute, Tehran, Iran, from April 2010 till March 2013. All infertile women presenting with clinical symptoms of endometriosis, who were booked for laparoscopy, underwent a preoperative trasvaginal sonography by an expert radiologist. Endometriosis was diagnosed on TVS according to detecting one or more of following findings: echogenic points on serosal surface of the ovaries, ovarian endometrioma and signs of pelvic adhesion (blurred ovary margins, fixation of ovaries, deviation of ovaries or decreased distance between them). A logistic regression analysis was performed to identify prognostic factors in detection of presence of endometriosis. Each parameter was entered sequentially into the model based on hosmer-lemeshow algorithm. Values were calculated by Stata12 software regarding laparoscopy as gold standard.

Results: totally, 101women were evaluated during the study. Endometriosis was present at laparoscopy in 58 patients. Mean age and the duration of infertility were calculated 30.78 ± 4.79 and 4.2 ± 2.91 years respectively. Frequencies of each sonographic finding were as follow: echogenic points (%31.68), ovarian endometrioma (%30.69), blurred ovary margin (%7.92), fixation of ovaries (%15.9), deviation of ovaries (%21.8), and decreased distance between ovaries (%8.9). As derived by logistic regression analysis, detection of “ovarian endometrioma”, “fixation of ovaries” and “ovarian deviation” strongly predicts endometriosis (odds ratio of 42.27, 46.89 and 14.78 respectively).

Conclusion: our study demonstrated that TVS has a reliable predictive value in diagnosis of endometriosis. “Ovarian endometrioma”, “deviation of ovaries” and “ovarian fixation” can be used as important criteria for radiologists and gynecologists.

Keywords: Transvaginal Sonography (TVS); Laparoscopy; Endometriosis

• 1099

TEST-RETEST REPRODUCIBILITY AND ROBUSTNESS ANALYSIS OF RECURRENT GLIOBLASTOMA MRI RADIOMICS TEXTURE FEATURES

Isaac Shiri [1,*]; Hamid Abdollahi [2]; Sajad Shaysteh [2]; Seied Rabi Mahdavi [1]

[1] Department of Medical Physics, Iran University of Medical Science, Tehran, Iran

[2] Iran University of Medical Science, Tehran, Iran

* Corresponding author: Isaac Shiri, Department of Medical Physics, Iran University of Medical Science, Tehran, Iran. E-mail: isaac.sh92@gmail.com

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Abstract:

Introduction: advanced quantitative information such as radiomics features derived from magnetic resonance (MR) image may be useful for outcome prediction, prognostic models or response biomarkers in Glioblastoma (GBM), knowledge about their Reproducibility and robustness is essential. The purpose of this study was to investigate the reproducible and non-redundant radiomics texture features in oncological GBM MRI based on test-retest setup.

Methods: thirteen patients with recurrent GBM who underwent repeated MR imaging approximately two day interval were subjected to this study. Lesions were segmented using competitive region-growing based algorithm. Following delineation and segmentation of lesions, 158 quantitative 3D features based on intensity histograms (IH), gray level run-length (GLRLM), gray level co-occurrence (GLCM), gray level size-zone texture matrices (GLSZM), neighborhood-difference matrices (NDM), and geometric features were extracted from the 3D-tumor volumes of each lesion. For every radiomics feature, test-retest was assessed with the intra-class correlation coefficient (ICC) and the concordance correlation coefficient (CCC) and finally the most reproducible and robust radiomics features were selected.

Result: Results shows that the "74%" of assessed radiomics features had a high test-retest stability in terms of their ICC. There were 107 radiomics features with "CCC > 0.95" and 49 radiomics features were non-redundant after grouping features with "R2Bet ≥ 0.95".

Conclusion: test-retest and correlation analyses have identified non-redundant radiomics features and this feature are prone to errors if they employed as quantitative biomarker for GBM image analysis. However when we use robust and redundant feature, quantitative image radiomics features are informative and prognostic biomarkers for GBM Magnetic resonance imaging.

Keywords: Radiomics; GBM; MRI; Feature

• 1100

APPARENT DIFFUSION COEFFICIENT VALUE AS A PREDICTIVE MARKER TO EVALUATE TUMOR RESPONSE IN PATIENTS WITH CERVICAL CANCER

Fariba Allahmoradi [1,*]; Abbas Haghparast [1]; Salman Zakariaee [2]

[1] *Kermanshah University of Medical Sciences, Kermanshah, Iran*

[2] *Tehran University of Medical Sciences, Tehran, Iran*

** Corresponding author: Fariba Allahmoradi, Kermanshah University of Medical Sciences, Kermanshah, Iran. E-mail: fariba.am93@gmail.com*

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Abstract:

Background: cervical cancer is the second common cancer and the third reason of mortality among women in the world which is often occurred in third and fifth decades of their life. Cervical tumor recurrence observed in 30% of the patients and the5-years survival rate of cervical cancer is about %50. The development of a rapid and non-invasive method for treatment response evaluation is one of the most challenges in cancer treatment management. Diffusion-weighted magnetic resonance imaging (DW-MRI) is a contrast agent free imaging technique thatis widely used for oncology studies.

Object: in this paper, thecapability of ADC valueto monitor the treatmentresponse in the cervical cancer patientswasevaluated.

Material and methods: a computerized search using the databases SID, Google Scholars, Pub med and Science Direct, covering the period from 1998 to 2015, was conducted using the following key search terms: "Treatment response", "Diffusion-weighted magnetic resonance imaging", "ADC", "MRI" and "cervical cancer". In total, 27 relevant papers were reviewed.

Results: studies had shown that the mean ADC value of cervical carcinoma ($1.110 \pm 0.175 \times 10^{-3}$ mm^2/s) is significantly lower than that of normal cervical tissue ($1.593 \pm 0.151 \times 10^{-3}$ mm^2/s) ($P < 0.001$). The mean ADC value of the cervical area significantly increased after chemoradiationtreatment ($1.436 \pm 0.129 \times 10^{-3}$ mm^2/s) than that before therapy ($1.013 \pm 0.094 \times 10^{-3}$ mm^2/s) ($P < 0.001$). There is a statistically significant difference between the ADC values of the normal cervical tissue and cervical area after therapy ($P < 0.01$). Partial response of the bulky tumorscould be predicted with high sensitivity (85.7%) and specificity (100%) (AUC 0.96; $P = 0.05$) using the ADC value greater than 0.95×10^{-3} mm^2/s.

Conclusion: ADC value could be a prognostic factor to monitor the response to therapy for patients with cervical cancer. The addition of DW-MRI to the conventional MRI protocols considerably improved the diagnostic ability of MR imaging method for tumor evaluations.

Keywords: Treatment response; Diffusion-Weighted Magnetic Resonance Imaging; DW-MRI; ADC; Cervical Cancer

• 1101

IS BACKGROUND PARENCHYMAL ENHANCEMENT ON MAGNETIC RESONANCE IMAGING HELPFUL IN RISK ASSESSMENT OF BREAST CANCER?

Maryam Farghadani [1,*]; Ali Hekmatnia [2]; Hoda Sharif [2]; Mehdi Baradaran [2]; Maryam Riahinezhad [3]

[1] *Assistant Professor of MUI*

[2] *Isfahan Medical University*

[3] *Isfahan University of Medical Sciences*

** Corresponding author: Maryam Farghadani, Assistant Professor of MUI. E-mail: dr_mar_far@yahoo.co.uk*

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Abstract:

Objectives: background parenchymal enhancement (BPE) on contrast-enhanced magnetic resonance

imaging (CE-MRI) corresponds to hormonally active breast fibroglandular tissue. Several studi.es have reported increased odds of breast cancer in patients with marked BPE. The purpose of the present study was to evaluate BPE in contralateral breast of biopsy proven breast cancer patients and comparison of the results with control group.

Methods: in a case-control study, CE-MRI of the contralateral breasts of 40 biopsy-proven breast cancer patients and 40 patients with biopsy- proven benign breast lesions, were retrospectively reviewed by an experienced radiologist and degree of BPE, and pattern of enhancement were determined", Finally, BPE was compared between case and control groups using chi square test. Pearson correlation test was used to determine association between FGT amount and BPE. P value <0.05 was considered significant.

Results: in the case group, 4, 17, 14, and 5 patients had minimal, mild, moderate, and marked BPE, respectively. In the control group, 12, 24, .and 4 participants had minimal, mild, and moderate BPE, respectively. BPE was significantly higher in the case group in comparison with the control group. (P value < 0.05). Patients with invasive carcinoma had significantly higher BPE in comparison with the patients with carcinoma in situ. (P value <0.05) There was a moderate correlation (r = 0.4, P value < 0.05) between FGT amount and degree of BPE. In the case group, 3, 26, and 11 patients had mass-non mass, mass, and non mass pattern of enhancement, respectively. In the control group, 25, antl15 participants had mass, and non mass pattern of enhancement, respectively. Pattern of enhancement was not significantly different between the two groups.

Conclusions: our study revealed that patients with the diagnosis of breast cancer have greater BPE in comparison with control group. The results may be indicative for higher probability of developing breast cancer in patients with higher BPE. Therefore, CE-MRI could be a useful tool for breast cancer risk assessment.

Keywords: Background Enhancement; MRI; High Risk Breast Cancer

• 1102

COMPARISON OF GESTATIONAL AGE BASED ON BPD AND FL IN STANDARD TABLES OF HADLOCK AND OSAKA WITH REAL GESTATIONAL AGE BASED ON LMP IN TEACHING HOSPITALS IN ZAHEDAN

Aiob Beiknejad [1,*]; Farshid Mohebbi

[1] *MD, Zahedan University of Medical Sciences*

[*] *Corresponding author: Aiob Beiknejad, MD, Zahedan University of Medical Sciences. E-mail: aiobbeiknejad@ymail.com*

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Abstract:

To determine the gestational age of ultrasound devices, commonly used standard tables. The aim was to determine the gestational age of pregnant women admitted to hospitals in Zahedan with HADLOCK and OSAKA table and gestational age derived from the tables to be adjusted to determine the gestational age of the actual use of tables for a more accurate determination of gestational age for the proper study population Trust.

Methods: a total of 200 pregnant women admitted to hospitals in Zahedan were in 1393 - 1394. Exclusion criteria were: women with a history of chronic disease and fetal anomalies and multiple pregnancy. Inclusion criteria were: pregnant women in the second trimester and third with LMP characteristics. A questionnaire was designed and pregnant women were studied by ultrasonography and femoral length and BPD were measured. Data with SPSS software, paired t-test and Pearson correlation coefficient were studied.

Results: in the second trimester the correlation coefficient between LMP; according to BPD in both tables were the same, but the FL values in HADLOCK and OSAKA.

Conclusions: in general it can be concluded that the use of OSAKA table to determine the gestational age of the study population, especially in the third trimester, is more accurate than the HADLOCK.

Tables was varied. Also in the third trimester based on the correlation of BPD and FL were different in the above tables.

Keywords: Ultrasonography, BPD, FL, Gestational Age

• 1103

MRCP FINDINGS OF HEPATOBILIARY FASCIOLIASIS : A CASE REPORT

Shaghayegh Sadat Khabbaz [1,*]

[1] *Department of Radiology, Shahid Beheshti University of Medical Science (SBMU)*

[*] *Corresponding author: Shaghayegh Sadat Khabbaz, Department of Radiology, Shahid Beheshti University of Medical Science (SBMU). E-mail:shaghayegh_khabbaz@yahoo.com*

Abstract:

Introduction: fascioliasis, caused by Fasciola hepatica and Fasciola gigantica, is a parasitic infection. It merges in Iran as a serious problem in past decades. A pattern of fascioliasis transmission was defined for northern part of Iran, named “Caspian pattern”.

Case Presentations: we report a 33-year-old from iran who presented with epigastric and RUQ pain. We present US and MRCP findings of hepatobiliary fascioliasis and the results of her surgery. In the sonographic study, an echogenic area with no acoustic shadowing was seen in the gallblader. CBD and CHD (common hepatic duct) was slightly dilated In the MRCP elliptical intermediate signal area in T2W and iso tense area in T1W in common hepatic duct with dilated internal biliary ducts and common bile duct was seen.

Conclusion: hepatobiliary fascioliasis is a rare disease. Imaging studies can help us for diagnosis of fascioliasis with subtle symptoms and laboratory findings especially in endemic areas.

Keywords: Fascioliasis; Magnetic Resonance Cholangiopancreatography; Ultrasonograph

• 1104

REVIEW ON SKELETAL MUSCLE DISEASE AND IMAGING

Soheila Refahi [1,*]; Hakimeh Saadati [1]

[1] *Ardabil University of Medical Sciences*

[*] *Corresponding author: Soheila Refahi, Ardabil University of Medical Sciences. E-mail: soheila52@yahoo.com*

Abstract:

Images of soft tissues, such as muscle, can be obtained with many different techniques, each with distinct advantages and disadvantages. Imaging plays a major role in the evaluation and management of skeletal muscle disorders. The noninva-

sive methods of computed tomography (CT), ultrasound, and magnetic resonance imaging (MRI) offer many advantages over other approaches for diagnosis and management of a wide range of muscle conditions. In this paper we discuss recent published information about the various modalities available for imaging muscle and consider how the data from these studies can be applied in clinical practice.

• 1105

SPORADIC BURKITT'S LYMPHOMA OF MANDIBLE WITH SPREAD TO MULTIPLE PELVIC AND ABDOMINAL ORGANS: CASE REPORT

Elham O Sadat Banimostafavi [1,*]; Sahar Oladzadeh [2]; Maryam Tayebi [2]

[1] *Mazanadaran UOMS*

[2] *Mazandaran University of Medical Scinces*

* *Corresponding author: Elham O Sadat Banimostafavi, Mazanadaran UOMS. E-mail: razavi109@yahoo.com*

Abstract:

Background: Burkitt's lymphoma (BL) is a poorly differentiated B-cell lymphoma. It is rare and occurs most often in children and young adults. BL with jaw and facial involvement is most commonly seen in endemic areas of Africa. In non-endemic areas, the jaws are affected in about 15% - 18% of cases. We report this case with mandibular BL because of low incidence and its spread to multiple pelvic and abdominal organs.

Case Presentations: This patient was a 34-year-old woman who complained of toothache. After dental extraction, a mandibular abscess was developed gradually. Followed by drainage of mandibular abscess, soft tissue mass appeared in left mandible that was removed by surgical excision and histopathology report confirmed the diagnosis as BL. Afterward, with having symptoms of fever and night sweats, she was treated for Brucellosis. All these problems occurred during 3 months after her caesarean section. Historically, cholecystectomy and left salpingo-oophoretomy was performed for this patient. Her HBsAg test result confirmed infection 12 years ago, but it is not currently active.

Contrast-enhanced CT showed left kidney enlargement with multiple hypodensities in renal parenchyma. In addition to homogeneous mass enhancing in bilateral rectus abdominis muscle and left breast, one mass in right ovary and several non-significant retroperitoneal and mesenteric lymph nodes were found. Ultrasonography showed enlarged heterogeneous uterus with increased vascularity and left solid-cystic adnexal mass and right ovarian mass. In brain CT of this patient, soft tissue densities in right maxillary sinus with an oval-shaped hyperdense structure in left orbital space were detected.

Conclusion: this patient was presented with definitive diagnosis of mandibular BL. By considering the rapidly progressing abdominal and pelvic masses specifically with the uterus and bilateral adnexal involvement, spreading BL should be thought in differential diagnosis to facilitate the prompt treatment.

• 1106

BRAIN NEAR-INFRARED SPECTROSCOPY (NIRS)

Soheila Refahi [1,*]; Hakimeh Saadati [1]

[1] *Ardabil University of Medical Sciences*

* *Corresponding author: Soheila Refahi, Ardabil University of Medical Sciences. E-mail: soheila52@yahoo.com*

Abstract:

Near-infrared spectroscopy (NIRS) is a spectroscopic method that uses the near-infrared region of the electromagnetic spectrum. Typical applications include medical and physiological diagnostics. NIRS can be used for non-invasive assessment of brain function through the intact skull in human subjects by detecting changes in blood hemoglobin concentrations associated with neural activity, e.g., in branches of cognitive psychology as a partial replacement for fMRI techniques. NIRS cannot fully replace fMRI because it can only be used to scan cortical tissue, where fMRI can be used to measure activation throughout the brain. In this approach we compared NIRS with different functional brain tests.

• 1107

ASSESSMENT OF RADIO-GUIDED OCCULT LESION LOCALIZATION ASSOCIATED WITH SONOGRAPHY IN NONPALPABLE BREAST LESIONS

Ali Alamdaran [1,*]; Ramin Sadegi [1]; Aida Sharifi [1]; Elaheh Moododi [1]; Naser Forghani [1]

[1] *Mashhad University of Medical Sciences, Mashhad, Iran*

* *Corresponding author: Ali Alamdaran, Mashhad University of Medical Sciences, Mashhad, Iran. E-mail: alamdarana@mums.ac.ir*

Abstract:

Background: several methods are in use for localization of non-palpable breast lesions prior to excision. The most common is wire-guided localization which is fraught with difficulties and possible complications. Radio-guided localization of non-palpable lesions (ROLL) is a relatively new method which has been never used in our country before. We have for the first time investigated its diagnostic value for localization of non-palpable breast lesions in a teaching hospital in Iran.

Method: in this study, 42 patients with non-palpable breast lesions, detected by ultrasonography, underwent radio-guided localization. Phytate-Tc-99m was injected into the lesion under the guidance of ultrasonography, 1 - 2 hours before surgery. Excision of the lesion was performed according to radioactivity signal of lesion, detected by a hand-held gamma probe during surgery. After total excision, the resection bed was explored by gamma probe to detect any residual activity. So if there was no radioactivity signal, the excision was regarded as complete. The data of ultrasonographic characteristics, localization and excision procedure, complications, margin status and tissue volume were analyzed by SPSS 16.

Results: Pathologic results were benign in 90.5% and malignant in 9.5% of patients. Post-operative margin of lesion was clear in 100% of patients. No margin involvement was reported. Mean duration of localization and surgical procedure was 1.80 ± 0.42 and 26.78 ± 8.10 minutes, respectively. Fault in localization took place in 4 patients (9.5%) and there was a need to secondary surgery in 1 patient (2.4%). Patients' satisfaction level about post-operative cosmetic results was excellent in 33.3% and good in 66.6% of patients. Mean excised tissue volume was 28.59 ± 27.96 cm in all patients and 23.54±23.46 cm, in patients without fault of localization.

Conclusion: radio-guided localization of non-palpable breast lesions is an acceptable method because of technical facilitation, accurate localization and complete excision with limited complications. So it can be recommended as an alternative method for wire-guided localization.

• 1108

USING A MULTI-AGENT SYSTEM APPROACH FOR MONITORING APPROPRIATENESS CRITERIA IN MEDICAL IMAGING

Mahtab Karami [1,*]

[1] *Kashan University of Medical*

** Corresponding author: Mahtab Karami, Kashan University of Medical. E-mail: Skarami_m@kaums.ac.ir*

Abstract:

Agent technology is an emerging and promising research area in software technology, which increasingly contributes to the development of value-added information systems for large healthcare organizations due to its capability to automatically modify themselves in response to changes in their operating environment.

Multi agent system (MAS) approach is the construction of a complex system as a set of entities, called agents, interacting among them in order to perform the system tasks. Patie Maes, the director of MIT media lab, deems that agent is "a computer system, which locates in dynamic and complex environment, can autonomically sense the environment and act accordingly to complete its tasks or goals". Agent is a computing entity with four features of autonomy, reactivity, interaction and initiative.

A MAS is composed of a large number of agents and other computational artifacts. These agents are goal-oriented components, that is, they are modeled as entities that pursue goals and choose for execution those actions that will potentially contribute to satisfy them. These choices depend on their information about the environment, past experiences and themselves. Agents are also social because they need to interact with other agents to achieve the satisfaction of goals, and these interactions are modeled in terms of information, requests and informs.

In healthcare, medical imaging is a service-oriented, data-intensive and technology-driven environment; therefore it requires combining many computerized systems with different user environments to provide quality efficient services in less time. In such environments, MAS is well-suited to describe the interactions between agents (e.g., information exchanged, related tasks or reasons for that interaction) and the way in which the agent adapts to changes in it (e.g., new roles or goals) or its environment.

Medical imaging is a science but also a discipline of action that often requires a decision. The complexity of decision-making, especially in medical imaging, comes from the uncertainty, for example the uncertainty of knowledge, uncertainty about the protocols and the uncertainty of the procedure used. A multi-agent system (MAS) for decision-aiding support uses and combines distributed and heterogeneous systems to ease the extraction of useful

information in order to select appropriate protocol or procedure.

Keywords: Medical Imaging; Agent Technology; Multi Agent System; Agent; Appropriateness Criteria

• 1109

ESTIMATING COMPLICATIONS RATE AFTER PERCUTANEOUS LIVER BIOPSY USING REAL-TIME ULTRASOUND APPROACH: INTRODUCING UNIFORM METHODOLOGY

Mohammad Reza Sasani [1,*]

[1] *Shiraz University of Medical Sciences, Shiraz, Iran*

[*] *Corresponding author: Mohammad Reza Sasani, Shiraz University of Medical Sciences, Shiraz, Iran. E-mail: sasanimrz@gmail.com*

Abstract:

Objectives: this study conducted to estimate precise complications rate after percutaneous liver biopsy using the uniform approach in all subjects with omission of factors that have led to various results in the literature. Other aim is introducing uniform methodology for percutaneous liver biopsy that produce comparable results.

Methods: in this retrospective study, 116 patients were enrolled for percutaneous liver biopsy. Uniform approach was employed to perform biopsy in all participants. There was an attempt to eliminate factors might influence on complications rate using needle of same type and size, one needle pass, subcostal approach, breath holding in deep inspiration, identical pre and post-biopsy preparation, real-time ultrasonography guidance, one operator, and without sedation or general anesthesia. Finally, frequency of complications were recorded.

Results: the overall complication rate was 19.8%, which 18.9% were pain and minor bleeding and one patient (0.9%) had hematoma requiring hospitalization. Total percentage of patients experienced pain was approximately 13.8%. Other complications were not occurred.

Conclusions: the findings of this study might indicate precise estimation of post liver biopsy complications rate. Furthermore, described uniform methodology could be better choice in clinical practice because of lower frequency of unwanted effects after biopsy than most of reported data in the literature and no life-threatening complications, as well as need for homogeneous approach to perform biopsy producing comparable outcomes.

• 1110

CALLOSAL ANGLE MEASUREMENT: A USEFUL METHOD FOR DIAGNOSING IDIOPATHIC NORMAL PRESSURE HYDROCEPHALUS

Maryam Haghighimorad [1,*]

[1] *Shahid Beheshti University of Medical Sciences, Tehran, Iran*

[*] *Corresponding author: Maryam Haghighimorad, Shahid Beheshti University of Medical Sciences, Tehran, Iran. E-mail: maryamhaghighimorad@yahoo.com*

Abstract:

Idiopathic normal pressure hydrocephalus is a syndrome which characterized by dementia, gait disturbances and urinary incontinence. The patient's CSF pressure is normal.so CTscan and MRI play an important role in diagnosing INPH.

Periventricular hyperintensities and deep white matter hyperintensities in MRI are often observed in aged subjects and are not sufficient for diagnosing INPH.

Also CSF flow void in aqueduct is seen in both INPH and normal subjects and is not a useful method for diagnosing INPH.

Evans index is determined by the largest diameter of frontal horns divided by the diameter of internal skull on the same plane but by using this index distinguishing INPH patients from alzheimers disease is impossible.

So recent studies show that measuring callosal angle is a useful method for diagnosing INPH. The callosal angle is smaller in INPH patients in comparison to normal population and alzheimers disease.

The reason of small callosal angle less than 90 degrees in INPH patients is elevation of dilated lateral ventricles and compression of dilated sylvian fissures. Measurment is done on a coronal plane which is perpendicular to anterior commissure posterior commisure plane on the posterior commisure plane and the angles less than 90 degrees is indicative of INPH.

• 1111

LARGE HIATAL HERNIA WITH PANCREATIC BODY HERNIATION

Elham O Sadat Banimostafavi [1,*]; Maryam Tayebi [1]

[1] *Mazanadaran University of Medical Sciences, Mazandaran, Iran*

* Corresponding author: Elham O Sadat Banimostafavi, Mazanadaran University of Medical Sciences, Mazandaran, Iran. E-mail: razavi109@yahoo.com

Abstract:

A hiatal hernia can be classified as one of four types according to the position of the gastroesophageal (GE) junction and the extent of herniated stomach. Type IV paraesophageal hiatal hernia (PEHH) is characterized by a large defect in the diaphragmatic hiatus that allows other organs, besides stomach, such as the colon, pancreas, spleen, or small intestine to herniate into the thorax.1 Herniation of the pancreas through a gastroesophageal hiatus is a rare condition, and only a few cases have been reported in the literature. We present a case of a patient with paraesophageal herniation along with the pancreatic body.

Keywords:

Hiatal Hernia; Pancreatic Body Herniation

• 1112

MANAGEMENT OF LOCO-REGIONAL INTERVENTIONS IN HCC

Hazhir Saberi [1,*]; Pejman Saberi [2]

[1] IKHC

[2] University of Debrecene

* Corresponding author: Hazhir Saberi, IKHC. E-mail: hazhir_saberi@hotmail.com

Abstract:

Some patients are more susceptible to HCC (like HBV, Cirrhosis and ...). In these patients screening imaging (ultrasound) is highly recommended. In positive cases next step would be 4- phasic CT scan or dynamic MRI for confirm diagnosis and also staging.

If there are typical signs of HCC (wash in, wash out), biopsy is not necessary in susceptible populations.

Gold standard treatment of HCC is surgery (resection or liver transplantation). In those cases which are not candidate for surgery, Loco-Regional treatments are key players. The most noticeable of these are: TACE (trans arterial Chemoembolization) and local ablations (RF, microwave, alcohol injections and ...). Site and Size of tumors should be considered in decision for ablative techniques. Limitations for RF are 1) tumors more than 3 cm or 2) subcapsular location or 3) neighboring to large vessels, but there are less limitations in Microwave. TACE is one of the treatment of choice in cases which are not candidate for surgery or thermal ablations (intermediate stage). There are also some limitations for TACE which the most important one is decompensated cirrhosis (child B8, 9 and C). In this technique there are two factors (Ischemia and Chemotherapy) attenuating the tumors with synergistic effect.

Generally TACE has a palliative situation in the guidelines but could be used as a bridge for curative plan (surgery or liver transplantation) alone or in combination with ablation techniques.

• 1113

DIAGNOSTIC VALUE OF COMPUTERIZED TOMOGRAPHY VENOGRAPHY IN DETECTING STENOSIS AND OCCLUSION OF SUBCLAVIAN VEIN AND SUPERIOR VENA IN CHRONIC RENAL FAILURE PATIENTS

Banafsheh Bakhshoude [1,*]; Masoud Pezeshki Rad [1]; Hasan Ravari [1]

[1] Mashhad University of Medical Sciences, Mashhad, Iran

* Corresponding author: Banafsheh Bakhshoude, Mashhad University of Medical Sciences, Mashhad, Iran. E-mail: drbakhshoodeh@gmail.com

Abstract:

Introduction: currently, venography is the standard diagnostic method to examine veins before implementing access, which is invasive in nature. Computerized tomography venography (CTV) can simultaneously indicate deep and superficial venous systems in the upper extremity and their relation to the surrounding anatomical structures; however, its diagnostic value in the detection of central venous disease has yet to be defined. The aim of this study was to determine the diagnostic value of CT venography compared to venography in the diagnosis of stenosis and the occlusion of subclavian veins and the superior vena in renal failure patients.

Methods: this cross-sectional study was conducted from January to September 2015 on patients with chronic renal failure undergoing upper extremity venography at the radiology department of Imam Reza hospital in Mashhad, Iran. We excluded patients with catheters in their jugular and subclavian vein routes, venous hypertension with reverse-function fistula, or sensitivity to contrast agents. Several factors, including age, gender, catheterization record in jugular and subclavian veins, and fistula record in the upper extremity, as well as clinical symptoms consisting of edema, dermatitis, and ulcers in

these organs, were recorded in the corresponding form. Then, the patients consecutively underwent indirect venography and CT venography and traces of stenosis (more than 50%) or complete occlusion in the subclavian vein and superior vena were recorded. The data were analyzed using SPSS software by the chi-squared test, and sensitivity, specificity, and positive and negative predictive values were calculated by means of MedCalc Online, version 16.2.

Results: the study was conducted on 40 patients (26 males and 14 females) with a mean age of 46.7 ± 10.4 years. In this study, 58 subclavian veins, as well as 32 superior vena cava, were studied. The results showed that the diagnostic value of CTV in the detection of subclavian stenosis had a sensitivity and a specificity of 88.2 and 97.5%, respectively. Moreover, in the superior vena cava, the greatest CTV diagnostic sensitivity and specificity was related to vein stenosis detection (sensitivity = 88.8%; specificity = 100%).

Conclusion: it seems that the CTV, based on its high sensitivity, specificity, and predictive value, can be used as an efficient tool in the study of stenosis in subclavian veins and superior vena in patients undergoing venography.

• 1114

ASSESSMENT OF DIAGNOSTIC VALUE OF SINGLE VIEW STATIC AND DYNAMIC TECHNIQUE IN DIAGNOSIS OF DEVELOPMENTAL DYSPLASIA OF HIP: A COMPARISON WITH STATIC AND DYNAMIC ULTRASOUND TECHNIQUES

Ali Alamdaran [1,*]; Ali Fayzi [1]; Sahar Kazemi [1]

[1] *Mashhad University of Medical Sciences, Mashhad, Iran*

[*] *Corresponding author: Ali Alamdaran, Mashhad University of Medical Sciences, Mashhad, Iran. E-mail: alamdarana@mums.ac.ir*

Abstract:

Abstract Purpose: developmental dysplasia of hip (DDH) is a common childhood disorder and ultrasonography examination is routinely used for screening purposes. In this study, we aimed to evaluate a modified combined static and dynamic ultrasound technique in the detection of DDH and to compare with the static and dynamic ultrasound techniques results.

Methods: in this crosssectional study, during 20132015, 300 high risk infants were evaluated by ultrasound for DDH. Both hips were examined with three techniques: static, dynamic and single view static and dynamic technique. Statistical analysis was performed by SPSS version 11.5.

Results: Patients aged 9 days to 83 weeks and 75% were between 1 to 3 months old. Among 600 hip joints, about 5% were immature in static sonography and almost all of them were unstable in dynamic techniques. 0.3% of morphologically normal hips were unstable in dynamic sonography and 9% of unstable hips had normal morphology. The mean angle differences in coronal view before and after stress maneuver was 14.43 ± 5.47 in unstable hips. Single view static and dynamic technique revealed all cases with acetabular dysplasia, instability and dislocation except two dislocations that were diagnosed by dynamic transverse view. In two patients, Ortolani maneuver showed femoral head reversibility in dislocated hips. Single view static and dynamic technique was diagnostic in more than 99% patients.

Conclusion: single view static and dynamic technique not only is a fast and easy technique, but also, it is of high diagnostic value in assessment of DDH.

• 1115

PROVIDING AN AUTOMATED METHOD FOR FAST AND ACCURATE MEASUREMENT OF SUBCUTANEOUS BODY FAT ON MRI IMAGES DURING LIPOSUCTION SURGERY

Fatemeh Valipoori Goodarzi [1,*]

[1] *Hakim Sabzevari University*

[*] *Corresponding author: Fatemeh Valipoori Goodarzi, Hakim Sabzevari University. E-mail: fatemeh.goodarzi10@gmail.com*

Abstract:

One of the most important methods for the measurement of subcutaneous body fat is in the field of clinical MRI, in this way the desired area of fat tissue (ROI) manually isolated and the region of interest identified by the radiologist, and its thickness is measured. But this separation is not necessary is has not the required speed and accuracy. In contrast, the method presented in this paper is an automated method for fast and accurate measurement of subcutaneous fat thickness. The recent study is done on 100 MRI images of (50 female, 50 male), and the thickness of subcutaneous fat in the midline of the abdomen and flank (from the iliac crest to the rib area) based on the proposed method (K-MEANS and FCM clustering methods and using recursive connected components algorithm) were calculated.

Keywords: Subcutaneous Fat; MRI Images; K-MEANS; FCM; Recursive Connected Components Algorithm

• 1116

ASSOCIATION BETWEEN BODY MASS INDEX AND BONE MINERAL DENSITY IN PEOPLE OVER 50 YEARS

Farnood Rajabzadeh [1,*]; Mohamad Mansoori Nejad

[1] *Islamic Azad University, Mashhad, Iran*

** Corresponding author: Farnood Rajabzadeh, Islamic Azad University, Mashhad, Iran. E-mail: farnood@yahoo.com*

Abstract:

Background: osteoporosis is the most common metabolic disease in a significant percentage of post menopausal women and the old people. Several risk factors have been reported for osteoporosis that among them the weight and body mass index (BMI) were added in recent studies. According to reports on prevalence of osteoporosis in Iran, it is significantly higher in elderly. The aim of this study is to investigate the relationship between BMI and bone mineral density (BMD) in individuals older than 50 years. Evidence for the relationship can suggest BMI as an easy, inexpensive and safe predictive factor for BMD. Proper control of body mass could be useful in the screening and monitoring of the osteoporosis.

Method: this cross-sectional study was performed in 60 patients referred to a private imaging center in Mashhad who were eligible according to inclusion and exclusion criteria. Patients were referred by physicians to imaging center for BMD for various reasons. After measuring weight, height and BMI, BMD was performed by DXA at the lumbar spine and femoral neck. The data was analyzed by SPSS software.

Results: 60 patients were enrolled in the study including 7 males and 53females (41 menopaused), 56 patients were married. No significant correlation was seen between BMI and BMD at the lumbar spine. However, based on T-score, in single people and based on the Z- score in illiterates a significant linear relationship was found. A clear correlation between BMI and femoral neck BMD based on the T-score was see, the way that the BMI increases bone mineral density (P = 0.027).

According to T-score, there is a significant positive relation between BMI and BMD in women with, married patients, menopause patients and the weight of patients. There was also a relation based on the Z- score in illiterates.

Conclusion: BMI has a clear positive effect on the femoral neck BMD based on T-score, while there is no such a relation in lumbar spine. Of the variables studied, age, gender, education level, marital status, height had no effect on BMD. In addition to the BMI, weight has significant positive relation with femoral neck BMD based on T-score.

Keywords: Osteoporosis; Body Mass Index; Bone Mineral Density

• 1117

PRESACRAL EXTRAMEDULLARY HEMATOPOIESIS IN A PATIENT WITH BETA-THALASSEMIA INTERMEDIA: CASE REPORT

Elham O Sadat Banimostafavi [1,*]; Zahra Najafi [1]; Maryam Tayebi [1]

[1] *Mazanadaran University of Medical Sciences, Mazandaran, Iran*

** Corresponding author: Elham O Sadat Banimostafavi, Mazanadaran University of Medical Sciences, Mazandaran, Iran. E-mail: razavi109@yahoo.com*

Abstract:

Introduction: extramedullary hematopoiesis (EMH) consists of the presence of ectopic haematopoietic elements outside the bone marrow and peripheral blood. It is manifested by several clinical hematologic disorders including beta-thalassemia major and thalassemia intermedia. The masses associated with EMH are frequently seen in the liver, spleen, spinal canal, thoracic cavity, lymph nodes and adrenal glands. We report an unusual case of extramedullary hematopoiesis.

Case Presentations: a 46 years-old male with thalassemia intermedia who was candidate for splenectomy referred to our center. Contrast CT of chest, abdomen and pelvic revealed bilateral paraspinal heterogeneity soft tissue masses with fat density and one mass in left retrocrural space. Multi presacral homogenous soft tissue masses were also shown. This finding suggests extramedullary hematopoiesis that is very rare and difficult to diagnose especially when it manifests in unusual location and associated with a hematologic disorder.

• 1118

FUNCTIONAL MAGNETIC RESONANCE IMAGING AND SYNAPTIC PLASTICITY

Hakimeh Saadati [1,*]; Soheila Refahi [1]

[1] Faculty of Medicine, Ardabil University of Medical Sciences, Ardabil, Iran

* Corresponding author: Hakimeh Saadati, Faculty of Medicine, Ardabil University of Medical Sciences, Ardabil, Iran. E-mail: hsadat54@yahoo.com

Abstract:

Functional magnetic resonance imaging (fMRI) is a type of particular MRI scan. It determines the hemodynamic response (change in blood flow) relayed to neural activity in the brain or spinal cord of humans or animals. This effect has been extensively exploited in a several research settings sequentially to study regional activation related with several of cognitive processes, language, reward processing, decision making and fear as well as motor and sensory processing. Functional MRI can offer important insights into brain plasticity and reorganization after injury such as trauma or stroke. Changes in neural performance with experience happen with development and learning. For instance, developmental experiment with nonhuman animals has indicated that sensory experience causes changes at the molecular and cellular levels and the cortical map level. Because fMRI can indirect determine the synaptic activity, only those changes in synaptic activity will be measurable via this technique. In this review study we assess the brain plasticity using fMRI methods because neuroimaging of learning and development is one of the most important issues of cognitive neuroscience.

• 1119

HISTORY OF MAMMOGRAPHY IN IRAN

Fariba Zarei [1,*]; Banafsheh Zeinali-Rafsanjani [2]; Hannaneh Vahab Aghaei [1]; Sepideh Sefidbakht [1]; Masoomeh Giti [3]

[1] Shiraz University of Medical Sciences, Shiraz, Iran

[2] Medical Imaging Research Center

[3] Tehran University of Medical Sciences, Tehran, Iran

* Corresponding author: Fariba Zarei, Shiraz University of Medical Sciences, Shiraz, Iran. E-mail: zareifari@yahoo.com

Abstract:

Mammography has a long and interesting history. It started with the curiosity of a German surgeon (Dr. Salomon-1913) who attempted to visualize the tumoral tissue of a removed cancerous breast, but it was not clinically routine till late 1950s. The history of mammography is completely clear in foreign countries, but unfortunately we do not know when, where or by whom mammography was used for the first time in our country. The aim of this study was to track the history of mammography in Iran

There is a study entitled "Infrared thermography in Iran" which was published in 1978 in the journal of Acta Thermologica by P. Ghaom-Maghami. This document is an evidence that around 1978 thermography was used in order to diagnose the patient's breast disease.

As far as we could collect data from valid sources, it was revealed that a General Electric (GE) infrared thermograph, which was working with liquid nitrogen was set up at Irans cancer Institute around 1974 by M. Zohuri. Cancer Institute, where is placed at the east part of Imam Khomeini (formerly Hezar Takhtekhabi and then Pahlavi hospital) was established in 1955. This cancer research center is one of the oldest research centers in Iran.

After Dr. Ghaom-Maghami, Dr. H. Vahabaghaei (1933 - 2006) continued the job. Dr. Vahabaghaei studied the specialized courses of breast diseases in European countries and started his activity exclusively in the field of breast diseases. He prepared the first brochure of breast self-examination which was distributed to the patients who referred to his center for free. He also developed and published the first atlas of mammography in Iran with the collaboration of the Dr. M. Hashemi and by gathering the mammograms, which were provided in Iran.

The first X-ray mammogram devices were xeroradiography or xero-mammography. Xeroradiography does not require any dedicated x-ray tools; the difference is only in the technique of recording an x-ray image. According to M. Zohuri, the first x-ray mammography equipment was set on at Shiraz hospital (Shahid Beheshti hospital- today) and Isfahan Foroughi Abari hospital in 1977 - 1978 at the beginning of their establishment.

We are still collecting the data. We will be grateful if new information would be presented to us.

• 1120

OSTEOBLASTIC AND OSTEOLYTIC LESIONS IN RADIOGRAPHY, BONE SCINTIGRAPHY AND FDG-PET

Sahar Rabani Khorasgani [1,*]; Bijan Bijan [2]

[1] Taleghani Hospital, Iran

[2] University of California Davis Medical Center, USA

* Corresponding author: Sahar Rabani Khorasgani, Taleghani Hospital, Iran. E-mail: rabani1369@yahoo.com

Abstract:

The presence and localization of distant metastases play a central role in therapeutic decision making. The most common imaging procedure for the assessment of bone metastases is MDP bone scintigraphy, though it cannot detect accompanying soft-tissue abnormalities and lacks specificity. PET is a well-established imaging modality to evaluate metabolic activity through the uptake of radioactive tracers in tissue. The bone metastases were visually classified by multi-slice CT into four types osteoblastic, osteolytic, mixed and invisible. Several studies show FDG-PET is more sensitive in detecting osteolytic metastases than bone scintigraphy, whereas bone scintigraphy is more sensitive in detecting osteoblastic metastases. For the detection of bone metastases the specificity and accuracy of FDG-PET/CT were higher compared to bone scintigraphy, while the sensitivity was lower. Sclerosis does not correlate well with FDG activity. FDG activity is within the aggressive lesions, whereas this activity is around the blastic lesions. MDP activity of bone scan is in the blastic rim of lytic metastases. Since progressive osteoblastic lesions can lead to a false-negative PET, bone scintigraphy should not be replaced by FDG-PET/CT for the detection of bone metastases. So the decision to use FDG-PET should be made individually depending on the expected change of therapy management. The important issue in this study is to correlate the findings of osteoblastic and osteolytic lesions and their changes to response according to imaging modalities and their sources.

• 1121

COMPUTED TOMOGRAPHY FINDINGS OF PULMONARY MYCOBACTERIUM SIMIAE INFECTION

Ayeh Baghizadeh [1,*]

[1] *Resident*

[*] *Corresponding author: Ayeh Baghizadeh, Resident. E-mail: Dr.aye.baghizadeh@gmail.com*

Abstract:

Non-tuberculous mycobacterial (NTM) pulmonary infections can be quite similar to tuberculosis both clinically and radiologically. However, the treatment is not similar. In addition, various species of NTM pulmonary infection.Here in we aimed to evaluate CT scan findings of M.simiae lung disease. 34 patients with M.simiae lung infection were retrospectively evaluated. Diagnosis was confirmed by American thoracic society (ATS) guidlines and CT scan were reviewed in both lung and mediastinal windows.The average age of patients was 63 + 14.54 years and 52.9% were male. The most common presenting symptomes were cough (91.2%)and sputum production (76.5%). The most common conditions in patient's medical history were previous TB (41.2%), cardiac disease (38.2%) and diabetes mellitus (35.3%). The most common CT scan findings in our study were modular lesions (100%) and bronchiectasis (85.29%). Regarding the severity, grade I bronchiectasis was the most prevalent. Other prominent findings were tree-in-bud sign (88.2%), consolidation (52.94%) and lobar fibrosis and volume loss (67.6%). There was no significant zonal distribution of findings. Our study concludes that like other species of NTM ,nodular lesions and bronchiectasis are the most common pulmonary CT scan findings in M.simiae pulmonary infection.

• 1122

NONE SURGICAL TREATMENT OF UTERINE LEIOMYOMAS

Morteza Bajoghli [1,*]

[1] *Isfahan University of Medical Sciences, Isfahan, Iran*

[*] *Corresponding author: Morteza Bajoghli, Isfahan University of Medical Sciences, Isfahan, Iran. E-mail: morteza.bajoghli@yahoo.com*

Abstract:

Safety and efficacy of US- Guided Suprapubic trans vaginal (ST) radiofrequency Ablation (RFA).

One - Year Follow -Up with Symptomatic Uterine Leiomyoma's:

The study offers a new method to treat uterine leiomyoma's by using suprapubic US guided suprapubic trans vaginal (ST) radiofrequency Ablation (RFA) with a large electrode.

Unlike Trans abdominal RFA, US guide ST RFA of uterine leiomyoma's Can be performed many times in the same lesion and in the same patient.

Us-guided ST-RFA is simple and cost-effective method with which to manage uterine leiomyoma via a trans vaginal approach and with a large electrode. And we can performed many times in the same lesion and in same patient, it is simple and cost-effective technique.

Indications are

a) Women with symptomatic uterine leiomyoma's, including menorrhagia and pelvic pain.

b) Women with sub mucosal and intermural leiomyoma, including Pedunculated sub mucosal lesion.

c) Moment refused surgery.

d) Women with normal coagulation.

Patient excluded if had sub mucosal or intramural, or in serous layer of Uterus or large exceeding 300 cm^3, because of perforation or possible Thermal radiation possible injures other tissues.

Ad excluded if had Gy malignancy. And who desire to become pregnancy, or breastfeeding or had coagulopathy.

Volumes of lesion and related quality of life (QOL) and complicated immediately after treatment are main considered.

RFA and US equipment: They used RFA without put power 0 - 60 W and frequency of 500 kHz. The electrode has a large exposed tip that is 0.5 - 1.5 cm long, 0.3 - 0.5 cm wide, and less than 0.1 thick.

Between October 2010 and December 2012; 1755 patients were treated.

The ST RFA treatment lasted 20 -40 minutes depend on the size and number of leiomyoma's.

It is effective and safe but need randomized multi-institutional trial.

• 1123

PEDIATRIC KNEE MRI

Parva Mokhallaghsani [1,*]

[1] *Radiology*

** Corresponding author: Parva Mokhallaghsani, Radiology. E-mail: mokhallaghsani@yahoo.com*

Abstract:

One of the most commonly reported internal derangements in a skeletally immature knee is a meniscal injury; however, the incidence of meniscal tears is significantly less than compared with the adult population.

The accuracy of MRI for detecting meniscal and ACL tears in adolescents is comparable with that of adults but is reportedly less accurate in patients before physeal closure. Injury patterns in the pediatric knee overlap and differ from adults.

Differences include open physes, changing mechanics, and differences in ligamentous support. Awareness of normal variants, common incidental findings, and normal evolution of bone marrow aid in the interpretation.

• 1124

APPEARANCE AND EVALUATION OF INTRACRANIAL HEMORRHAGE WITH MRI IN THE BRAIN

Hossein Jomleh [1,*]; Navid Sarmast Alizadeh [1]

[1] *Shahid Beheshti University of Medical Sciences, Tehran, Iran*

** Corresponding author: Hossein Jomleh, Shahid Beheshti University of Medical Sciences, Tehran, Iran. E-mail: hoseinjomle@sbmu.ac.ir*

Abstract:

The appearance of intracranial hemorrhage at magnetic resonance (MR) imaging depends primarily on the age of the hematoma and the type of MR contrast (ie, T1 or T2 weighted). As a hematoma ages, the hemoglobin passes through several forms (oxyhemoglobin, deoxyhemoglobin, and methemoglobin) prior to red cell lysis and breakdown into ferritin and hemosiderin. Five distinct stages of hemorrhage can be defined: hyperacute (intracellular oxyhemoglobin, long T1 and T2), acute (intracellular deoxyhemoglobin, long T1, short T2), early subacute (intracellular methemoglobin, short T1, short T2), late subacute (extracellular methemoglobin, short T1, long T2), and chronic (ferritin and hemosiderin, short T2). The short T1 of methemoglobin is due to the paramagnetic dipole-dipole interaction. Another paramagnetic property, the magnetic susceptibility effect, is responsible for the short T2 observed when deoxyhemoglobin, methemoglobin, or hemosiderin is intracellular. T2 shortening can also be produced by hemoconcentration and clot retraction. The T2 shortening due to magnetic susceptibility effects is enhanced on higher-field-strength systems and on gradient-echo images and is reduced with "fast spin-echo" MR techniques. Hemorrhage in the brain can be accurately staged using a combination of T1- and T2-weighted MR images. The MR appearance depends on the form of hemoglobin present and on whether hemolysis has occurred. The stages of hemorrhage distinguishable by MR imaging are: hyperacute (less than 1 day, intracellular oxyhemoglobin), acute (1 - 3 day, intracellular methemoglobin), late subacute (7 - 14 days, extracellular methemoglobin) and chronic (14 + days, hemosiderin rim).

• 1125

PEDIATRIC SPINE, SONOGRAPHIC APPROACH

Amirreza Jahanshahi [1,*]

[1] Assistant Professor, Tabriz university of Medical Sciences, Tabriz, Iran

* Corresponding author: Amirreza Jahanshahi, Assistant Professor, Tabriz university of Medical Sciences, Tabriz, Iran. E-mail: dj_amirreza@yahoo.com

Abstract:

Spinal dysraphism is the second most common congenital abnormality and ultrasound provides an excellent means for imaging the spine up to three to six months of age.

Types of dysraphysm include: occult dysraphism, spina bifida cystica ,spina bifida aperta.

Indication for pediatric spine ultrasound include back dimple which is more than 2.5 cm from the anus and larger than 5 mm and syndromes that are associated with an increased incidence of dysraphism ventriculus terminalis: a small, ependyma-lined cavity limited to the conus or proximal filum, unlike a syrinx, it does not extend superiorly. Detemination of vertebral level in ultrasonography is done by determination L5-S1 transition zone, S5 vertebral body and or S2 level.

Tethered cord: low position of the conus medullaris below L3 in a neonate and below L2/3 in older patients.

Hydromyelia and syringomyelia: abnormal accumulation of CSF, either within the paracentral cavities (syringomyelia) or within the central canal (hydromyelia).

Dorsal dermal sinus: epithelium-lined tract that extends from the skin to the arachnoid, cauda equina, or spinal cord.

Diastematomyelia: an osseous or fibrous sagittal ridge results in splitting of the spinal cord (often-asymmetric).

Caudal regression syndrome: a spectrum of abnormalities involving the trunk and the lower extremities, can present with relatively mild partial agenesis of the sacrococcygeal spine or severe spinal deformity with fusion of the lower extremities (sirenomelia), it has two type.

Posterior meningocele: consists of a CSF-filled sac lined with dura and arachnoid that herniate through a dysraphic defect.

Myelocele and myelomeningocele: the neural placode and leptomeninges are attached to an open skin defect.

Keywords: Pediatric Spine; Ultrasonography; Dysraphism

• 1126

SOME MAIN TYPES OF SKELETAL DYSPLASIA

Amirreza Jahanshahi [1,*]

[1] Assistant Professor, Tabriz University of Medical Sciences, Tabriz, Iran

* Corresponding author: Amirreza Jahanshahi, Assistant Professor, Tabriz University of Medical Sciences, Tabriz, Iran. E-mail: dj_amirreza@yahoo.com

Abstract:

Cleidocranial dysplasia: these patients manifest with small face, wide head with hypertelorism, generalized joint laxity, and also partial or complete absence of the clavicle.syndrome usually evident at birth and may be detected prenatally.

Osteogenesis imperfecta: disorders of collagen synthesis that result in abnormal bone formation that are easily fractured.presentation include osteoporosis, and wormian bones and basilar invagination with brain stem compression.

Based on relative bone fragility, bone deformity, stature, blue sclerae, dentinogenesis imperfecta, hearing loss and inheritance patern, sillence classification is done for this syndrome.

Sclerosing bone dysplasia: a varied group of conditions that have common various patterns of increased bone density.

Caffey disease: present with exuberant periosteal new bone in infant (especially around the mandible).

Osteopetrosis: diminished osteoclast function, and present with diffusely very dense but brittle bones bone-within-a-bone appearance and sandwich appearance is from its presentation.

Pyknodysostosis: manifest as short-limbed dwarfism with diffuse osteosclerosis, frequent transverse fracture and also acroosteolysis.

Progressive diaphyseal dysplasia: symmetric endosteal and periosteal cortical thickening and expansion of long bone diaphyses, especially in the legs, notice that epiphyses are spared.

Osteopoikilosis: present with multiple bone islands clustered around joints.

In differentiation with blastic metastasis, metastases tend to spare the epiphyses, whereas the bone islands of osteopoikilosis are most densely concentrated in the epiphyses.

Melorheostosis; dense bone is deposited along the cortex of otherwise normal bones and has Dripping candle wax pattern,although life expectancy is not shortened in patients with melorheostosis, significant morbidity can occur, especially when the condition presents in childhood.

Keywords: Skeletal Dysplasia; Cleidocranial Dysplasia; Osteogenesis Imperfecta; Sclerosing Bone Dysplasia

• 1127

SALIENT FEATURES OF THYROID NODULES ON ULTRASOUND

Afarin Sadeghian [1,*]

[1] *Shahid Beheshti University of Medical Sciences, Tehran, Iran*

[*] *Corresponding author: Afarin Sadeghian, Shahid Beheshti University of Medical Sciences, Tehran, Iran. E-mail: afarin.sadeghian@yahoo.com*

Abstract:

Thyroid nodule is a common challenging clinical problem.Its prevalence dramatically increase in areas of iodine deficiency including the mountainous regions of our country. The American thyroid association's (ATA's) guideline recommends thyroid ultrasound for evaluating the thyroid nodules. Several studies have been conducted to evaluate the morphologic features of thyroid nodules. We propose a poster presentation of salient features of thyroid nodules with their specificity, sensitivity, positive predictive value (PPV) and negative predictive value (NPV) of them to distinguish between malignant and benign nodules. We also present practical images of these features.

• 1128

IMAGING IN FEMORAL HEAD AVASCULAR NECROSIS

Farnood Rajabzadeh [1,*]

[1] *Islamic Azad University, Mashhad, Iran*

[*] *Corresponding author: Farnood Rajabzadeh, Islamic Azad University, Mashhad, Iran. E-mail: farnood@yahoo.com*

Abstract:

This paper reviews the imaging approach in femoral head avascular necrosis , describing and evaluating different radiological techniques,including as X-ray, computed tomography (CT), magnetic resonance imaging (MRI), and nuclear Medicine. It is also described that how many patients with clinical AVN had positive MRI findings.

Plain films are considered the first line imaging technique due to its ability to depict femoral head morphological changes, low costs and high availability.

CT is not routinely performed, but useful to R/O of a subchondral fracture when MRI is doubtful or contraindicated.

MRI is considered the gold standard technique in the early stages, can detect bone marrow changes such as edema and sclerosis.

Nuclear medicine imaging is mostly applied in post-op period to detect graft viability or infectious complications.

In conclusion, X-ray examination is the first line, but lacks of sensitivity. CT easily depicts late stage deformation and may decrease MRI false positive results in detecting the subchondral fracture.

Nuclear Medicine Imaging and advanced MR techniques need more investigation.

• 1129

ENHANCEMENT CURVE OF MRI WITH CONTRAST IN MALIGNANT BREAST LESIONS

Neda Azarpey [1,*]; Mojgan Kalantari [2]; Elham Keshavarz [2]; Azadeh Joolayee [3]

[1] *Department of Radiology*

[2] *Department of Radiology, Shahid beheshti University of Medical Sciences*

[3] *Department of Surjery, Shahid beheshti University of Medical Sciences*

[*] *Corresponding author: Neda Azarpey, Department of Radiology. E-mail: nedaazarpey@gmail.com*

Abstract:

Background and Objectives: breast cancer is one of the most common types of cancer and constitutes one of the main reasons of death caused by cancer among women. Preventing cancer on one hand and treating it on the other hand can help reduce the burden of disease. Among the various diagnostic methods used, we may list sonography, mammogra-

phy, and MRI. The present research seeks to provide a qualitative and quantitative account of variables in MRI and study the correlation between variables and consequences.

Methods: The present research was conducted on 50 patients suffering from breast cancer resorting to hospitals of Shahid Beheshti University selected through convenient sampling. All of them underwent MRI with contrast. Pattern of various tumors was studied in patients. The results were analyzed and studied using Chi-Square tests.

Results: according to the results, speculated tumor patterns exhibited the greatest degree of frequency (36%). The results gained from the analysis of enhancement curve of MRI showed that T3 and T1 curves with respective frequencies of 40 and 12 percent exhibited the greatest and lowest frequencies. According to pathological results, invasive ductal carcinoma and lobular carcinoma in situ exhibited the greatest frequencies in T3 enhancement curve and the greatest frequency of ductal carcinoma in situ was observed in type 2 curve. A statistical analysis showed that variables such as the size of tumor and patient's age had no significant correlation with the type of the curve (P value > 0.05). There was also no particularity between the size of tumor and patient's age and pathological results. It was finally shown that no significant correlation existed between the triple types of MRI enhancement curves and the results of pathology (P value > 0.05).

Conclusion: the results of this research showed no significant correlation between enhancement curve and variables such as patient's age, tumor pathology and size of tumor.

Keywords: Breast Cancer; Tumor Pattern; Enhancement Curve; MRI

• 1130

IMAGING ASSESSMENT OF THORACOLUMBAR TRAUMATIC INJURIES

Azin Shayganfar [1,*]

[1] *Alzahra Hospital*

[*] *Corresponding author: Azin Shayganfar, Alzahra Hospital. E-mail: Azin_shayganfar@yahoo.com*

Abstract:

Imaging studies play a central role in the diagnosis of spinal trauma.multiple classification systems have been developed and continue to evolve.thoracolumbar injury classification and severity score (TLICS) is a scoring and classification system developed by the spine trauma study group in response to the recognition that previous classification systems have limited prognostic value and generally do not suggest treatment pathways. The TLICS provides a spine injury severity score based on three components: injury morphology, integrity of the posterior ligamentous complex (PLC) and neurologic status of the patient. This is a reliable prognostic classification system with an optimal balance of use and detail of injury description contributed to the development of a new classification system for thoracolumbar spine trauma. Familiarity with the TLICS will help radiologist who interpret spine trauma imaging studies to effectively communicate findings to spine trauma surgeon.

• 1131

IMAGING OF CRANIOCERVICAL JUNCTION TRAUMATIC INJURIES

Azin Shayganfar [1,*]

[1] *Alzahra Hospital*

[*] *Corresponding author: Azin Shayganfar, Alzahra Hospital. E-mail: Azin_shayganfar@yahoo.com*

Abstract:

The craniocervical junction (CCJ) is composed of the occiput and the first two cervical spine in conjunction with an intricate ligamentous complex that is essential to maintaining stability of cervical spine. Approximately one-third of all cervical spine injuries involve the CCJ which had previously often led to immediate death but at now these are increasingly being seen in emergency department due to improvement in initially management of high-speed motor vehicle collisions. Considering the most patient with blunt trauma are now treated nonsurgically, it is therefore essential that radiologist recognize findings that distinguish injuries with ligamentous instability that require surgical stabilzation from those that are classically stable and can be treated with a collar alone. So for properly evaluation of cervical spine stability in setting of trauma understanding the anatomy of the CCJ is crucial. The aim of this review is familiarity of the radiologist about anatomy and important traumatic injuries of the CCJ, focusing on atlantooccipital and atlantoaxial joints, allowing the radiologist to assess it s stability in the trauma setting.

• 1132

ULTRASOUND OF MUSCULOSKELETAL INFECTIONS

Hend Riahi [1,*]; Meriem Mechri Rekik; Mouna Chelli Bouaziz; Mohamed Fethi Ladeb

[1] IMKO

* Corresponding author: Hend Riahi, IMKO. E-mail: hend.riahi@gmail.com

Abstract:

Musculoskeletal infections are commonly encountered in clinical practice in children and adult patients. Ultrasound (US) may be used either as a primary imaging technique or as adjunct to radiography, computed tomography (CT), magnetic resonance imaging (MRI) and nuclear medicine studies. Despite an important delay, radiographs remain the first imaging modality to perform in these conditions. US is very performant in the diagnosis and the follow up of musculoskeletal infections. It may help to differenciate infections from tumors or non-invasive inflammatory conditions with similar clinical presentation, to localize the site and extent of infections; to identify precipitating factors and guide drainage or biopsy.

In acute osteomyelitis, daily US examination allows an early detection of subperiosteal abcess thus indicating surgical treatment (Protocol of Tunis).

Clinical and US differential diagnosis is sometimes difficult with sickle cell anemia vasoocclusive crisis and sub periosteal hematoma.

Soft tissue modification and or collection are also easily diagnosed by US in case of chronic osteomyelitis reactivation.

Septic arthritis either in a native or prosthetic joint may have devastating complications on the joint function. Early diagnosis requires joint fluid analysis. US is very sensitive in the detection of joint effusions and is helpful to guide the arthrocentesis.

• 1133

IMAGING OF MYCOTIC SPONDYLTIS

Hend Riahi [1,*]; Meriem Mechri Rekik; Mouna Chelli Bouaziz; Mohamed Fethi Ladeb

[1] IMKO

* Corresponding author: Hend Riahi, IMKO. E-mail: hend.riahi@gmail.com

Abstract:

Mycotic spondylitis are rare disorders caused in most cases by Candida and Aspergillus.

Four cases of proven mycoticspondylitis were collected from 1st June 2014 to 31th of December 2015. They have been explored with plain radiographs (n = 3), CT (n = 4), MRI (n = 4). Patients age ranged from 27 to78 years, sex- ratio was 1. Two patients were diabetics and one had sickle cell disease. Two patients had compressive myelopathy. Major bone destruction was observed in two patients. MRI showed a thoracic spondylitis in 3 cases, lumbar spondylitis in one case and multifocalinfection in three cases. Epidural abscess was seen in all cases. Epidural abscesswas marked in one case contrasting with a minimal bone involvement. One patient underwent surgical biopsy and three a CT-guided biopsy. The diagnosis was achieved by the isolation of the fungus in all cases (aspergillusfumigatus = 1, candida glabrata = 1, candida tropicalis = 1 and cryptococcus = 1) associated with characteristic histopathologic changes in 2 cases.

Imaging features of mycotic spondylitis that are distinct from pyogenic osteomyelitis include absence of disk hyper-signal, preservation of the intra-nuclear cleft on T2- weighted images and marked abcess contrasting with minimal bone destruction in Cryptococcus spondylitis. Recognition of imaging characteristics of fungal spondylitis should prompt biopsy and should not alter management of spondylitis in the immune-compromised patient.

• 1134

THE ROLE OF MR IMAGING IN MULTIPLE SCLEROSIS

Maryam Haghighimorad [1,*]

[1] Shahid Beheshti University of Medical Sciences, Tehran, Iran

* Corresponding author: Maryam Haghighimorad, Shahid Beheshti University of Medical Sciences, Tehran, Iran. E-mail: maryamhaghighimorad@yahoo.com

Abstract:

Today conventional MR imaging is a routine way for diagnosis and disease evaluation in multiple sclerosis. Conventional MR imaging has high sensitivity and lower specificity in diagnosis of multiple sclerosis. Volumetric MRI is used for quantitation of disease burden. MT is a method which used to evaluation of extent of myelination in lesions and

in normal appearing white matter. This method has a better correlation with neurocognitive outcome of patients. DT imaging assessment globally by using a histogram analysis shows a significant difference between white matter in patients and controls. Also using fiber tractography in patients revealed disruption of white matter tracts by demyelinating lesions in patients. DSC MR imaging is another method which can measure blood perfusion and so predict demyelinating lesions activity and provide additional information of micro vascular abnormality. Non localized MR spectroscopy can quantify marked changes in NAA concentrations of brain in patients compared with age matched controls which is a global marker of neuronal dysfunction.

• 1135

RESTING STATES FUNCTIONAL MRI: AN INTRODUCTION TO PSYCHOIMAGING

Ali Mahdavi [1,*]

[1] *Tehran University of Medical Sciences, Tehran, Iran*

[*] *Corresponding author: Ali Mahdavi, Tehran University of Medical Sciences, Tehran, Iran. E-mail:Mahdavi0ali@yahoo.com*

Abstract:

Functional MRI is a non-invasive technique for examining brain function that utilizes changes in BOLD signal to identify areas of neuronal activity. Today fMRI has seen relatively little translation into the clinical realm.

A recent advance that offers tremendous promise for improving the clinical applicability of fMRI involves focusing on spontaneous modulations in the BOLD signal that occur during resting conditions with fcMRI. In contrast to the traditional task-based approach, resting state studies observe the brain in the absence of overt task performance or stimulation.

Methods: during fcMRI subjects are generally asked to lie under resting conditions. Spontaneous modulations in the BOLD signal in the absence of any explicit input or output are then recorded and analyzed.

A consistent observation is that regions with similar functional properties exhibit coherent BOLD fluctuations even in the absence of action under resting conditions.

Clinical Applications:

The largest application is comparing brain networks between normal subjects and those with psychiatric disease. This may lead to identifying prognostic or diagnostic markers on patients with normal structural MRI. Also it is able to segregate patients within a disease category in heterogeneous disease like schizophrenia. Also fcMRI is extremely useful in monitoring treatment effects. The other role for fcMRI is in pre-operative without limitations of task-based mapping.

Discussion: indeed several articles have recently been published showing strong proof of concept for resting state fcMRI as a potential imaging tool in patients with psychological conditions which standard imaging techniques appear normal. These studies have shown good correlation between resting state fcMRI results and clinical diagnosis and disease severity in these patients. Future research may lead us to develop new imaging biomarkers regarding diagnosis and prognosis of psychiatric disease.

• 1136

FUNCTIONAL MRI IN CLINICAL PRACTICE: PRE SURGICAL ASSESMENTS

Ali Mahdavi [1,*]

[1] *Tehran University of Medical Sciences, Tehran, Iran*

[*] *Corresponding author: Ali Mahdavi, Tehran University of Medical Sciences, Tehran, Iran. E-mail: Mahdavi0ali@yahoo.com*

Abstract:

Functional MRI (fMRI) has been used widely for preneurosurgical planning and may eventually become a routine pre-surgical imaging modality. Validity of fMRI for clinical applications depends on different factors such as proper task selection, correct statistical analysis and threshold setting withappropriate patient cooperation. In this study we mainly focus on the role of proper patient selection to achieve reliable fMRI results.

Methods: forty patients with different types of brain mass lesions or hippocampal sclerosis wereincluded in this study. None of them suffered from overt motor or language deficits. Based on pre-fMRI test session performance, the optimized task protocol was individualized for each patient. The dataset analysis carried out using FSL program. Clinical reports were provided to neurosurgeons planning surgical removal.

Results: all of the patients completed motor related

tasks successfully. For language-based fMRI, 15% of the patients were unable to produce reliable data suitable for a clinical report.These patients who failed to perform language fMRI, had trouble cooperating during the pre-test session and also low MMSE scores and a below average educational level.

Conclusion: accurate and reproducible, fMRI strongly depends on active patient cooperation. This issue is of utmost importance for surgical planning based on fMRI and is more problematic with language fMRI. As we observed in this study, a pre-test mock fMRI session held by the radiologist may help to predict which patients are more or less suitable candidates for fMRI. We recommend exclusionof patients with poor cooperationleading tomore reliable fMRI-resultsfor clinical interpretation.

• 1137

DIAGNOSIS OF CORONARY ARTERY ATHEROSCLEROSIS IN THERMAL IMAGES OF GRAY SCALE

Fatemeh Valipoori Goodarzi [1,*]

[1] *Hakim Sabzevari University*

[*] *Corresponding author: Fatemeh Valipoori Goodarzi, Hakim Sabzevari University. E-mail: fatemeh.goodarzi10@gmail.com*

Abstract:

Background: burst fractures of vertebral are about 15% spine injuries that the most common site is the lumbar dorsal. Now detection of type of fracture and associated injuries usually done by the plain radiography, CT scan and MRI, But these methods have many limitations such as high cost and the risk of radiation. In this study, we tried to provide a new method for the detection of fractures in thermography images.

Methods: the present study was performed on a series of thermal images were obtained from a Clinical Center in California, and diagnosis of Unstable burst fractures of the lumbar spine was done based on thermal model and using Fuzzy C- Means (FCM) clustering algorithm and Recursive connected components algorithm.

Results: in this study, with the survey performed by orthopedic surgeon, that previously was done from the patients, the accuracy of this work is confirmed. Techniques and tips that are practical and based on scientific principles obtained in this study could to help to doctors to diagnose unstable burst fractures of the lumbar spine Based on analysis of thermal images.

Conclusion: the method presented in this article can be considered as a non-invasive and cost-effective method for the detection of unstable burst fractures of the lumbar spine.

Keywords: Unstable Burst Fractures; Thermography; FCM Clustering Algorithm; Recursive Connected Components Algorithm

• 1138

FACIAL NERVE IMAGING

Reza Basiratnia [1,*]

[1] *Isfahan University Of Medical Sciences, Isfahan, Iran*

[*] *Corresponding author: Reza Basiratnia, Isfahan University Of Medical Sciences, Isfahan, Iran. E-mail: basiratniareza@yahoo.com*

Abstract:

The facial nerve is the most common paralyzed nerve of the human body. It is responsible for facial mimic. Lacrimation, salivatiton, and taste with dysfunction of this nerve having a tremendous negative impact on patient's lives. Its long and tortuous course within the densest bone of the human body and its fragile vascular supply make it particularly vulnerable to injury and difficult to rehabilitate functionally. As it is not amenable to direct clinical inspection, imaging plays a pivotal role in the diagnosis, management, and follow up of patients with facial nerve dysfunction. The increasing resolution of imaging studies has lead to an increasing number of recognizable causes of facial nerve palsy improving the diagnostic yield and allowing for early treatment and functional rehabilitation. Appropriate imaging of the facial nerve requires detailed knowledge of its anatomy and physiology, mastering imaging technique, and recognition of the imaging features of the the wide set of pathologic processes that may affect this nerve.

• 1139

COMPARISON OF DIFFUSION WEIGHTED IMAGE (DWI) AND ENHANCED T1- WEIGHTED SEQUENCE IN PATIENTS WITH MULTIPLE SCLEROSIS

Amin Abolhasani Foroughi [1,*]; Roohollah Salahi [1]; Alireza Nikseresht [1]; Hora Heidari [1]; Masoumeh Nazeri [1]

[1] *Shiraz University of Medical Sciences, Shiraz, Iran*

* Corresponding author: Amin Abolhasani Foroughi, Shiraz University of Medical Sciences, Shiraz, Iran. E-mail: amin.a.foroughi@gmail.com

Abstract:

Although evidences have demonstrated increased diffusion in most MS lesions, we have tried to assess whether demographic, brain anatomical regions and contrast enhancement show differences in the MS patients with increased diffusion lesions compared with diffusion restriction.

Conventional MRI protocol comprised T1- and T2-weighted sequence with and without gadolinium, sagittal 3-dimentional fluid-attenuated inversion recovery (FLAIR) sequence, DWI and ADC mapwere prospectively performed in 126 MS patients at single academic center from January to December 2015. The investigation was conducted to evaluate differences in demographic, cord and brain regional, technical, and positive or negative gadolinium contrast imaging parameters in 2 groups of increased diffusion (ID) and diffusion restriction (DR). Statistical analysis was performed using SPSS software ver. 22 and chi-square Pearson and Fisher's exact test, along with Mann-Whitney test.

The study reports no significant differences in EDDS, disease duration and attack rate between patients with ID and DR ($P > 0.05$). Moreover, OCT and VEP, as well as, demographic and regional parameters demonstrated no significant differences in ID patients compared to DR ($P > 0.05$). MR imaging of the brain, unlike to cord, with and without gadolinium declared a significant difference in ID compared to DR ($P = 0.019$).

This study showed no significant differences in demographic, cord and brain regional, and technical parameters in MS patients with ID and DR. While, significant differences in contrast enhancement with and without gadolinium were observed between the studied groups. We found DR in MS patients, altering the prior suggestions that diffusion increases in MS lesions.

• 1140

DOUBLE LUMEN PLACEMENT IN CHALLENGING CASES DELIVERS A PERILOUS RADIATION DOSE TO PHYSICIANS: FACT OR FICTION?

Amin Abolhasani Foroughi [1,*]; Alireza Rasekhi [1]; Banafsheh Zeinali-Rafsanjani [1]; Mahdi Saeedi-Moghada [1]; Masoumeh Nazeri [1]

[1] Shiraz University of Medical Sciences, Shiraz, Iran

* Corresponding author: Amin Abolhasani Foroughi, Shiraz University of Medical Sciences, Shiraz, Iran. E- mail: amin.a.foroughi@gmail.com

Abstract:

Background: the last choice for the end stage kidney disease patients is catheter hemodialysis. Unfortunately catheterization for a long time, can lead to some problems which make the re-catheterization challenging. Sometimes the physician has to try catheterization through several veins and stays close to the patient during the procedure, which may cause, delivering a high radiation dose to the radiologist, so that some radiologists refuse to admit such patients. The objective of this study was, assessment of the radiation dose of radiologists and patients during the placement of double lumen catheter in difficult cases.

Methods: the thermoluminescent-dosimeter (TLD) was used to measure the delivered radiation dose to physicians. During the procedure, a package of dosimeter was placed on thyroid shield and another, on the chest, under the apron in order to calculate the occupational effective dose. Moreover, some patient information and parameters of the procedure were recorded, in order to estimate the patient dose during the procedure.

Result: the mean effective dose provided by TLDs, dose/procedure and the annual dose of physicians resulted just from this procedure were 30.38 Sv, 0.02 Sv/procedure and 350.20 Sv/y respectively. The mean dose area product, dose and calculated peak-skin dose obtained in this study were 151.44 cGy cm^2, 851.71 mGy and 384.97 mGy respectively.

Discussion and conclusion: the mean effective dose of physician per case is about 0.02 Sv/procedure which is much less than the radiation dose per other procedures. Briefly, it can conclude that double lumen replacement does not deliver an unacceptable radiation dose to physician and even the radiation dose resulted from these cases are much lesser than the other procedures.

• 1141

BRAIN MAG NETIC RESONANCE IMAG ING FOR THE DETECTION OF EARLY STAGE CATARACT

Amin Abolhasani Foroughi [1,*]; Ali Khorsand [1]; Masoumeh Nazeri [1]; Masoud Yasemi [1]; Mohammad Hossein Nowroozzadeh [1]; Roohollah Salahi [1]

[1] Shiraz University of Medical Sciences, Shiraz, Iran

* Corresponding author: Amin Abolhasani Foroughi, Shiraz University of Medical Sciences, Shiraz, Iran. E-mail: amin.a.foroughi@gmail.com

Abstract:

Objectives: the aim of this study was to determine the possible role of brain magnetic resonance imaging (MIR) in cataract detection.

Methods: this study was done patients who referred to Martyr Faghihi Hospital with a known disease for brain MRI. Patients were stated in two groups of case and controls. Cases, 44 eyes with abnormal signal of the lens and controls, 88 eyes with normal signal intensity of the lens. All patients underwent an ophthalmological examination and the presence of cataract and IOL was assessed in these patients. Lens average signal, muscle average signal, fat average signal, lens to muscle signal ratio, lens to fat signal ratio were recorded.

Results: the mean of lens average signal in case group was significantly higher than controls (370 versus 161 respectively, P value < 0.0001). 16 (36.4%) of 44 eyes in case group had cataract, but 48 (54.5%) of 88 eyes in control group had cataract (P value = 0.049). IOL in cases 18.2% and in controls was 6.8% (P value = 0.046). The mean of lens average signal in eyes with cataract was 218.5 and in normal eyes was 249.1 (P value = 0.36). In eyes with IOL mean of lens average signal was 347.5 and in normal eyes was 223.1 (P value = 0.036).

Conclusions: Cataract in eyes with abnormal lens signal was significantly lower than eye with normal lens average signal. Although lens signal in eyes with cataract was similar to eyes without cataract. lens average signal in brain MRI was not successful early detection of cataract.

• 1142

EVALUATION OF LIVER ADC VALUES IN PATIENTS WITH LIVER FIBROSIS COMPARISON TO HEALTHY PEOPLE

Mohammad Momen Gharibvand [1,*]; Medi Shayesteh [2]

[1] Ahwaz University of Medical Sciences, Khuzestan, Iran

[2] Resident of radiology

* Corresponding author: Mohammad Momen Gharibvand, Ahwaz University of Medical Sciences, Khuzestan, Iran. E-mail: mmmohamad93@yahoo.com

Abstract:

DWI is a quick and repeatable noninvasive MR modality which enables qualitative and quantitative evaluation of tissue diffusivity without the use of gadolinium chelates in Liver fibrosis (LF) staging the apperant diffusion coefecient (ADC) of the fibrotic hepatic tissue is usually significantly lower than that of normal liver tissues and the ADC values decrease as the fibrosis score increases. A possible explanation for this phenomenon suggested that in fibrotic liver tissues with the presence of increase proton poor connective tissue the molecular diffusion and blood flow the restricted leading to the decrees ADC in these tissues. Studies have shed light on the feasibility of DWI in the staging of LF, monitoring treatment responses and follow up of patients with LF.

• 1143

REAL-TIME SONOELASTOGRAPHY FINDINGS IN HEALTHY ACHILLES TENDONS AND IN PATIENTS WITH DIABETES WITH OR WITHOUT FOOT ULCERS

Morteza Joorabian [1,*]

[1] Ahwaz University of Medical Sciences, Khuzestan, Iran

* Corresponding author: Morteza Joorabian, Ahwaz University of Medical Sciences, Khuzestan, Iran. E-mail: morteza_joorabian@yahoo.com

Abstract:

Real-time sonoelastography is a new ultrasound-based technique able to assess tissue elasticity that has already shown feasibility in tumor diagnosis and liver stiffness measurement.

The principle of realtime sonoelastography is as follows: tissue compression produces displacement within the tissue, which is less in hard tissue than in soft tissue.

However, it is well known that inflammation and tumors lead to changes in tissue elasticity. Although real-time sonoelastography is not yet used in routine clinical practice, it has been shown to be useful in the differential diagnosis of breast, thyroid, and cancers and recently was applied to lymph node characterization. Estimation of tissue elasticity might also be a useful tool for characterizing tendons; therefore, the aim of this paper is to explain how we can use real-time sonoelastography to depict the Achilles tendons of healthy volunteers and in patients with diabetes to compare those findings with conventional ultrasound findings and prediction of diabetic foot ulcer.

• 1144

DIAGNOSTIC ACCURACY OF PARATHYROID SCINTIGRAPHY AND ULTRA-SONOGRAPHY FOR LOCALIZATION OF PARATHYROID ADENOMA

Amir Pasha Amel Shahbaz [1,*]; Reza Nafisi Moghadam [2]

[1] Shahid Sadoughi Hospital, Yazd, Iran

[2] Yazd University of Medical Sciences, Yazd, Iran

* Corresponding author: Amir Pasha Amel Shahbaz, Shahid Sadoughi Hospital, Yazd, Iran. E-mail: pasha.shahbaz@gmail.com

Abstract:

Objectives: the aim of the study was to determine the diagnostic accuracy of parathyroid scintigraphy and ultra-sonography for localization of parathyroid adenoma.

Methods: PubMed, ISI Web of Knowledge databases, Science direct, Scopus (Embase) Google scholar, Wiley online database up to December 2015 and the reference lists of all included studies were searched for further studies. The search strategy was according PICO characteristics. The heterogeneity between the studies was accounted by P < 0.1. Point estimates were pooled estimate of sensitivity, specificity and accuracy of SPECT and ultra-sonography with 95% confidence interval (CI) by pooling available data.

Results: among 188 studies and after deletion of duplicated studies (75), about 113 title and abstracts were studied.totally 17 studies were selected. The meta-analysis determined scintigraphy pooled accuracy of 84.18 (confidence interval (CI) 79.84 - 88.76) and ultra-sonography pooled accuracy of 76.86 (confidence interval (CI) 70.76 - 77.48).

Conclusion: the study results reveal, no significant difference statically between SPECT and Ultrasonography in detection of parathyroid adenoma.

Keywords:

Parathyroid Adenoma; Ultra-Sonography; Scintigraphy; Diagnostic Accuracy; Sensitivity, Specificity

• 1145

DIAGNOSTIC ACCURACY OF PARATHYROID SCINTIGRAPHY AND ULTRA-SONOGRAPHY FOR LOCALIZATION OF PARATHYROID ADENOMA

Amir Pasha Amel Shahbaz [1,*]; Reza Nafisi Moghadam [2]; Kazem Razav; Mona Kharraji [1]

[1] Shahid Sadoughi Hospital, Yazd, Iran

[2] Yazd University of Medical Sciences, Yazd, Iran

* Corresponding author: Amir Pasha Amel Shahbaz, Shahid Sadoughi Hospital, Yazd, Iran. E-mail: pasha.shahbaz@gmail.com

Abstract:

Objectives: the aim of the study was to determine the diagnostic accuracy of parathyroid scintigraphy and ultra-sonography for localization of parathyroid adenoma.

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Keywords:

Parathyroid Adenoma; Ultra-Sonography; Scintigraphy; Diagnostic Accuracy; Sensitivity, Specificity

• 1146

OLD MAN WITH CHRONIC ABDOMINAL PAIN AND FEVER: WHAT IS YOUR DIAGNOSIS?

Reza Nafisi moghadam [1]; Mohammad Ghadrian [2,*]

[1] Yazd University of Medical Sciences, Yazd, Iran

[2] Resident, Radiology Department of Shahid Sadughi University of Yazd

* Corresponding author: Mohammad Ghadrian, Resident, Radiology Department of Shahid Sadughi University of Yazd. E-mail: Ghadrmed@gmail.com

Abstract:

Background: foreign bodies used during surgical procedures can remain in the body. It can be asymptomatic but in some patients shows shortly after

surgery or after years, with Non-specific and various symptoms, Due to medical and legal problems related to this error. The incidence rate is not clear but It seems that gauze is the common remaining foreign bodies after surgery.

We present such a rare case, which presented as epigastric pain.

Case presentations: a 72 year old man complaining of epigastric pain from two months ago was visited by Gastroenterologist and referred to radiology department of shahid sadughi university of Yazd.

The pain was dull, continues and meal-unrelated. During this period, fever and chills with irregular pattern was also exist occasionally.

Patient had undergone open mitral valvectomy 20 years back .Previous surgery scar was seen in midline chest and epigastric bulging was present on palpation. Other systematic examination was normal.

In labarotory findings, ESR and CRp was abnormal But there was no instance of parasitic diseases.

To rule out or prove other differential diagnosis sonogoraphy was done. The results showed a 110 × 120 mm hypo hetero echo mass with well defined margin in epigastric area. The mas was without vascular flow. The curvilinear echogenic area with dirty posterior shadow in the mass was seen.

Then CT scan with oral and I.V contrast was done wich shows rounded mass with curvilinear hyper dense area in it in epigastria (figure 3, 4, 5, 6). Mass dimensions was 110 × 125 with well defined clear borders and regular margin with mild to moderate peripheral enhancement (figure7, 8).

After surgery exploration, a collection was found that was containing gauze remaining from 20 years ago from surgery. After removing the mass, without particular problems during the postoperative period, the patient was discharged from hospital.

Conclusion: Remaining foreign body during surgery is a significant human error and the most common type of foreign body is surgical gauze that is called Gossypibom. Gossypibom diagnosis, Due to similarity to conditions such as tumor, hematoma or aneurysm in radiologic imaging, is difficult.

Usually the first professionals who recognize this phenomenon are radiologist. CT scan is the imaging of choice for diagnosis. The CT scan pattern is depended on time interval from surgery. If the interval is short, heterogeneous hypodense mass with sponge format in the central region and the presence of bubbles is seen. But if the period is long, severe fibrinoid reaction have occurred. And the Gossypibom is shapes like a solid mass that radiologic imaging should be used for better diagnosis.

The next step after the initial diagnosis by imaging is tumor removal and pathologic examination.

Maviogulu reported a case with complication of fatigue and mitral valvctomy that Gossypiboma was diagnosed after 8 years. In our study we describe a man with Gossypiboma after 20 years from mitral valulotomy.

The duration of surgery and the lack of precision in counting the used gauze are the most important factors to occure this error. So that in the study with 11 cases of the Gossypiboma, in 8 patients the initial gauze count was done properly. Use of radiopaque gauze during surgery and Post-operative radiography can be preventive. Also, in cardiovascular surgery, removing the gauze as soon as possible is important.

• 1147

EVALUATION OF ASYMPTOMATIC AVASCULAR NECROSIS (AVN) IN PATIENT WITH MULTIPLE SCLEROSIS TREATED (MS) BY CORTICO STEROIDS (CST)

Abolfazl Shiravikhoozani [1,*]; Ali Shakourirad [2]; Mohammadali Sahraian [3]; Khadijeh Bakhtavar [3]

[1] *Resident of Radiology*

[2] *Assistance Professor, Radiology Department, Tehran University of Medical Sciences*

[3] *Associate Professor, Neurology Department, Tehran University of Medical Sciences*

[*] *Corresponding author: Abolfazl Shiravikhoozani, Resident of Radiology. E-mail: mediresearch12@gmail.com*

Abstract:

Background: early diagnosis of AVN before beginning of symptoms is effective and important because prognosis is highly related to AVN stage. The incidence of AVN among patients with MS who are under treatment with steroids is not clear. Early diagnosis can be helpful for patients This study surveys the incidence of AVN in patients with MS without any symptoms who are treated by CST.

Methods: During a cross sectional study 97 patients with definitive diagnosis of MS who had any experience of treatment by CST were selected 1.5 Tesla MRI was used to evaluate hip joint Fiat and mitchell classification systems were used to determine the grade and stage of AVN Existence of AVN in weight bearing areas was surveyed.

Results: to determine the effects of age gender level of education job the number of using CST accumulative amounts of CST the time period passed from the last using of CST and duration of the MS disease on the incidence of AVN Mixed effects Poisson Regression Analysis was used The results showed that none of these parameters had effects on the incidence of AVN.

Conclusion: 5 of 97 patients had AVN of femoral head All these patients had used more than 10 g CST during their treatment period from the beginning of their disease till this study In this period of time they had used CST at least 5 times According to existence of AVN in weight bearing areas in 2 cases early diagnosis of AVN is very effective to prevent axial loading.

• 1148

EVALUATION OF ASYMPTOMATIC INSUFFICIENCY FRACTURE IN PATIENT WITH MULTIPLE SCLEROSIS (MS) TREATED BY CORTICOSTEROIDS (CST)

Abolfazl Shiravikhoozani [1,*]; Ali Shakourirad [2]; Mohammadali Sahraian [3]; Khadijeh Bakhtavar [3]

[1] *Resident of Radiology*

[2] *Assistance professor, Radiology department, Tehran University of Medical Sciences*

[3] *Associate Professor, Neurology department, Tehran University of Medical Sciences*

** Corresponding author: Abolfazl Shiravikhoozani, Resident of Radiology E-mail: mediresearch12@gmail.com*

Abstract:

Background and Objectives: early diagnosis of insufficiency fracture before beginning of symptoms is effective and important, because it may progress toward gross fracture. The incidence of insufficiency fracture among patients with MS who are under treatment with CST is not clear. Early diagnosis can be helpful for patients.

Methods: during a cross sectional study 95 patients with definitive diagnosis of MS who had any experience of treatment by CST were selected. 1.5 Tesla MRI was used to evaluate pelvic and lower extremities bony structures.

Results: there was not any MRI detected insufficiency fracture of pelvic and lower extremities in MS patients.

Conclusion: according to the no incidence of asymptomatic of insufficiency fracture, routine MRI evaluation of insufficiency fracture in MS patients treated by more than 10 g CST is not necessary.

• 1149

VALUE OF SERIAL NON-CONTRAST COMPUTED TOMOGRAPHY (NCCT) FOR DETECTION OF HEPATIC AND SPLENIC IRON DEPOSITION IN ACUTE MYELOID LEUKEMIA (AML) PATIENTS WITH PRIOR BLOOD TRANSFUSION: INITIAL EXPERIENCE

Abolfazl Shiravikhoozani [1,*]; Hendrik Von Tengg-Kobligk [2]

[1] *Resident of Radiology*

[2] *Professor of Department of Radiology, University Hospital of Bern, Inselspital*

** Corresponding author: Abolfazl Shiravikhoozani, Resident of Radiology. E-mail: mediresearch12@gmail.com*

Abstract:

Objectives: the aim of our study was to evaluate serial NCCT for detection of hepatic and splenic iron deposition in AML patients with prior blood transfusion.

Methods: 68 blood transfused AML patients underwent serial NCCT of chest (because of suspicion to fungal lung infections) by CT scanner (SOMATOM Definition, Siemens Medical Solutions, Germany). HU values obtained from CT scans were statistically correlated to calculate significance levels. Table times were measured.

Results: in all patients CT scans were successfully acquired.

HU values of Hepatic and splenic correlated strongly with amount of blood transfusion and time of transfusion.

Conclusion: Serial NCCT seems to be possible for evaluation of hepatic and splenic iron deposition in AML patient with prior blood transfusion.

• 1150

PET/MR; CLINICAL APPLICATIONS, TECHNICAL CONSIDERATIONS, AND PITFALLS

Majid Chalian [1,*]; Esben Vogelius [1]; Peter Faulhaber [1]; Pablo Ros [1]; Karin Herrmann [1]

[1] *University Hospitals, Case Western Reserve University, OH, USA*

*Corresponding author: Majid Chalian, University Hospitals, Case Western Reserve University, OH, USA. E-mail: m.chalian@gmail.com

Abstract:

1- Background: PET/MRI is a new hybrid modality proved to be promising in various oncologic applications. This state-of-the-art imaging modality is increasingly being used in miscellaneous clinical settings. However, both clinical utilities and technical optimizations are still an ongoing process. Other potential clinical applications such as in cardiac imaging and neuroimaging are also being explored. This presentation aims to review the current status of MET/MRI, its potential clinical applications, technical considerations, and also limitations and pitfalls of this imaging modality.

2- Technical considerations

3- Oncologic Applications:

3-1- Pediatric Malignancies

3-1- Musculoskeletal Malignancies

3-3- Neurological Malignancies

3-4- Head and Neck Malignancies

3-5- Lung Cancer

3-6- Hepatic Malignancies

3-7- Colorectal Malignancies

3-8- Gynecological Malignancies

3-9- Lymphoma

3-10- Prostate Cancer

4- PET/MR in adjunct with treatment planning

5- Limitations and pitfalls

6- Conclusion: PET/MRI is a one-stop-shop hybrid modality with reduced ionizing radiation compared with PET/CT. Applications of PET/MRI are not to compete with PET/CT but to generate or identify complementary indications where PET and MRI are integral parts of the work-up. Also, further implementation of cohesive multifactorial multiparametric information and investigation of novel biomarkers could be considered as potential future applications of hybrid PET/MRI studies.

• 1151

RARE CASES BY IMAGING

Jalal Jalal Shokouhi [1,*]; Ali Akbar Khadem; Shahyar Pashaei

[1] Jaam E Jam Medical Center, Tehran, Iran

* Corresponding author: Jalal Jalal Shokouhi, Jaam E Jam Medical Center, Tehran, Iran. E-mail: jalaljalalshokouhi@hotmail.com

Abstract:

Background: rare diseases or cases are surprising for medical doctors and a numerous bad chance to patient and also it is a challenge for interns and residents.

Methods: findings in these patients are diagnosed by radiology and imaging as a documentary medical show in diagnosis and in post treatment steps. All modalities can use for demonstration of rare cases.

Results: cases are exostosis of C2 with cord complication, forms of brain TB mimicking tumor, inferior turbinate Concha bullosa, brain fungus versus tumor, hydatid of brain and heart in multivesicular form, microadenoma above 10mm size, corda bifida with septal diastematomyelia looking double cord, fracture demonstration by MRI when X-ray is normall and so on.

• 1152

EVALUATION OF THYROID NODULE SHAPE IN SONOGRAPHY AND PREDICTION OF MALIGNANCY IN PATIENTS WITH THYROID NODULES

Seyed Mohamad Sakhaei [1,*]; Somaie Abbaspour [1]; Mehdi Hasanzadehhosseinabadi [1]

[1] Mazandaran Medical University, Mazandaran

* Corresponding author: Seyed Mohamad Sakhaei, Mazandaran Medical University, Mazandaran. E-mail: yaghobsakhaei@yahoo.com

Abstract:

Background: the purpose of this study is to evaluate sensitivity and specificity of thyroid nodules shape leading malignancies and their predictive value in benign or malignant thyroid nodules. And also answer the question that is it possible to replace FNA and forbear the application of FNA?

Methods: this study is based on diagnostic test and sample size including possible loss is 413 nodules in Sari Imam Khomeini hospital and clinic of radiology in 2014 - 2015. Sonography was performed by Zonar-Aloka with 7.5 megahertz linear probe, and FNA was performed by 5 mL or 10 ml syringe with needle number 21 or 22. When lams prepared Pathofix fluid was sprayed and after Papnicolaou staining evaluated by pathologists.

Results: our study determined that 4.4 % of ovoid/ Round nodules, 22.9 % of irregular nodules and 75 %

of taller than wide nodules have malignant pathological features. So the shape of nodules has significant relationship with risk of malignancy ($P < 0.001$).

The risk of malignancy is 10.1 times more in Taller than wide and 6.25 times more in irregular nodules. The sensitivity, accuracy, positive and negative predicitive values of taller than wide were 59.4 %, 73.1 %, 96.6 %.

Conclusion: our data show that no single parameter, satisfactorily identifies a subset of patients to be electively investigated by FNAC. We concluded that taller than wide with at least one of US features is today the best compromise between missing cancers and cost-benefit.

• 1153

KNEE OSTEOARTHRITIS: SERUM HS-CRP LEVELS DO NOT CORRELATE WITH CAROTID INTIMA-MEDIA THICKNESS

Sakineh Dehghani [1,*]; Ehsan Bahramali

[1] *Shiraz University of Medical Sciences, Shiraz, Iran*

[*] *Corresponding author: Sakineh Dehghani, Shiraz University of Medical Sciences, Shiraz, Iran. E-mail: dehghanis90@gmail.com*

Abstract:

Background: knee osteoarthritis (KOA) is a prevalent morbidity which is associated with increased cardiovascular (CV) mortality. Any means to add to the risk stratification strategies especially prior to the total arthroplasty operations is of great applicability in terms of patient safety and cost reduction. We investigated the correlation between serum high sensitivity C-reactive protein (hs-CRP) levels, as a measure of CV risk, and common carotid intima-media thickness (IMT), as the cursor of underlying atherosclerosis.

Methods: in a cross sectional study, serum hs-CRP levels and common carotid IMT were determined in 68 patients with KOA.

Results: the mean serum hs-CRP level was 1.85 ± 1.98 mg/L and the mean carotid IMT was 0.67 ± 0.16 centimetres with a Pearson's R=0.016 (P = 0.898). Using linear regression models no correlation was found between hs-CRP and IMT.

Conclusion: findings indicate the poor ability of hs-CRP to predict the underlying atherosclerosis in patients with KOA. Although hs-CRP has been shown to be a powerful prognostic tool in general and is associated with increased mortality in patients with KOA, its applicability to predict the atherosclerosis risk especially prior to operation is limited. Further investigation to find the best cost-effective non-invasive indicator of CV risk in patients with KOA is mandatory.

• 1154

ASSESSMENT OF ADHERENCE TO THE STARD STATEMENT FOR THE QUALITY OF REPORTS ON DIAGNOSTIC STUDIES PUBLISHED ON THE IRANIAN JOURNAL OF RADIOLOGY

Fariba Zarei [1,*]; Banafsheh Zeinali-Rafsanjani [2]

[1] *Shiraz University of Medical Sciences, Shiraz, Iran*

[2] *Medical Imaging Research Center*

[*] *Corresponding author: Fariba Zarei, Shiraz University of Medical Sciences, Shiraz, Iran. E-mail: zareifari@yahoo.com*

Abstract:

Background: standards for the Reporting of diagnostic accuracy studies (STARD) statement was developed to improve the accuracy and completeness of reporting of studies of diagnostic accuracy. It allows readers evaluate the internal and external validity and enable readers to assess the potential for bias in the study and the generalizability of the results.

Objectives: up to date, few data exist about the quality of diagnostic accuracy studies in Iran. Therefore, we evaluated the extent of adherence to the STARD for the quality of reports on diagnostic accuracy studies in the Iranian journal of radiology.

Methods: in this cross-sectional descriptive study, we searched Iranian journal of radiology and retrieved all diagnostic accuracy studies for recent 3 years and evaluated their adherence to STARD. We used STARD checklist (version January 2003) available at www.stard-statement.org.

Results: we identified about 14 potential diagnostic accuracy studies meeting our inclusion criteria. In this preliminary study 50% identified the article as diagnostic accuracy study in the title or abstract (MeSH heading sensitivity and specificity). 4% reported details of blinding. 3% had a flow diagram. 38% described the number, training and expertise of the persons reading the index tests and the reference standard. 25% reported definition of cutoffs and/or categories of the results of the index tests

and the reference standard.Only 40% of the reports of diagnostic evaluations reported precision for the estimates of diagnostic accuracy. The occurrence of uninterpretable, indeterminate and intermediate test results were 30%. The report time interval from the index tests to the reference standard was 40%.

Only 40% of articles reported on more than 50% of STARD items, while no articles reported on more than 85%. A flow chart was presented in 3 articles. Assessment of reporting on individual items of the STARD statement revealed wide variation, with some items described in 15% of articles and others in 100%. Mean STARD score (0 - 25 points available) was 14.8 (range, 5.5 ± 19.5).

Conclusions: these findings show non-adherence to the STARD.The authors, reviewers, and editors should pay more attention to reporting by checking STARD statement items and including a flow diagram to represent study design and patient flow.

• 1155

INTER-OBSERVER VARIABILITY OF BREAST COMPOSITION EVALUATION IN MAMMOGRAPHY

Zeinab Gholami [1,*]; Somayeh Gholami Bardeji [2]; Mahdi Dodangeh; Fariba Zarei; Rezvan Ravanfar Haghighi; Sepideh Sefidbakht

[1] *Radiology Department, Shiraz University*

[2] *Postdoc*

* *Corresponding author: Zeinab Gholami, Radiology Department, Shiraz University. E-mail: gholamiz@sums.ac.ir*

Abstract:

Objectives: to evaluate the inter-observer variability of breast composition categorization according to the American college of breast imaging reporting and data system 2013 (BI-RADS 2013).

Methods: 400 mammograms were reviewed by three radiologists (two experienced breast radiologists and one new graduated) on breast composition determination regarding the BI-RADS 2013. The inter-observer variability was determined by Fleiss's test.

Results: statistical analysis showed a moderate agreement between the observers (k: 0.56). The agreement was substantial between observers A and B (k: 0.68); moderate between the observers A and C (k: 0.52); and moderate between the observers B and C (k: 0.46). The most inter-observer agreement was seen in composition A (k: 0.65) and D (k: 0.59) and the least agreement in composition B (k: 0.5) and C (k: 0.57).

Conclusion: although guideline is available for breast composition determination, inter-observer variability still exists. Correlation with supplementary ultrasound is helpful in final management of many patients with breast composition C and D. In this regard, for better medical team training and resource allocation comparison of radiologist interpretation and automated breast densitometry will be reported.

Keywords: BIRADS 2013; Interobserver Variability; Breast Composition

• 1156

DILEMMA OF COMMON BILE DUCT DILATATION IN OPIUM-ADDICTS: A POPULATION-BASED STUDY ON PREVALENCE AND CLINICAL OUTCOME

Amir Reza Radmard [1,*]; Faezeh Khorasanizadeh [1]; Hossein Poustchi [2]; Soheil Kooraki [1]; Babak Mirminachi [3]; Maryam Sharafkhah [3]; Elham Jafari [3]; Amir Pejman Hashemi Taheri [1]; Rasoul Sotoudehmanesh [3]; Mehdi Mohamadnejad [3]; Reza Malekzadeh [3]; Shahin Merat [3]

[1] *Department of Radiology, Shariati hospital, Tehran University of Medical Science*

[2] *Liver and Pancreatobiliary Diseases Research Center, DDRI*

[3] *Digestive Diseases Research Institute, Tehran University of Medical Sciences, Tehran, Iran*

* *Corresponding author: Amir Reza Radmar, Department of Radiology, Shariati hospital, Tehran University of Medical Science. E-mail: amir.radmard@gmail.com*

Abstract:

Background: dysfunction of the sphincter of Oddi is one of the well-known effects of narcotic agents.

Objectives: to evaluate the association of various opium-related factors with common bile duct (CBD) diameter in opium users in a population-based setting and investigate the clinical importance and long-term outcome.

Methods: participants were randomly selected from Golestan Cohort study. Opium consumption data such as type of opium, duration of consumption, route of administration and cumulative dose were recorded. CBD diameter was measured by ultrasound. Transient elastography was also performed at enrollment and three years later. Participants were followed for at least 5 years.

Results: a total of 1599 individuals, aged above 50

years, were enrolled. 167 were opium addict. CBD diameter was significantly higher in opium addicts compared to controls (Mean ± SD: 5.54 ± 1.95 vs. 4.74 ± 1.34 mm, P < 0.001). This difference was noted with all types of opium mostly by heroin (Coefficient: 2.75; 95% CI = 2.00-3.50, P < 0.001). Ingestion of opium caused greater CBD dilatation than inhalation (Coefficient: 1.16; 95% CI = 0.05-2.27, P = 0.04 vs. Coefficient: 0.98; 95% CI = 0.75-1.20, P < 0.001). Among opium users, no significant association was found between CBD diameter and cumulative dose and duration of consumption. Opium users had significantly lower serum aminotransferase, lipid profile and frequency of fatty liver but higher alkaline phosphatase and gamma-glutamyl transferase levels. Linear regression analysis of transient elastography results did not show any association between fibroscan score change and CBD diameter. No major related malignancy was seen during follow-up.

Conclusions: this study strengthened the evidence on the association of opium use with increased CBD diameter in a population-based setting without significantly increased risk of pancreaticobiliary malignancies or liver fibrosis. We cautiously suggest that opium-induced CBD dilatation may not require further diagnostic work-up.

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NEW MOLECULAR IMAGING METHODS IN BREAST CANCER DETECTION AND CHARACTERIZATION

Tofigh Janeh [1,*]

[1] *Shahid Beheshti University of Medical Sciences, Tehran, Iran*

[*] *Corresponding author: Tofigh Janeh, Shahid Beheshti University of Medical Sciences, Tehran, Iran. E-mail: tofighjaneh@sbmu.ac.ir*

Abstract:

Background: breast cancer is the most common cancer among women. The lifetime risk for the development of breast cancer is currently 1 in 8 (12%) in the developed world. Breast cancer is the second leading cause of death for women worldwide and it affects > 8% of women during their lifetime. Early detection is the key to improving breast cancer prognosis since the earlier the cancer is detected, the earlier proper treatment can be provided.

Conventional: conventional diagnostic tools for breast cancer detection, including mammography, ultrasound (us), magnetic resonance imaging (MRI) and computed tomography (CT scan) that provide largely anatomic in nature, using tissue features such as size, shape, and density to identify breast cancer.

Molecular: molecular imaging including positron emission tomography (PET), single photon emission computed tomography (SPECT), Molecular magnetic resonance imaging (MMRI), optical imaging, and Molecular ultrasound provides noninvasive in vivo information on important biological and molecular events, which can ultimately lead to improved early detection and characterization of therapy response. The goal of molecular imaging is to detect and quantify biological processes at the cellular and subcellular levels in living subjects. With advancements in instrumentation and introduction of novel targeted probes, molecular imaging firmly establishes its role in drug development and in clinical assessment.

Results: Early detection is the key to improving breast cancer prognosis since the earlier the cancer is detected, the earlier proper treatment can be provided.

Conclusion: Molecular detection techniques increasingly allow reproducible clinical imaging of the molecular components of tumor and/or normal tissue in breast. While these are exciting and potentially important advances, much work will be required to identify the technologies that truly increase diagnostic accuracy and improve patient outcomes.

Keywords: Breast Cancer; Molecular Imaging of Breast; Optical Imaging; Molecular Magnetic Resonance Imaging

• 1158

MRI EVALUATION OF FEMALE PELVIC MASSES. HOW TO NAIL IT

Yasmin Davoudi [1,*]

[1] *MUMS*

[*] *Corresponding author: Yasmin Davoudi, MUMS. E-mail: yasmindavoudi@gmail.com*

Abstract:

Female pelvic masses have a broad differential diagnosis, including benign and malignant entities.

Not only familiarity with signal intensity, contrast enhancement and shape of a lesion is very important in interpreting a mass; the location, organ of origin and the clinical history of the patients also

have a tremendous effect on deciding upon the most probable diagnosis.

In this presentation we would give a practical method in reading MRIs in women with a pelvic mass.

We would review the most important mass lesions in the female pelvis which should always be kept in mind.

We would show how choosing the right imaging protocol would affect the diagnostic capability of a radiologist when facing such a lesion.

Then through a series of cases we would focus on the different signal intensity, contrast enhancement and shape of the various pelvic tumors.

We would also discuss the importance of the realizing the exact site of origin of the mass and review the important points that would help a radiologist to correctly localize the tumor.

At the end we would emphasize the importance of patients' history in narrowing the differential diagnoses and try to give a protocol that would cover every aspect of an MRI in a patient with a pelvic mass.

• 1159

COMPARISON OF DIGITAL MAMMOGRAPHY AND DIGITAL BREAST TOMOSYNTHESIS IN BREAST CANCER DETECTION

Ammar Nabiloo [1,*]; Ali Ghafari [2]

[1] *Tabriz University of Medical Sience*

[2] *Tabriz Paramedical School*

* *Corresponding author: Ammar Nabiloo, Tabriz University of Medical Sience. E-mail: ammarnabiloo@gmail.com*

Abstract:

Background: digital mammography (DM) is widely used for breast cancer screening and has been shown to reduce breast cancer mortality rates but it has some limitations. Digital breast tomosynthesis (DBT) is a three-dimensional imaging technique and images the breast with multiple low dose exposures. It remove DM limitations. It seems that DBT does not apply to the assessment of micro calcifications. Combination of DBT and DM seems to improve detection but it may cause extra dose problems. Here we comparison to know which one have better cancer detection.

Methods: first we take our search in PubMed, according to them: Woo Jung Choi et al study 35 women (age range: 50 - 80) who underwent both DBT and DM. G.Mariscotti et al use 83 mammographic examinations of women with 107 newly diagnosed invasive lobar cancer.

Results: mammographic screening has shown clinical effectiveness, but it has been criticized for false-positive examinations and some other problems. Number of detected lesions including calcification didn't show big difference between DBT and DM. Mass without calcification was much better detected and less number of lesions was assessed as asymmetry on DBT. The decrease in recall with DBT implementation was more pronounced among women with less dense breasts. DBT may perform better clinically than 2D mammography. Mammography reading based on DBT as an adjunct to DM significantly improved the interpretive accuracy compared to reading based on standard DM alone. The radiation dose of tomosynthesis was equal or higher compared to that DM. Use of DBT in combination with 2D DM increases the radiation dose that a patient receives relative to DM alone. Synthesized 2D images which are approved by the food and drug administration of USA, requires no additional radiation and shows comparable performance to DM.

Conclusion: DBT is more accurate than DM. This is because of the tissue overlapping removal by DBT. Detecting micro-calcifications similarly is better in digital mammography. Adding DBT to DM can improve the cancer detection. But this can increase the patient dose, to solve this problem we can use 2D synthesized images which came from processing the DBT data.

• 1160

PET-CT-MRI HYBRID IMAGING

Ramesh Mathur [1,*]

[1] *Qazvin Medical University*

* *Corresponding author: Ramesh Mathur, Qazvin Medical University. E-mail: dr_ramesh_mathur@yahoo.com*

Abstract:

This article is to appraise and Inform in nutshell to Radiologists that

1- PET CT ior PETMRI or any Hybrid imaging system is our domain /may be in collaboration but we should prevail.

2- Its better to have basic and primary knowledge and /or information.

3- Its time that Radiologists must obtain subspeciality NOT VICE VERSA.

4- Any imaging modality with roentegen X-rays is radiologists domain even if it has other components. We should master it, we have lost plenty of territory already to clinical invaders such as O/G -Neurologist, Neorosurgeon, Urologist, Intrnists.who are sitting on the table to grab our hard earned, hard researched bread. Its not impossible with the entry of private health care providers we may face poor working and financial condition as we will be on the opposit side of policy makers, financial institutions, insurance Cos, Beurocrats, And Clinicians.

• 1161

IDIOPATHIC GRANULOMATOUS MASTITIS: IMAGING FEATURES AND ACCURACY OF ULTRASOUND IN THE DIAGNOSIS

Donya Farrokh [1,*]; Bita Abbasi [1]; Ali Alamdaran [1]; Masoud Pezeshki Rad [1]

[1] *Mashhad University of Medical Sciences, Mashhad, Iran*

[*] *Corresponding author: Donya Farrokh, Mashhad University of Medical Sciences, Mashhad, Iran. E-mail: farrokhd@mums.ac.ir*

Abstract:

Objectives: idiopathic granulomatous mastitis (IGM) is a rare, benign inflammatory disease of the breast. The purpose of this study is to review the imaging findings of IGM with clinical and pathological correlation.

Methods: a retrospective study of 120 patients with IGM was performed from 2005 to 2015. The diagnosis of IGM was confirmed by core needle biopsy and pathological examination in all cases. Clinical presentation, mammographic and ultrasound findings were included in this analysis.

Results: one hundred and twenty cases of IGM were identified with mammographic and ultrasound results available for review. The most common presenting symptom was a palpable lump in the breast. At mammography, IGM was most commonly presented with focal asymmetry. The most common ultrasound feature was a hypoechoic mass with heterogeneous internal echoes and irregular or angular margins. Other ultrasound features include perilesional edema, fluid collection with floating internal echoes, intercommunicating channels between the breast masses, and sinus tracts. Whenever all of these sonographic findings are seen, the accuracy of ultrasound diagnosis increases to 98%.

Conclusion: IGM is a rare inflammatory lesion of the breast that may mimic breast cancer and breast abscess, both clinically and radiologically. Awareness of this disease is important for clinicians and radiologists to prevent delayed treatment or unnecessary breast surgery.

• 1162

A MAN WITH DISABLING LOW BACK PAIN: ECHINOCOCCUS OF THE SACRUM

Bita Abbasi [1,*]; Farrokh Seilanian Toosi [1]; Reza Akhavan [1]; Sirous Nekooei [1]

[1] *Mashhad University of Medical Sciences, Mashhad, Iran*

[*] *Corresponding author: Bita Abbasi, Mashhad University of Medical Sciences, Mashhad, Iran. E-mail: abbasib@mums.ac.ir*

Abstract:

Background: Echinococcosis (also commonly referred to as hydatid disease or hydatidosis) is a parasitic infection that is still common in many parts of the world. Regions endemic for the infection include some areas of Africa, Europe, Asia, the Middle East, and Central and South America.

Bone involvement is a rare occurrence (0.5% - 4%), and typically presents as multiloculated cysts in the vertebral body, with disk space sparing. Spinal involvement is seen in 30% - 50% and pelvic involvement in 20% of these cases.

Case presentations: a 61-year-old male presented to the emergency department with persistent and severe low back pain. The patient also had a history of low back pain in the past 6 months. He reported a previous diagnosis of multiple renal stones and was scheduled for a percutaneous nephrostomy within the next 2 weeks.

On initial evaluation the patient was afebrile with stable vital signs. No costovertebral angle tenderness was present. There were no radicular symptoms or focal neurological findings. Midline tenderness was detected in the lower lumbar and sacral area.

An abdomino-pelvic computed tomography (CT) scan showed multiple renal stones in both kidneys (not shown). There was also an expansile lytic lesion with areas of cortical disruption in the sacral bone. A few bony trabeculae were seen within the lesion (Figure 1). The location of the lesion correlated with the point of maximum tenderness on physical examination. Magnetic resonance imaging (MRI) was ordered to evaluate the extension of the lesion and

soft tissue involvement. The MRI results revealed an expansile lesion with high signal intensity in T2-weighted images and low signal intensity in T1-weighted.

• 1163

A YOUNG WOMAN WITH PUFFY FACE

Bita Abbasi [1,*]; Reza Akhavan [1]; Hamidreza Reihani [1]; Vahid Mahmoodi [1]; Masoud Pezeshki Rad [1]

[1] *Mashhad University of Medical Sciences, Mashhad, Iran*

[*] *Corresponding author: Bita Abbasi, Mashhad University of Medical Sciences, Mashhad, Iran. E-mail: abbasib@mums.ac.ir*

Abstract:

A 19-year-old woman presented with a puffy face and neck 3 days after a go kart accident in which her scarf was stuck in a tire and wrapped around her neck. Immediately after the accident, the patient had no complaint except vague anterior neck pain, so she refused to seek medical help. In the following 3 days, a bruise appeared on the anterior aspect of her neck, she noticed gradual puffiness and dyspnea (Figure 1A), and crepitus was present over the face, neck, chest wall, and upper abdomen on palpation. Computed tomography (CT) scans of the cervical and thoracic regions were ordered.

Discussion: on the CT scan, extensive subcutaneous emphysema was noted and air was introduced and dissected into the cervical fasciae, mediastinum, peritoneum, and even retroperitoneum (Figure 2). Bilateral pneumothorax was also evident (Figure 2). A radiologist reviewed the images to see if she could find the source of emphysema. On axial and sagittal multiplanar reformatted images, she noticed an anterior tracheal defect at the same level of the superficial ecchymosis (Figure 3).

• 1164

COLOR DOPPLER EVALUATION OF PORTAL HYPERTENSION

Abolhasasan Shakeri Bavil [1,*]; Javad Jalili

[1] *Radiology*

[*] *Corresponding author: Abolhasasan Shakeri Bavil, Radiology. E-mail: shakeri.ab@gmail.com*

Abstract:

Doppler sonography is the initial investigation of choice for evaluating hepatic vasculature. Three major vessels that must be evaluated at liver Doppler are the hepatic arteries, portal and hepatic veins. In hepatic parenchymal disease abnormal patterns are seen in these vessels and for understanding of abnormal patterns, one must know the normal waveforms and physiology of their generation. Colour Doppler in portal hypertension provides information about the flow direction in portal vein and its branches and also location and size of portal-systemic collaterals.

In normal hepatic artery, pulsatile low resistance waveform is seen, that shows forward flow throughout the cardiac cycle and multiple pathologic conditions could influence the hepatic artery waveforms, more commonly with elevation or decrease of its resistance.

The normal portal venous waveform is hepatopetal and show mild undulations. Abnormal patterns are included: increased pulsating, slow flow, reverse or absent flow.

The normal hepatic venous waveforms are hepatofugal and phasic. Abnormal patters are pulsatile waveforms, decreased phasicity and absent flow.

In Portal Hypertension, blood that normally flows through the cycle is diverted into systemic veins because of increased resistance to portal venous flow. Demonstration of portosystemic collaterals is diagnostic of portal hypertension. Portosystemic collaterals form when the resistance to blood flow in the portal vessels exceeds the resistance to flow in the small communicating channels between the portal and systemic circulations. Several major sites of portosystemic venous collaterals occur. Those commonly identified on Doppler ultrasound are: Gastroesophageal or short gastric, paraumbelical, splenorenal, gastrorenal and gall bladder.

The aim of this review is to describe information about normal and abnormal flow and waveform characteristics in portal vein and its branches, hepatic veins and arteries and also location and size of portal-systematic collaterals.

Keywords: Portal Hypertension; Hepatic Artery; Portal Vein; Hepatic Vein

• 1165

EFFECT OF THE EXTRA CORPOREAL SHOCK-WAVE LITHO TRIPSY ON INTRARENAL ARTERIES RESISTIVE INDEX

Jafar Nuri [1,*]; Lida Peivandi [1]

[1] *ZAUMS*

* Corresponding author: Jafar Nuri, ZAUMS. E-mail: jafarnuri58@gmail.com

Abstract:

Background and Objective: since 1980, the first extracorporeal shock-wave lithotripsy (SWL) was introduced which brought a revolution in the treatment of urinary tract stones. Some of the effects and side effects of this method is still unknown. This study aimed to investigate the changes in vascular resistance index (RI) in ipsilateral and contralateral kidney, as well as its relations to time these changes was carried out.

Methods: The RI of the inter-lobar renal arteries were measured for the regions near the calculi, far from it and contra-lateral kidney, before, one hour after, and 2 weeks after SWL. Changes in the RI values and their relations with the sex and age were evaluated and analyzed by SPSS.

Results: The median age of the patients was 46.5 and they were 56.7% men and 43.3% women. The median calculus size was 11.8 mm. The RI near and remote from the calculus increased one hour after SWL (P = 0.003), but returned to the pre-SWL values 2 weeks later. The RI values of contralateral kidney did not change significantly.

Conclusions: this study suggest that SWL of the kidney calculi changes the RI only in ipsilateral kidney which is immediate, transient, and after 2 weeks returns to pre-SWL value.

Keywords: Extracorporeal Shock Wave Lithotripsy (SWL); Vascular Resistance Index; Kidney Calculi

1166

TESTING THE PERFORMANCE OF MAMMOGRAPHY UNIT WITH NATURAL SUBSTANCES AS PHANTOM

Rezvan Ravanfar Haghighi [1,*]; Mohammad Esmaiel Fazilat Moaddeli [1]; Sepideh Sefidbakht [1]; Fariba Zarei [1]; Sabya Sachi Chatterjee [2]; Reza Jalli [1]; Vani Varadhan Chatterjee [2]; Somayeh Gholami Bardeji [3]; Bijan Bijan [4]

[1] Shiraz University of Medical Sciences

[2] Indian Institue of Sciences

[3] Postdoc

[4] University of California Davis Medical Center, USA

* Corresponding author: Rezvan Ravanfar Haghighi, Shiraz University of Medical Sciences. E-mail: ravanhaghighi@yahoo.com

Abstract:

Background: breast cancer is one of the major causes of women's mortality rate in Iran. Screening mammography has been shown to be able to detect breast cancer at earlier stages and therefore, potentially can save the lives of large number of women by earlier detection and earlier commencement of therapy. Understandably, image quality of mammograms is of paramount importance in reliability and accuracy of detection of breast cancer. While breast tissue composition, such as in fibro-glandular tissue, is similar to that of cancerous cells, micro-calcification of very small but finite size can also be visualized. Thus a mammography system has to be able to produce high contrast as well as high spatial resolution images. It is necessary, that all mammography systems have to be monitored regularity to verify the image quality. This task is done by the standard test phantoms which are commercially available but most mammography departments may not be able to afford purchase or update on regular basis. The aim of this study is to test the performance of the mammography systems by standard test phantom and subsequently evaluate the possibility of using low cost naturally available materials as phantom to mimic breast tissues.

Methods: the mammography unit at the main hospital affiliated to Shiraz University of Medical Sciences was selected for this study. Signal-to-noise ratio (SNR) and contrast-to-noise ratio (CNR) of this machine has been checked over a period of 12 months, on a monthly basis, utilizing the manufacturer guidelines, employing the provided phantom by the manufacturer. Also multifunction meter was used to verify the accuracy and reproducibility of the kVp, linearity of the radiation output and half value layer. Accreditation phantom (CIRS) is used to evaluate the details similar to the breast compositions. Three normal sized boiled eggs, containing white part and yolk were used as natural phantoms to test the contrast and spatial resolution of the mammography unit. Standard NIST table was used to calculate the linear attenuation coefficients of white part and yolk at the different kVps which we are using in diagnostic mammography. Very small pieces of egg shell were inserted on the white part of egg to simulate micro-calcification and also to evaluate the spatial resolution of the mammography unit.

Results: the results of SNR and CNR showed the stability of these two factors within the acceptable range over a reasonable period of time (12 months). The kVp accuracy and reproducibility, both were acceptable being within 10% margin of error (or range)

and 0.02 respectively. A linear relationship has been noted between the x-ray output and mAs, and also the HVL at different kVps were found to be within the acceptable range. The image of accreditation phantom shows all details within the predefined range of manufacturer guideline. It was found that the linear attenuation coefficients of white part and yolk are very close to each other and are very similar to the values measured for the fibro-glandular tissues and various breast masses, at the kVps used for diagnostic mammography. The images of boiled egg showed white part and yolk of egg as well as demonstrated the fine particles of internal chips of egg shell.

Conclusion: our experiment showed that boiled egg can be used as a low-cost natural phantom in testing the image quality of mammography systems. It is cheap and readily accessible. The test can be operated simply by technologists, at a minimum cost.

Keywords: Mammography; Image Quality; Phantom

• 1167

EVALUATION OF PET ON THE DELINEATION OF HYPOXIA FOR OPTIMIZING RADIATION TREATMENT IN GLIOBLASTOMA MULTIFORME TUMORS

Mohsen Shoja [1,*]; Mojtaba Rokni [2]

[1] *Faculty of Paramedicine, Semnan University of Medical Sciences, Semnan, Iran*

[2] *Mazandaran University of Medical Sciences, Mazandaran, Iran*

[*] *Corresponding author: Mohsen Shoja, Faculty of Paramedicine, Semnan University of Medical Sciences, Semnan, Iran. E-mail: moh3n_sh_66@semums.ac.ir*

Abstract:

According to the world health organization (WHO), glioblastoma multiforme (GBM) is aggressive cancer and malignant tumor in the brain, causing a large mortality in adults. The current standard treatment is surgical followed by radiotherapy and chemotherapy agent temozolomide but increasing the survival of patients is one of the challenges for oncologists. Radiation treatment planning is dependent on imaging that is based on magnetic resonance imaging (MRI) or computed tomography (CT) to reveal the morphological information of the brain and positron emission tomography (PET) to measuring the metabolism of tumor to determine target volumes more precisely. (18F)-fluorodeoxyglucose (FDG) was the first tracer for tumor grading of cerebral but the rate of glucose utilization as imaged by FDG uptake in normal brain tissue is high. So amino acid (AA) tracers, such as (11C) methionine (MET), are known as a beneficial choice for gliomas, because of its more sensitivity and accuracy, a better delineation of the target volume might lead to an improvement in treatment. One of the key biological features to a novel approach to therapy is hypoxia. Since hypoxic tumor cells are resistant to radiation therapy and chemotherapies. Some particular PET biomarkers for tumor hypoxia and proliferation are interested in gliomas because the identification of such biological changes can help in optimizing radiation therapy. Hypoxia is associated with tumor progression and resistance to radiotherapy. (18F) uoromisonidazole (FMISO) and (18F) fluoroazomycin (FAZA) are the first and most specific hypoxia PET tracers. Hypoxia is known to be an important prognostic factor for long-term survival and local tumor control. Evaluation of the extension and location of tumor hypoxia would provide additional information that could be integrated into strategies to improve the outcome of radiobiology in treatment and to add specific antihypoxia drugs. In radiotherapy, knowing the precise location of hypoxic areas is compulsory.For this reason, variety of efforts are developed procedures for measuring oxygen levels in tumor tissue. Recently, positron emission tomography with FMISO as hypoxia-sensitive radioisotope tracers has succeeded in detecting tissue hypoxia.

• 1168

ROLE OF PHASE SENSITIVE INVERSION RECOVERY COMPARED WITH STIR AND T2W TSE IN DETECTION OF CERVICAL CORD MULTIPLE SCLEROSIS LESIONS

Zahra Abidi [1,*]; Fariborz Faeghi [2]; Mohammad Sakhaei [1]; Jamil Abdolmohamadi [3]

[1] *Social Security Organization*

[2] *Shahid Beheshti University of Medical Sciences*

[3] *Kurdistan university of Medical sciences*

[*] *Corresponding author: Zahra Abidi, Social Security Organization. E-mail: abidi4805@sbmu.ac.ir*

Abstract:

Multiple sclerosis (MS) is a chronic inflammatory disease in brain and spinal cord. Spinal cord MS lesions usually are accompanied by brain lesions. But, about 20% of patients with spinal cord lesions have no plaques in their brain. T2W-TSE, STIR (short TI in-

version recovery) sequences routinely are used in imaging study of MS patients to depict spinal cord lesions.

We aimed to investigate the importance of PSIR sequence in detection of MS lesions in spinal cord.

Methods: fifteen patients with MS underwent on a 1.5 Tesla Philips (Ingenia) MRI scanner using protocols included T2W-TSE, STIR and PSIR sequences in the sagittal plane with 3 mm thick slices.

Results: the contrast between MS lesions and surrounding tissue in spinal cord was significantly higher in PSIR. Radiologist observed better delineation of lesions in PSIR compared to T2W-TSE and STIR sequences. The lesions in PSIR were shown more clearly.

Discussion: spinal cord MRI would be beneficial for early diagnosis and recognizing clinical subtypes of MS due to high spread of lesions in patients with definite MS.

STIR is still considered as a gold standard sequence in detection of cervical cord lesions. But, these advantages of PSIR persuaded us to recommend PSIR as a complementary sequence to detect cervical cord lesions.

• 1169

CARDIAC CALCIFICATION

Marjan Amjadi [1,*]; Bijan Bijan [2]

[1] *Rafsanjan University of medical Sciences*

[2] *University of California, Davis Medical Center*

[*] *Corresponding author: Marjan Amjadi, Rafsanjan University of medical Sciences. E-mail: Mrjnamjadi@yahoo.com*

Abstract:

Cardiac calcifications may be distinguished based on their characteristic locations and shapes. Often these calcifications are pathognomonic for a particular disease and the radiologist may be the first to offer a diagnosis.

Recognizing cardiac and pericardial calcifications will guide patient care as each has a different etiology, treatment and outcome.

A. Endocardial Calcifications

- Valvular calcification, Left Heart

- Aortic Valve calcification, is detected most frequently and is a marker for significant aortic stenosis. Three patterns of calcifications can be described: linear in commissural calcification, ring calcification, plaque calcification.

The aortic valve is in the center of the cardiac silloute and is over the spine on AP chest X-ray. In lateral one, the valve is located above a line drawn from the tracheal bifurcation to the anterior sternodiaphragmatic angle and in the midway of anterior and posterior heart borders.

- Mitral valve calcification, not common to find on chest radiographs. Calcification may appear nodular or amorphous. If draw the line from tracheal bifurcation to anterior sternodiaphragmatic angle, it is located below it in lateral CXR.In frontal view, it is to the left of spine and lower than aortic valve calcification. This is almost always caused by rheumatic heart disease.

- Annular Calcification

This calcification is a degenerative and aging process and by 45 years, calcium deposits are demonstrable. Calcification of mitral annulus is usually asymptomatic but can cause arrhythmia. It is present as a reverse C in left lateral CXR due to lack of calcification in its central part adjacent to aortic root.

Calcification of the tricuspid annulus is rare.

- Tumor and thrombus calcifications

5% - 10% of myxomas contain calcifications and 75% of myxomas are located in the left atrium. Metastatic tumors can involve intracardiac chambers. Also, infectious causes like hydatid cysts and tuberculomas can cause calcified cardiac lesions. Calcific amorphous tumor of the heart can be mistaken by calcified myxoma in imaging studies

- Coronary artery calcification

Calcifications are more frequently seen in the left coronary artery than in the right and they are greatest in the proximal parts of coronary arteries. They represent as plaque or double lines in PA CXR medial to left atrial appendage (Coronary arterial calcification triangle). The optimal view for detection of both right and left coronary artery is left anterior oblique.

- Valvular calcifications, Right Heart

- Pulmonic valve calcification is rare. This valve is the most cephalad valve of the heart. On AP CXR, it is visible below and medial to the pulmonary trunk border between the spine and left atrial appendage. On lateral one, it is seen in upper anterior part of heart, behind the sternum.

- Tricuspid Valve calcification is also rare. Rheumatic heart, ASD, congenital valve defects and infective

endocarditis are associated with tricuspid calcification.

B- Pericardial calcification

The pericardium most frequently calcifies over the right sided cardiac chambers, over the anterior and diaphragmatic aspects of the heart and in the atrioventricular grooves. Calcifications over the left ventricle and cardiac apex is rare, unless there is more extensive involvement in the other parts of pericardium. This distribution is due to less pulsatility of right sided chambers.

Therefore, pericardial calcifications are right-sided or diffuse over heart but myocardial calcifications are left-sided and more localized. Also, in pericardial one calcification extends over pulmonary outflow which does not occur in myocardial type. Myocardial calcification shows a soft tissue rim of 2 mm in its periphery while pericardial calcifications involves the extreme periphery of heart shadow.

C- Myocardial calcification

This calcification most commonly occurs after myocardial infarction. Calcifications may be thin or thick and is curvilinear. Other causes include trauma, cardioversion, infection and endocardial fibrosis. Calcification of left ventricle aneurysms

- True aneurysms are most commonly resulted from myocardial infarction and occur in apical and anterolateral part of left ventricle. So we can see a localized bulge along the left border of the heart on frontal chest radiographs at the apex or lower lateral border of ventricular contour. On lateral CXR, we have a retrosternal or superior opacity. Myocardial calcification is present in 7% of left ventricular aneurysms.

- Because anterior rupture of left ventricle is fatal and is not contained, pseudoaneurysms are rarely seen anteriorly. Also true aneurysms rarely occur posteriorly. Therefore, a posterior bulge along the border of left ventricle, following an infarction, is an indicator of a false aneurysm.

• 1170

ROLE OF IMAGING IN EMBRYONIC REDUCTION

Mohammad Hashim Wahaaj [1,*]

[1] *Wahaaj Hospital Kabul, Afghanistan*

[*] *Corresponding author: Mohammad Hashim Wahaaj, Wahaaj Hospital Kabul, Afghanistan. E-mail: wahaajhospital@yahoo.com*

Abstract:

In the last one or two decades incidence of multiple pregnancy as a result of assisted reproductive technology (ART) has been increased. Multiple pregnancy has a higher likelihood of obstetric and prenatal morbidity and mortality, especially when more than two fetuses are present. Singleton abortion rate after IVF and embryo transfer is 22%. This risk increases by 20% for each additional fetus. Triplets have a perinatal morbidity and mortality ranging from 5% to 25%. Some 15% of newborns from multiple pregnancies do not survive the infancy period. While 20% of surviving babies show long-term squeal. Given these facts, first trimester embryo reduction may be an effective and safe option. However, psychological, sociological, ethical and religious considerations should be taken into account when measuring the effectiveness of this rescue technique.

• 1171

US OF INFLAMMATORY JOINT DISEASE

Farimah Noorbakhsh [1,*]

[1] *Mashhad University of Medical Sciences, Mashhad, Iran*

[*] *Corresponding author: Farimah Noorbakhsh, Mashhad University of Medical Sciences, Mashhad, Iran. E-mail: fnoorbash@yahoo.com*

Abstract:

Within the past few years, musculoskeletal ultrasound has become an established imaging technique for the diagnosis, treatment and follow up of patients with inflammatory joint disease. This has been made possible through technological improvements resulting in higher frequency probes, some of them specifically designed for small joints. US is most commonly used in the assessment of joint effusions, tendinitis and bursitis and can also be used to visualize other structures, such as articular cartilage and bone surfaces. Owing to the better axial and lateral resolution of US compared to other imaging techniques, even minute bone surface abnormalities may be depicted by US. Thus destructive changes like erosions and reparative/hypertrophic changes on the bone surface may be seen before they are apparent on plain X-rays or even MR imaging. Articular cartilage can be demonstrated with great resolution especially in the knee joint. However, US wave frequencies cannot penetrate into bone, therefore imaging of intra-articular disease is usually not possible.

The real time capability of US allows dynamic assessment of joint and tendon movements, which can often aid the detection of structural abnormalities and impingements. US is particularly useful for the monitoring of treatment. US can also be used for guidance of aspiration, biopsy, and injection treatments.

Newer US techniques being used in evaluation of rheumatologic disease include color and power Doppler imaging, which help in assessment of vascularity and hyperemia as may occur in joint and soft tissue inflammation. To increase further the sensitivity of power Doppler, intravenous bubble contrast agents are under development.

• 1172

QUALITY IMPROVEMENT PROJECT: DESIGN AND IMPLEMENTATION OF PACS INTEGRATED FEEDBACK FROM RADIOLOGISTS TO TECHNICIANS.

Allard Olthof [1,*]

[1] *Treant healthcare group, Netherlands*

** Corresponding author: Allard Olthof, Treant healthcare group, Netherlands. E-mail: a.olthof@treant.nl*

Abstract:

Purpose: feedback is valuable to improve professional skills. Feedback from radiologist to technician helps to improve the quality of radiological examinations. Radiologist do not always provide feedback because of practical issues. In the setting of hospital with 3 separate locations tools are needed to facilitate this feedback. The purpose of this paper is to demonstrate the design and implementation of a PACS integrated feedback system.

Methods: the teaching-file function and the worklist functions of the PACS were adapted. Radiologists provide feedback by adding a label and comments to the examinations. A working agreement was made to promote the usage of the system at radiology department. The coach of the technicians discussed the feedback to ensure maximum learning and quality improvement.

Results: The system allowed radiologist to provide feedback to technicians without interruption of daily workflow. The worklist function allowed easy retrieval of the feedback and comments. Technicians can review the feedback on their own examinations. Group meetings contribute to learn from useful feedback. Periodical reports of the provided feedback can be derived for the departmental management.

Conclusion: PACS integrated feedback is easy to implement and contributes to quality improvement in radiology.

• 1173

SHOULDER JOINT MSK HOW TO DO IT

Mohammad Hashim Wahaaj [1,*]

[1] *Wahaaj Hospital Kabul, Afghanistan*

** Corresponding author: Mohammad Hashim Wahaaj, Wahaaj Hospital Kabul, Afghanistan. E-mail:wahaajhospital@yahoo.com*

Abstract:

Al most all movements are possible at shoulder joint. Due to large number of movements this joint has got complex architecture, i.e. muscle groups, tendons, bursa, capsule and articular surface. Important nerve is also crossing this joint and the upper vessels are also passing near it. X-ray has got limited value and though MRI is a good modality but MRI cost, availability, and luck of movements during the scan makes it second modality for shoulder joint diagnosis. MSK is the modality of choice for diagnosis of shoulder joint pathological problems and can help the doctor to come to a good diagnosis and treat the patient.

• 1174

TESTICULAR VEIN SYNDROME; REVIEW ARTICLE AND NEW ADDITIONS ON THIS VERY RARE ENTITY

Hidayatullah Hamidi [1,*]

[1] *FMIC, Kabul, Afghanistan*

** Corresponding author: Hidayatullah Hamidi, FMIC, Kabul, Afghanistan. E-mail: hedayatullah.hamidi@gmail.com*

Abstract:

Objective: To perform a systematic review of cases published about the extremely rare entity of testicular vein compression on ureter with resultant hydroureteronephrosis and addition of a new case of left side testicular vein syndrome.

Methods: A search of English-language literature through Google Scholar and PubMed was performed up to May 2016 with key phrases of; testicu-

lar vein syndrome, testicular vein compression on ureter, spermatic vein compression on ureter and hydronephrosis caused by testicular vein/spermatic vein. Besides, references of all identified case reports were also reviewed.

The literature was surveyed for clinical presentations, preference of side, involved site, pathological changes and size of testicular vein, changes in affected ureter, grading of resultant proximal hydroureteronephrosis, diagnostic workup, rule of various imaging modalities, treatment approaches and lastly their prognosis.

Results: Seven cases were reported in English literature about this very unusual entity until May 2016; the first case reported in 1975 and the last in 2011.

Four of the cases involved the right side and four the left side (including the present case). In three cases, pathologically altered testicular vein resulted in obstructive uropathy, while in remaining five cases, normal testicular vein was indenting over the ureter anteriorly at the crossing point.

Conclusion: Compression of ureter by aberrant or abnormal testicular vein is a rare cause of obstructive uropathy in male patients with only seven cases reported in English literature. Authors present the 8th case of this rare entity.

Keywords: Testicular Vein Syndrome; Ureteral Obstruction; Aberrant Abdominal Vessels

• 1175

HOW TO ADD VALUE TO NEURORADIOLOGY REPORTING BY FEEDBACK FROM NEUROLOGISTS

Allard Olthof [1,*]

[1] *Treant healthcare group, Netherlands*

[*] *Corresponding author: Allard Olthof, Treant healthcare group, Netherlands. E-mail: a.olthof@treant.nl*

Abstract:

Background/objectives: feedback is valuable to improve professional skills. In radiology feedback can be from radiologist to radiologist, from radiologist to technologist, and from referring physician to radiologist. This last type of feedback is essential for radiologist to make actionable reports and to be patient-centred.

The purpose of this paper is to describe the results of the usage of a questionnaire to collect feedback from neurologist regarding their opinion on radiology reporting and their experience with radiology.

Methods: a questionnaire was developed to collect information from neurologists. The items of the survey include the professional radiology experience of neurologists, their knowledge of radiology facilities, their self-confidence in reading MRI and CT, their scores for several items of radiology reports, and their preferences regarding radiology education.

Results: until now the survey was conducted among neurologists in the Netherlands and among neurologists in Azerbaijan. The online and paper versions of the survey had different response rates. The survey results gained insight in regional differences in radiology experience of neurologists, also related to the availability of healthcare resources. Subgroup analyses helped to identify report items that need improvement, for example the importance to answer the question of the referring physician in the radiology report.

Conclusion: the questionnaire is suitable to help radiologists to increase their knowledge of their referring neurology colleagues. Radiologists can use this information to adapt their reporting practice and to add value to healthcare.

• 1176

CLASSIFICATIONS OF THYROID NODULES, A COMPREHENSIVE REVIEW OF CURRENT IMAGING GUIDELINES

Afarin Sadeghian [1,*]

[1] *Shahid Beheshti University of Medical Sciences, Tehran, Iran*

[*] *Corresponding author: Afarin Sadeghian, Shahid Beheshti University of Medical Sciences, Tehran, Iran. E-mail: afarin.sadeghian@yahoo.com*

Abstract:

Thyroid nodules are common, found in 50% of cases at autopsy.Most of these nodules are benign and incidence of malignancy is 3% - 7%.Use of thyroid imaging has led to increase discovery of pseudo disease. Thyroid ultrasound helps in characterizing the thyroid nodules as well as adjacent cervical lymph nodes.However,because of lack of familiarity of radiologists with sonographic features and their validities some of malignant lesions could be ignored and some of lesions with low suspicion of malignancy could be undergone unnecessary sam-

pling in everyday practice.The recent-decade studies have proposed thyroid imaging, reporting and data system (TIRADS) for risk stratification of thyroid nodules on sonographic exam.As well,several guidelines such as American thyroid association, society of radiologists in ultrasound and European thyroid association have published.However,these are confusing for practice. We propose a practical classification of thyroid nodules and a comprehensive review of current imaging guidelines.

• 1177

GUIDELINE FOR THYROID NODULE, WHEN TO FOLLOW AND WHEN TO SAMPLE

Afarin Sadeghian [1,*]

[1] Shahid Beheshti University of Medical Sciences, Tehran, Iran

* Corresponding author: Afarin Sadeghian, Shahid Beheshti University of Medical Sciences, Tehran, Iran. E-mail: afarin.sadeghian@yahoo.com

Abstract:

The use of high-resolution sonography has led to increase detection of non-palpable thyroid nodules. Although most of these lesions are benign, concern about their possible malignancy is remained.

Fine-Needle Aspiration (FNA) biopsy is the best single test for discriminating malignant thyroid nodules.

Several studies have assessed the ability of current guidelines for thyroid nodule sampling.Recent studies have documented considerable overlap of sonographic criteria for recommending FNA biopsy of thyroid nodules. We propose a practical guideline for indications of thyroid nodule sampling and follow-up with respect to current imaging guidelines.

• 1178

SYMPTOMATIC POPLITEAL VEIN ANEURYSM: A RARE PRESENTATION - CASE REPORT

Ahmad Rezaee Azandaryani [1,*]

[1] MD, Radiologist

* Corresponding author: Ahmad rezaee Azandaryani, MD, Radiologist, E-mail: ahmad_rezaee20@yahoo.com

Abstract:

Popliteal venous aneurysms (PVAs) are extremely uncommon but potentially highly morbid and fatal. PVAs are usually asymptomatic. Otherwise, they most commonly present primarily with deep vein thrombosis and pulmonary emboli. We report a case of PVA in a previously healthy 38-year-old male soccer player with a history of pain in his posterolateral left knee region and swelling in left popliteal fossa for the past 2.5 years. Because of its potential severe consequences, if left untreated, surgical repair is highly recommended regardless of the patient being symptomatic or not.

• 1179

CLINICAL PRESENTATIONS AND ULTRASONOGRAPHIC FINDINGS OF GENITOURINARY SYSTEM IN PATIENTS WITH NON-TRAUMATIC SCROTAL PAIN: A PROSPECTIVE STUDY

Ahmad Rezaee Azandaryani [1,*]

[1] MD, Radiologist

* Corresponding author: Ahmad Rezaee Azandaryani, MD, Radiologist. E-mail: ahmad_rezaee20@yahoo.com

Abstract:

Background: Scrotal pain is one of the most annoying discomfort which affect a wide spectrum of men in general population who referred to the urology units and leads to significant cost and time wasting. There are numerous conditions causing pain with various clinical and paraclinical features that each of them require its appropriate therapeutic approach.

Objective: In the present study we attempted to determine the clinical nature and sonographic features in patients with non-traumatic scrotal and testicular pain.

Methods: In the current cross-sectional study 620 patients with non-traumatic scrotal pain were evaluated between December 2010 and 2013. They were divided into seven group as age and two groups as pain duration. All patient were given a questionnaire which included demographic and clinical questions of their pain. Then anyone who had the inclusion criteria underwent genitourinary ultrasonography and the findings were collected and evaluated.

Results: Of 323 patients who entered the study, the largest number were in the age group between 35 - 64years (107 person).In most cases (54.8%), the pain pattern was colicky. 178 patients (46.5%) had left tes-

ticular pain and 308 (80.4%) reported to have acute scrotal pain. Ultrasonic evaluations showed that about 156 of patients had no pathological findings that could indicate the cause of the pain and in other cases, varicocele grade 3 (13.3%) was the most common pathologic diagnosis.

Conclusion: These findings suggest that although the sonography is the first choice of evaluating scrotal and genital problems, but it is still not able to detect all causative factors of scrotal pain. Moreover, the loss of pathologic finding in some cases of our study may be due to psychogenic factors, limited sexual activity and clothing and unsuitable sitting positions, which need to more exact evaluations to be confirmed.

Keywords: Genitourinary; Non-Traumatic; Scrotal Pain; Sonographic

• 1180

ILLUSTRATIVE EXHIBITION OF UPPER GASTROINTESTINAL DISEASES

Jahanbakhsh Hashemi [1,*]; Bita Abbasi [1]; Donya Farrokh [1]

[1] *MUMS*

[*] *Corresponding author: Jahanbakhsh Hashemi, MUMS. E-mail: jahanbakhshhashemi@gmail.com*

Abstract:

In this lecture we show all common, less common and rare upper gastrointestinal (UGI) tract diseases which were assessed by barium study. These cases are gathered during a 30-year period of radiological practice in GI tract field. All radiologic examinations are performed in our radiology clinic and department of Imam Reza academic hospital. Some of the cases have been published as papers and case reports.

Here we present an educational exhibit of these cases.

• 1181

PROGNOSTIC VALUE OF CORONARY ARTERY CALCIUM SCORE FOR DETERMINATION OF PRESENCE AND SEVERITY OF CORONARY ARTERY DISEASE

Maryam Moradi [1,*]; Shadi Nouri [1]; Ali Nourozi [1]; Danial Golbidi

[1] *Isfahan University of Medical Sciences, Isfahan*

[*] *Corresponding author: Maryam Moradi, Isfahan University of Medical Sciences, Isfahan. E-mail: moradi@med.mui.ac.ir*

Abstract:

Background: There are controversies regarding the usefulness of coronary artery calcium score (CACS) for predicting coronary artery stenosis. The aim of this study was to determine the prognostic value of CACS for determining the presence and severity of coronary artery disease (CAD) in patients with sign and symptoms of the disease.

Methods: In this cross-sectional study, 748 consecutive patients with suspected CAD, referred for coronary computed tomography angiography (CCTA), were enrolled. The mean CACS was compared between patients with different severities of coronary artery stenosis. The association between CACS and different CAD risk factors was determined as well. Different cutoff points of CACS for discriminating between different levels of coronary artery stenosis was determined using receiver operating characteristic (ROC) curves.

Results: The mean CACS was significantly different between different levels of coronary artery stenosis ($P < 0.001$) and there was a significant positive association between the severity of CAD and CACS ($P < 0.001$, $r = 0.781$). ROC curve analysis indicated that the optimal cutoff point for discriminating between CAD (presence of stenosis) and the non-stenosis condition was 5.35 with 88.6% sensitivity and 86.2% specificity. Area under the curve for different levels of coronary artery stenosis did not have sufficient sensitivity and specificity for discriminating between different levels of CAD severity (< 70%).

Conclusions: The study demonstrated that there is a significant association between CACS and the presence as well as the severity of CAD. CACS could have an appropriate prognostic value for the determination of coronary artery stenosis but not for discriminating between different severities of stenoses.

Keywords: Angiography; Coronary Artery Disease; Multidetector Computed Tomography

• 1182

CHARGE SYNDROME-ACASE REPORT

Azin Shayganfar [1,*]

[1] *Alzahra hospital*

[*] *Corresponding author: Azin Shayganfar, Alzahra hospital. E-mail: Azin_shayganfar@yahoo.com*

Abstract:

CHARGE syndrome is a rare congenital set of symptoms in children due to genetic disorder. It is an acronym consist of C-coloboma of the eyes, H-heart disease, A-atresia of the choanae, R-retarded growth and development, G-genital hypoplasia/genitourinary anomalies and E-ear anomalies and/or hearing loss.all anomalies are not seen in every case and a varied spectrum of associations is seen.

The more recent updated diagnostic criteria which has been published by Verlos in 2005, 8key features are defined (3 major and 5 minor). According to number of major and minor criterias, it is classified to typical, partial/incomplete and atypical types.

I want to report a child who was admitted to our imaging center for perform temporal CT scan for evaluation of deafness.based on Verlos diagnostic criteria our patient is categorized as typical CHARGE syndrome.

• 1183

RADIOLOGICAL EVALUATION OF THE STYLOID PROCESS LENGTH USING 64-ROW MULTIDETECTOR COMPUTED TOMOGRAPHY SCAN

Azin Shayganfar [1,*]; Danial Golbidi [2]

[1] *Alzahra hospital*

[2] *Isfahan University of Medical Sciences*

[*] *Corresponding author: Azin Shayganfar, Alzahra hospital, E-mail: Azin_shayganfar@yahoo.com*

Abstract:

Background: As elongated styloid process is one of the causes of recurrent oropharyngeal pain and carotid nerve plexus compression called Eagle's syndrome and this length is not similar in different communities, the aim of the current study is to determine average length of styloid process by paranasal multidetector computed tomography.

Methods: This is a retrospective cross-sectional study about 393 patients who underwent paranasal MDCT scan for trauma in Radiology Department without pathologic finding. Styloid length from temporal bone junction to tip of the process was measured using Workstation software. Demographic data including age, sex, and height were gathered from the patients' records, and patients were questioned about symptoms of Eagle's syndrome before trauma. Data were analyzed using SPSS version 20 with the methods of t-test, Chi-square, and ANOVA. $P < 0.05$ was considered statistically significant.

Results: Two-hundred and sixteen males and 177 females underwent MDCT. The length of right, left, and mean length of both sides were 25.4 ± 7.3, 25.2 ± 7.8, 25.3 ± 7.1, respectively. The mean length of both sides process was more among male that was statistically significant ($P = 0.025$ and 0.043, respectively).

Right and left side styloid process higher length was in correlation with patient's height ($P = 0.002$, $r = 0.153$, $P = 0.029$, $r = 0.110$, respectively) and number of symptoms ($P < 0.001$, $r = 0.300$, $P < 0.001$, $r = 0.334$, respectively).

Conclusion: The mean length of styloid process was 25.3 ± 7.1 that was in accordance with some studies and different from others. Styloid process length is higher in males. The length of styloid process is in association with height and number of symptoms as well.

Keywords: Iran; MDCT; Paranasal Sinus

• 1184

COMPRESSION OF RADIATION DOSE OF DIGITAL BREAST TOMOSYNTHESIS WITH FULL-FIELD DIGITAL MAMMOGRAPHY IN BREAST CANCER SCREENING

Mohammad Tavakkoli [1,*]

[1] *Radiologic technologist, BSc, paramedical school, Tabriz University of Medical Science, member of USERN*

[*] *Corresponding author: Mohammad Tavakkoli, Radiologic technologist, BSc, paramedical school, Tabriz University of Medical Science, member of USERN. E-mail: mhmmdtvkkl@gmail.com*

Abstract:

Background: The results of the studies showed that using of digital breast tomosynthesis (DBT) was more accurate than full-field digital mammography (FFDM) in cancer diagnosis. Tomosynthesis is now spotlighted more and more in the world and differs with FFDM in imaging. The purpose of our study is to compare the radiation dose of tomosynthesis with full-field digital mammography and to estimate the recall rate of screening when tomosynthesis is used for it.

Methods: For this review study we researched radiation dose studies about DBT and FFDM with entering appropriate keywords. We found about 100 articles in databases such as Google scholar, PubMed, Sid,

AJR, OALib, Springer and RSNA that due to limitation we selected 40 important ones between them.

Results: The initial results from tomosynthesis studies show a tendency for better imaging and higher accuracy and lower recall rates with tomosynthesis. In depend on kind of machines, the tomosynthesis system acquires 11 - 15 low-dose exposures through a 28 - 30 arc in approximately 4.3 - 19 seconds per view and uses roughly the same dose per view to twice the current dose per exposure of digital mammography. For new tomosynthesis system, Radiation dose to single breast view is about 1.45 mGy. However, the combined use of DBT and FFDM were able to identify 80% of the cancers, versus 59% when FFDM was used alone.

Conclusion: repeated X-rays might have the potential to cause cancer, but the benefits of mammography outweigh any possible harm from the radiation exposure. Because FFDM and DBT is relatively new, no one has really figured out what all the health risks and benefits are, so depend on the results of further study.

Keywords: Digital Mammography; Tomosynthesis; Radiation Dose; Breast Cancer

• 1185

SPECTROSCOPY FROM CHEMICAL USE TO CLINICAL APPLICATION

Banafsheh Zeinali-Rafsanjani [1,*]; Mahdi Saeedi-Moghadam [1]; Reza Jalli [1]; Mehrzad Lotfi [1]; Mahdi Haghighatafshar [2]

[1] *Medical imaging research center, Shiraz University of Medical Sciences, Shiraz*

[2] *Nuclear medicine and molecular imaging research center, Shiraz University*

[*] *Corresponding author: Banafsheh Zeinali-Rafsanjani, Medical imaging research center, Shiraz University of Medical Sciences, Shiraz. E-mail: b.zeinali.r@gmail.com*

Abstract:

In 1946, Purcell, Pound and Torrey from Harvard University with their colleagues Bloch, Hansen and Packard from Stanford University invented nuclear magnetic resonance (NMR). After that NMR investigation lead to 6 Nobel prizes in this field. In vivo NMR spectroscopy in clinic is known as magnetic resonance spectroscopy (MRS). MRS has been applied as both a research and a clinical tool in order to detect visible or non-visible abnormalities. The adaptability of MRS prepares a technique which can probe a broad range of metabolic applications across a variety of tissues. Although MRS mostly applies for brain tissue, but it can be used for detection, localization, staging, tumor aggressiveness evaluation, and tumor response assessment of breast, prostate, hepatic and other cancers. In this study, after a glance of MRS basis, the medical applications of MRS in the brain, including tumors, neural and psychiatric disorder studies, breast, prostate, hepatic, gastrointestinal and genitourinary investigations has been reviewed.

• 1186

THE IMPORTANCE OF SHIMMING IN MAGNETIC RESONANCE SPECTROSCOPY

Reza Faghihi; Mohammad Amin Mosleh-Shirazi; Reza Jalli [1]; Sedigheh Sina; Mahdi Haghighatafshar [2]; Banafsheh Zeinali-Rafsanjani [3,*]

[1] *Shiraz University of Medical Sciences, Shiraz, Iran*

[2] *Nuclear medicine and molecular imaging research center, Shiraz University of*

[3] *Medical imaging research center, Shiraz University of Medical Sciences, Shiraz, Iran*

[*] *Corresponding author: Banafsheh Zeinali-Rafsanjani, Medical imaging research center, Shiraz University of Medical Sciences, Shiraz, Iran. E-mail: b.zeinali.r@gmail.com*

Abstract:

Introduction: Proton magnetic resonance spectroscopy (MRS) is a well-known device for analyzing the biological fluids metabolically. Obtaining accurate and reliable information via MRS needs a homogeneous magnetic field in order to provide well-defined peaks and uniform water suppression. There are lots of reasons which can disturb the magnetic field homogeneity which can be corrected by a process known as shimming. This study is intended to recall the importance of shimming and also the significant role of quality control (QC) in achieving an accurate quantification.

Method: An acrylic cylindrical quality control phantom was designed as an analog of brain MRS test phantoms in order to control the accuracy of the obtained signal of a 1.5 T Siemens MRI system which belonged to one of Shiraz hospitals. The signal of NAA, Cho, Cr, the combination of these metabolites and also the distilled water, which was used in this study, was evaluated using separate phantoms. A QC test was performed using Siemens QC phantom and a standard test phantom.

Results: The spectrum of our home- made phantom had a significant difference with the expected spectrum. The results of checking the spectrum of me-

tabolites separately also confirmed that there was a systemic problem that affects all the signals originated from all metabolites and even the pure distilled water. The MRS system could not pass QC tests, and peak broadening was common in all spectra. The complex spectrum of standard test phantom was not produced successfully by the MRS system.

Discussion: By a simple check of the water peak characteristics, lots of information can be obtained, one of which is the status of shimming that has a considerable effect on the accuracy of the spectrum. Thus, performing an automatic or manual shimming is not a criterion of the spectrum accuracy, and performing a periodic quality control using a test phantom by a specialist is necessary.

Conclusion: Briefly, the quality control of MRS and all the other clinical device must be taken seriously. Sometimes QC can be the boundary of a right or a wrong decision for the patient.

• 1187

CONJOINETED TWINS SONOGRAPHY

Ahmad Soltani Shirazi [1,*]

[1] *Ahwaz Jundishapour Medical, Khuzestan, Iran*

[*] *Corresponding author: Ahmad Soltani Shirazi, Ahwaz Jundishapour Medical, Khuzestan, Iran. E-mail: dr.a.soltanishirazi@gmail.com*

Abstract:

One of the complications of Twinning of mono chorionic mono amniotic

gestations is Conjointed Twins.

Structural congenital malformations occur in 5 % to 7 % of twin gestations

versus only 3 % of singleton births. Most defects occurring in only one of the twin fetuses.

Occasional anomalies such as omphalocele sincenomalia heart defect one reported in both concordance. The structural defect commonly associated with monozygotic twins included conjoined twins: extrophy of bladder, vertebral defect .trachea esophageal fistula with esophageal atresia anomalies (VATER complex) anencephaly. Congenital heart defect and holopro cencephaly. The incidence of con joined twins is approximately 1 of 50000 70 % - 75 % are female. The classification are

1) Thoraco pagus : jointed at the thorax. They may share the chest and upper abdominal organs. This is the most common type (70 %).

2) Xiophopagus on omphalopagus: jointed by the anterior abdominal wall down to umbilicus

3) Pygopagus: jointed by the sacrum and coccyx lying back to back.

4) Ischiopagus: jointed at the ischium or sacrum lying side by side.

5) Craniopagus: jointed at the cranium lying at right angles each other.

The sonographic role of management of conjointed twins is to make diagnosis and detect Associated anomaly and the extent of joining of twins and map out the defect and determine the likelihood of post natal viability.

• 1188

DENOISING EFFECT ON T2* VALUES IN MAGNETIC RESONANCE IMAGING WITH APPLICATION IN IRON LOAD OF PATIENTS WITH THALASSAEMIA MAJOR

Mahdi Dodangeh [*]; Somayeh Gholami Bardeji [1]; Zeinab Gholami [2]; Reza Jalli [2]; Rezvan Ravanfar Haghighi; Sepideh Sefidbakht [2]

[1] *Postdoc*

[2] *Radiology Department, Shiraz University of Medical Sciences*

[*] *Corresponding author: Mahdi Dodangeh, E-mail: dodangeh@gmail.com*

Abstract:

Objective: To investigate the effect of noise and denoising on the measurement of magnetic resonance (MR) imaging T2* values at interventricular septum of the heart in thalassemia major patients. A second objective is to estimate the T2* value based on the improvement of signal to noise ratio (SNR).

Method: Different levels of Rician and Gaussian noises were added to the cardiac T2* MR images of 20 thalassemia major patients. The state-of-art denoising methods were applied to the obtained noisy images. T2* values of the interventricular septum and SNR were measured in both series of images by Segment and Matlab software, respectively.

Results: With respect to the Gaussian noisy and denoised images in different noise levels, although SNR improved, there were no significant differences between T2* values in original, noisy and denoised images. On the other hand, after denoising images with Rician noise a relation between improvement of SNR and T2* value is noticed. A predictor model is constructed based on the level of Rician noise for

each method.

Conclusion: In the case of existence Gaussian noise, the results confirm that denoising is not effective on the measurement of T2* value. In the case of image distortion by Rician noise, a predictor model is proposed to estimate the original T2* value. The predictor model is used to estimate the T2* value of new patients. The predicted T2* values were in good agreement with the corresponding original T2* values.

• 1189

IMAGING OF VASCULAR LESIONS IN PEDIATRICS

Houman Alizadeh [1,*]

[1] *Tehran University of Medical Sciences, Tehran, Iran*

[*] *Corresponding author: Houman Alizadeh, Tehran University of Medical Sciences, Tehran, Iran. E-mail: HOUMANALIZADEH68@gmail.com*

Abstract:

Background: The most common soft tissue tumors during infancy and childhood are vascular lesions. Although the vast majority of these lesions have typical clinical features with no need for any further exam, but sometimes atypical superficial or deeply located lesions require complementary studies to be diagnosed and classified.

In that way it is also very important to exclude very less common malignant soft tumors.Imaging studies play an essential role for categorization of vascular lesions before taking any therapeutic decision.

Objectives and methods: Vascular tumors such as hemangiomas and vascular malformations have their own imaging characteristics to be classified.

Although MRI is the best imaging modality because of its excellent soft tissue resolution, but Ultrasound and Color Doppler studies are the first step and sometimes preferred imaging approach in most of the cases.

This is a review article to describe different types of vascular lesions in childhood and infancy and explain various imaging findings of each one.

Keywords: Imaging; Pediatrics,; Vascular

• 1190

NEW VARICOSIS TREATMENTS AND NEW KEYNOTS

Kambiz Faridmarandi [1,*]; Hossein Hemmati

[1] *Marlic radiology clinic*

[2] *GUMS*

Corresponding Author: Mahdi Dodangeh, Marlic radiology clinic. E-mail: Kambizfaridmarandi@yahoo.com

Abstract:

Lower extremity venous varicosis is a very prevalent disease. Approximately 15 - 25 percent of the general population suffer from some degree of this disease.

In recent years many new and innovative treatments have been developed for the disease and nowadays customary treatments (saphenous strapping and phlebotomy) are nearly obsolete.

These new treatments include Laser ablation, Radio frequency ablation, Glue, sclerotherapy, foam sclerotherapy and … reveloutionaized treatment of venous varicosis.

These new technologies require new data that must be mentioned in duplex reports. These keynots determine which treatment is suitable for the patient and which one is not.

The goal of this article is about to explain the technical aspects of the treatments and new informations that must be added to duplex reports.

• 1191

RADIOLOGIC EVALUATION OF CHRONIC FOOT PAIN

Hamid Reza Mirbagheri [1,*]

[1] *Orthopaedic surgeon with special interest in foot and ankle surgery, Newport university hospital, Wales, UK*

[*] *Corresponding author: Hamid Reza Mirbagheri, Orthopaedic surgeon with special interest in foot and ankle surgery, Newport university hospital, Wales, UK. E-mail: h.mirbagheri77@yahoo.co.uk*

Abstract:

During last ten years I have been one the guest speakers who presented the principles of foot and ankle radiology in details since 2006 - 2015 in Iranian congress radiology. In this presentation I am focusing on one the specific problems of the foot which is very common practice in the field of radiology and orthopaedic surgery. Chronic foot pain has a broad spectrum of potential causes and imaging studies play a key role in diagnosis and management. Chronic foot pain is a common and often disabling clinical complaint that can interfere with a patient's routine activities. Despite

careful and detailed clinical history and physical examination, providing an accurate diagnosis is often difficult. Imaging studies play a critical role in diagnosis and management. Initial assessment is typically done by plain radiography; but magnetic resonance imaging has superior soft-tissue contrast resolution and multiplanar capability, which makes it important in the early diagnosis of difficult cases when initial radiographic findings are unclear. Computed tomography displays bony detail in stress fractures, as well as in tarsal coalition. Bone scanning and ultra-sonography also are useful procedures for diagnosing specific conditions that produce chronic foot pain.

Plain x-ray is an important diagnostic technique in the initial evaluation of patients with chronic foot pain. It is the most commonly used modality because of its wide availability and low cost. Radiography using the oblique view shows articulation of the Calcaneus, Talus, Navicular, and Cuboid bones, and it can be helpful in patients with foot pain who have no obvious diagnosis.

Magnetic resonance imaging (MRI) can play a significant role in making a precise diagnosis, guiding treatment decisions, and determining response to therapy. Bone scanning, ultrasonography, and computed tomography (CT) also are useful procedures in the diagnosis of specific conditions.

• 1192

NEANATAL INTESTINAL OBSTRUCTION

Mitra Khalili [1,*]

[1] *Shahid Beheshti University of Medical Science*

[*] *Corresponding author: Mitra Khalili, Shahid Beheshti University of Medical Science. E-mail: m.khalili76@yahoo.com*

Abstract:

Intestinal obstructions are the most common surgical emergencies in the neonatal period. Neonatal intestinal obstruction occurring during the first month of life. Early and accurate diagnosis of intestinal obstruction is important for proper patient management.This presentation is a brief review of studies in pubmed and google scholar.

For evaluation and diagnosis, intestinal obstruction in neonates can be divided into either high or low obstruction on the basis of dilated bowel loops present on abdominal radiographs. A few dilated bowel loops are seen with high intestinal obstruction and several bowel loops are generally seen with low intestinal obstruction. High intestinal obstructions are defined as occurring proximal to the ileum with differential diagnosis and radiographic appearance as below:

- Gastric atresia: in microgastria a distended esophagus and a small midline stomach and In gastric atresia single bubble sign" with no distal gas.

- Duodenal atresia:Double bubble sign

- Malrotation with Ladd bands and midgut volvulus can be partial or complete obstruction :The abdominal radiograph in malrotation is nonspecific. It may be normal or may show a proximal bowel obstruction pattern, or show dilatation of multiple bowel loops.

- Duodenal web partial obstruction with small amount of distal bowel gas.

- Annular pancreas.

- Preduodenal portal vein.

- Jejunal atresia :Triple-bubble sign with no gas in the distal bowel.

Dilatation of the duodenum is a sign of chronic obstruction, therefore seen in duodenal atresia, duodenal web and annular pancreas. When obstruction occurs acutely after birth in midgut volvulus, the duodenum is not usually dilated on plain film.

In complete obstruction in the high jejunum, no further roentgenographic studies are required, however, in partial obstruction (small amount of distal gas) upper GI study may be helpful to distinguish between duodenal web and malrotation with Ladd bands or midgut volvulus. The classic upper gastrointestinal appearance of malrotation with volvulus consists of an abnormal course of the duodenum that fails to cross the midline combined with a corkscrew appearance.

In contrast, low intestinal obstructions involve the distal ileum or colon and typically result in diffuse dilatation of multiple small-bowel loops . if distal small bowel obstruction is suggested, a contrast enema usually is necessary. It is not possible to differentiate distal small bowel from colonic obstruction on the basis of plain abdominal roentgenograms, and consequently, contrast enema is necessary to clarify microcolon in ileal atresia and meconium ileus and differentioation from other pathology as below:

- Meconium ileus : unused colon (i.e., microcolon), within which are multiple small filling defects representing meconium concretions. If there is reflux of contrast material beyond the ileocecal valve, mul-

tiple small filling defects (meconium concretions) also may be seen in the terminal ileum.

- Ileal atresia: Microcolon and blind ending ileum on contrast enema

- Meconium plug and small left colon syndrome: multiple filling defects (i.e., meconium plugs) is seen in splenic flexure with left sided microcolon and with normal rectum

- Hirschsprung disease: abnormal rectosigmoid ratio (<1), transition zone of rectal narrowing, irregular rectal contraction and retained contrast material on delayed radiographs,

- Colonic atresia: contrast enema study typically shows a distal unused colon (i.e., microcolon), with the more proximal markedly dilated colon ending in a blind pouch.

- Anorectal malformation

In any of these cases, if intestinal perforation occurs meconium peritonitis can result and peritoneal calcifications can be seen on plain films.

Conclusion: Intestinal obstructions are the most common surgical emergencies in newborn infants which require early and accurate diagnosis. An understanding of the characteristic imaging appearance of various causes of neonatal bowel obstruction on abdominal X-ray can lead to correct diagnosis or leading a guide to the next appropriate step. After abdominal X-ray that shows the presence of a neonatal high intestinal obstruction, an upper gastrointestinal series is typically performed for further evaluation. However, neonates with classic radiographic findings of high intestinal obstruction, such as duodenal atresia, may undergo surgery without any additional imaging study. An enema examination is used for further investigation of low intestinal obstruction in neonates.

Keywords: Neonate; Bowel Obstruction; Radiography; Contrast Enema; Upper GI Series

• 1193

SAFETY CONSIDERATIONS IN CARDIOVASCULAR MAGNETIC RESONANCE IMAGING STUDIES

Maryam Moradi [1,*]

[1] *Isfahan University of Medical Sciences, Isfahan, Iran*

[*] *Corresponding author: Maryam Moradi, Isfahan University of Medical Sciences, Isfahan, Iran. E-mail: moradi@med.mui.ac.ir*

Abstract:

The aim of this review is focusing on the most important safety issues in cardiovascular MRI (magnetic resonance imaging) which are categorized as:1-safety items in patients who referred for stress cardiac MR studies.2-Safety consideration that we must know when a patient with cardiovascular devices referred for any (cardiovascular or non-cardiovascular) MRI with focus on new protocols according to update or old devices.3-Review safety issues in the use of MR contrast agent.

• 1194

ASSESSMENT THE POSSIBILITY OF RADIATION DERMATITIS INCIDENCE IN THE INTERVENTIONIST'S LEG

Fariba Zarei [1,*]; Alireza Rasekhi [1]; Banafsheh Zeinali-Rafsanjani [2]; Mahdi Saeedi-Moghadam [1]; Amin Abolhasani Foroughi [1]

[1] *Shiraz University of Medical Science, Shiraz, Iran*

[2] *Medical imaging research center, Shiraz University of Medical Science, Shiraz, Iran*

[*] *Corresponding author: Fariba Zarei, Shiraz University of Medical Science, Shiraz, Iran. E-mail: zareifari@yahoo.com*

Abstract:

Introduction: Fluoroscopy guided imaging, which is going to be more routine these days require a long time of fluoroscopic observing, which can increase the radiation dose of the physician and other staff who have to stay near the patient during the procedure. In our department, one of the senior interventionists had observed the hair loss in his lower limb. Thus the objective of this study was measuring the radiation dose of the physician's leg during common procedures in order to find out that whether the radiation dose exceeds the threshold of deterministic effects of radiation or not?. Material and method: Thermoluminescent-dosimeters (TLD-100) set on the leg part of the anthropomorphic whole body phantom PBU-50, was used in order to measure the radiation dose in 2 centers where our interventionist work. Meanwhile, the duration of exposure in important procedures was observed and recorded in center 1 for 2 months. During this period some data such as age, height, and weight of the patients and radiation exposure time, dose (mGy) and dose area product (dap) ($Gy.cm^2$) was recorded. Results: The result of TLD dosimetry shown that the mean effec-

tive dose in center 1 and 2 was 0.20 and 0.86 mSv, and also the mean-dose (mSv)/min in these centers was 0.02±0.00 and 0.20±0.015 mSv/min respectively. Discussion and conclusion: The effective annual dose of interventionists who work in center 1 and 2 was 143.08 and 1226.78 mSv respectively. The high radiation dose which delivers to the leg of physicians in center 2 can be an important cause of radiation dermatitis occurred on the leg of our interventionist. Patient dose during most of the procedures was less than the threshold dose for occurring erythema but unfortunately in TIPS procedure which is a time-consuming procedure the patient radiation dose exceeds the threshold. It would be useful if a plan design to reduce the dose of patients and even physicians.

• 1195

IMAGING CONSIDERATION IN SUBARACHNOID HEMORRHAGE

Maryam Moradi [1,*]

[1] *Isfahan University of Medical*

Corresponding Author: Maryam Moradi, Isfahan University of Medical. E-mail: moradi@med.mui.ac.ir

Abstract:

This presentation aims to focus on different types of sub arachnoid hemorrhage(diffuse ,central and perimesencephalic) with different etiology and their important imaging considerations that are important to know when a radiologist encounter to a case of sub arachnoid hemorrhage .

• 1196

PATIENT RADIATION SHIELDING METHODS IN INTERVENTIONAL RADIOLOGY: A LITERATURE REVIEW

Ayoub Momivand [1,*]

[1] *Urmia University of Medical Sciences, Iran*

[*] *Corresponding author: Ayoub Momivand, Urmia University of Medical Sciences, Iran. E-mail: ayoob.momivand@gmail.com*

Abstract:

Background: The increasing complexity and numbers of interventional fluoroscopy procedures have led to increasing patient radiation doses. Consequently, radiation protection of the patients undergoing X-ray procedures is essential. During any medical procedure that uses radiation, the as low as reasonably achievable principle should always be followed.

Objective: To investigate available shielding methods in an effort to further awareness and understanding of existing preventive measures related to patient exposure in interventional radiology.

Methods: Searches were conducted to locate literature discussing the effectiveness of commercially available shields. Literature containing information regarding eye and thyroid shielding was identified. The selected studies were examined using the following topics as guidelines: the effectiveness of the shield (percentage of dose reduction), the shield's effect on image quality, arguments for or against its use (including practicality) and overall recommendation for its use in clinical practice.

Results: Only a limited number of studies have been performed on the use of shields for the eyes and thyroid, but the evidence shows an overall benefit to their use. This study demonstrates how thyroid shields can be used to reduce dose to the thyroid by almost half. The use of thyroid and eyes shields is not routine but has been studied in patients during interventional procedures. The effect of shielding on image quality was not remarkable in a majority of studies. Although it is noted that more studies need to be conducted regarding the impact on image quality, the currently published literature stresses the importance of shielding in reducing dose.

Conclusion: Available shields for the thyroid and eyes should be implemented in clinical practice. Further research is needed to demonstrate the prevalence of shielding in the clinical setting.

• 1197

DOES MYOCARDIAL SCAN WITH TECHNETIUM LEAD TO RADIO ADAPTIVE RESPONSE AMONG PATIENTS WHO ARE UNDERGOING THALLIUM SCAN? (CYTOGENETIC STUDY)

MohammmadMehdi Shirazi [1,*]; Ali Shabestani Monfared [1]; Maryam Shahidi [2]; Mehrangiz Amiri [1]

[1] *Babol University of Medical Sciences*

[2] *Mazandaran University of Medical Sciences*

Corresponding Author: MohammmadMehdi Shirazi, Babol University of Medical Sciences. E-mail: Shirazi_1200@yahoo.com

Abstract:

Introduction: Low dose radiation will induce adaptation and following exposure to an adaptive dose, the cells are more resistance to following challenging doses. This phenomenon is known as radio-adaptive response. The aim of this study was to investigate the percentage of apoptotic cells in the peripheral blood samples of the patients which undergo myocardial perfusion imaging with Tc-99m prior to thallium scan to assess the induction of radio-adaptive response.

Method: 97 samples from 74 patients, referred to nuclear medicine center of Mazandaran heart hospital for myocardial perfusion imaging which had no history of diagnostic, therapeutic, occupational and radioactive exposures during past two years, were provided. The participants were classified into four groups including control, technetium, thallium and the last group were the patients that examined by technetium followed by thallium. Then 2 mL Peripheral blood samples were obtained,the samples were studied by neutral comet assay with one-way ANOVA.

Result: The mean percent of apoptotic cells in the groups 2, 3, 4 were more than the controls and the mean percent of apoptotic cells in the patients who examined with 201Tl were more than other groups but the mean percent of apoptotic cells in the group 4 (99mTc before 201Tl) was less than that group 3 (just examinated by 201Tl) and this difference was significant statistically.

Conclusion: These findings suggest that exposure to Tc-99m could induce a radio-adaptive response against the exposure of Tl-201.

Keywords: Myocardial Perfusion Imaging; Radio-Adaptive Response; Technetium; Thallium

• 1198

STATISTIC METHOD FOR SPINE VERTEBRAL FRACTURE POSSIBILITY

Ali Akbar Khadem [1,*]; Jalal Jalal Shokouhi [1]

[1] *Jaam e Jam Medical Center*

[*] *Corresponding author: Ali Akbar Khadem, Jaam e Jam Medical Center. E-mail: khadem53@gmail.com*

Abstract:

Radiology and imaging data of patient is the main and the most important data of the patient. not only it shows disease of patient, but also it is included of the body geometry such as 2D and 3D.

Gathering and saving of radiology images and data for different patients can be useful for future statistic studies.

Many questions like, how to, why, in which and etc can be answered by statistic method, if we have had enough information in our hand.

In this study we are going to find possibility of fracture in vertebra using statistic method.

Radioogle web site was prepared as an search engine to gather information, searching data and result.

By this method, the result extracted and show which vertebra are about to harm in case of fracture.

The result shows that L1 is the most and L2, L4, L5 and C2 are the next possible to fracture in impact and accident.

Other disease of spine and hierarchy in vertebra will be futuristic discussion.

Keywords: Radioogle; Statistic Method; Fracture Frequency

• 1199

NORMATIVE VALUES OF INTRACRANIAL TRANSLUCENCY (IT) THICKNESS AS AN ULTRASONOGRAPHIC MARKER FOR NEURAL TUBE DEFECT (NTD) SCREENING IN THE IRANIAN SINGLETON PREGNANCIES

Mohammad Zare Mehrjardi [1,*]; Elham Keshavarz [1]; Morteza Sanei Taheri [1]

[1] *Department of Radiology, Shahid Beheshti University of Medical Sciences (SBMU)*

[*] *Corresponding author: Mohammad Zare Mehrjardi, Department of Radiology, Shahid Beheshti University of Medical Sciences (SBMU). E-mail: zare@sbmu.ac.ir*

Abstract:

Objective: To determine the normative values of intracranial translucency (IT) thickness in the Iranian singleton pregnancies.

Background: Neural tube defects are the second most common congenital anomalies following congenital heart defects. Once NTD is detected prenatally, different options are available including pregnancy termination, and intrauterine fetal surgery. Considering these facts, prenatal screening for NTDs is becoming a part of routine fetal care. Several ultrasonographic markers have been suggested

for detection of NTD during pregnancy. Intracranial translucency (IT) is a relatively new ultrasonographic marker for NTD screening during first-trimester. It actually represents the fourth cerebral ventricle, seen as an anechoic structure in the mid-sagittal plane of the fetal face posterior to the brainstem. Its absence or obliteration can be an indirect sign of open spina bifida, which is caused secondary to the caudal displacement of brain in these fetuses. In this study, we aimed to determine the normative values of this marker in the Iranian population.

Methods: 230 consecutive singleton pregnancies between 11 weeks and 13 weeks + 6 days of gestation were included in the study during 9 months (June 2015 to February 2016) prospectively in Mahdieh and Sarem Women's hospital, Tehran, Iran. Crown-rump length (CRL), nuchal translucency (NT) thickness, fetal heart rate, and nasal bone status were evaluated by ultrasound as parts of the routine first-trimester screening for aneuploidies. Precise gestational age was determined by the fetal CRL as well. In addition, IT thickness was measured in the mid-sagittal view of the fetal head between two echogenic horizontal lines: posterior border of the brainstem anteriorly and anterior aspect of the fourth ventricle choroid plexus posteriorly (Figure 1). All the measurements were performed by a radiologist with four years of experience in fetal imaging. Ethnicities other than Iranian, multiple gestation pregnancies, and pregnancies conceived by assisted reproductive technology (ART) were not included in the study initially. Other exclusion criteria were any obvious anatomic fetal anomaly in the ultrasound examination, abnormal genetic or maternal serum biomarker test result, increased NT, and presence of open NTD in the post-partum follow-up.

Results: Of the 230 included singleton pregnancies, all of them resulted in healthy live births, except for two pregnancies terminated at 19 and 17 weeks of gestation due to severe skeletal dysplasia and an abnormal genetic test result compatible with Down syndrome, respectively. None of born babies had open NTD on post-partum follow-up. Five pregnancies were excluded from the final analysis, including a fetus with increased NT, two pregnancies with abnormal maternal serum biomarker test result (one of which confirmed to be trisomy 21), poor visualization due to maternal severe obesity in one case, and skeletal dysplasia diagnosed at 19 weeks of gestation in one of pregnancies. The median maternal age was 29 (range, 16 - 49) years. Median gestational age was 12 weeks + 5 days (range, 11 weeks + 2 days-13 weeks + 6 days). There were 68 cases per gestational week between 11 and 11+6 weeks, 84 cases between 12 and 12 + 6 weeks, and 73 cases between 13 and 13+6 weeks. Mean IT thickness was 1.94 - 0.73 mm (95% CI, 1.84 - 2.04) in all included pregnancies. This measurement was 1.57 - 0.34 mm (95% CI, 1.49 - 1.65) for fetuses between 11 and 11 + 6 weeks, 1.86 - 0.29 mm (95% CI, 1.80 - 1.92) for fetuses between 12 and 12 + 6 weeks, and 2.12 - 0.41 mm (95% CI, 2.02 - 2.22) for fetuses between 13 and 13 + 6 weeks. Kolmogorov-Smirnov analysis demonstrated normality of IT thickness distribution in the included cases ($P > 0.10$). Linear regression analysis demonstrated that there was a statistically significant positive linear association between IT thickness and gestational age ($rs = 0.92$, $P = 0.021$).

Conclusion: We determined the normative values of IT thickness for the Iranian fetuses in a pilot study, which may be considered for NTD screening during the first-trimester in the national and international guidelines. It is important to determine normal measurements of different ultrasonographic and biochemistry markers nationally, since there are significant differences among various ethnicities. One should expect that IT thickness increases in a linear manner during first-trimester, and in case of its obliteration or absence open NTDs should be strongly suspected.

• 1200

EFFECT OF 3D PRINTERS IN THE FUTURE OF RADIOLOGY AND IMAGING

Ali Akbar Khadem [*]; Jalal Jalal shokouhi; Alireza Darvish

[1] *Jaam e jam medical center, Tehran, Iran*
[2] *BES*

[*] *Corresponding author: Ali Akbar Khadem, E-mail: khadem53@gmail.com*

Abstract:

Today Radiology and imaging are the only and main method to generate geometrical data from body. 3D model of the body will give us the best and reliable information for better understanding and diagnostic.

on the other hand with development of CAD/CAM and Rapid prototyping, the 3D printers were born to build 3D models without considering the geometry. today the 3D printers are able to makes a 3D physical model from complicated membrane in less that

2 hours in low cost.

3D physical model of hard tissues like skull, vertebra, MSK and etc as well as soft tissue like heart can be built using 3D printers.

Now, a new discussion for future of radiology will be opened:

Does a radiologist make the 3D physical model using 3D printer in near future.?

Is the 3D printer replaced with printed report of radiology?

2D images, 3D images or 3D physical models (3D printed model) are the most advantage for diagnostic?

Keywords: 3D Printer; Stereo Lithography; Rapid Prototyping; CAD/CAM

• 1201

RADIOGRAPHIC MANIFESTATIONS OF TUBERCULOSIS IN HIV POSITIVE PATIENTS: CORRELATION WITH CD4 POSITIVE TCELL COUNT

Mehrdad Bakhshayesh Karam [1,*]; Soheyla Zahirifard; Farahnaz Aghahosseini [2]

[1] *Masih Daneshvari Hospital, Pediatric Respiratory Diseases Research Center, Nat*

[2] *Masih Daneshvari Hospital*

[*] *Corresponding author: Mehrdad Bakhshayesh Karam, Masih Daneshvari Hospital, Pediatric Respiratory Diseases Research Center, Nat. E-mail: mehrdadbakhshayesh@yahoo.com*

Abstract:

Background: Observations on Tuberculosis HIV coinfection in addition to epidemiologic molecular studies have recently provided strong evidence for the state of immune system as the major determinant of the TB imaging spectrum. However, the presence of any correlation between radiographic findings and the degree of suppression in HIV positive patients still remains controversial. The present study aimed to investigate the TB radiographic manifestation in HIV positive patients and its relationship to the CD4 positive cell count.

Method: Chest radiography of 15 HIV positive patients with a definite diagnosis of pulmonary Tuberculosis in Masih Daneshvari Hospital, between 2013 -2014, were retrospectively reviewed. Radiographic findings and severity were categorized as typical (upper lobe infiltration/cavity) and atypical (middle/lower lobe opacity, adenopathy, pleural effusion and normal X-ray). Demographics and CD4 positive cell count were also recorded. Data analysis was performed using SPSS version 23 (frequency and mean for descriptive quantitative variables and Logistic regression analysis for correlation, $P < 0.05$).

Results: Of a total 15 patients (86.7% men and 13.3% women), 78.6% had CD4 positive counts below 350 (mean ± SD; 229.15 ± 199.45). The most common radiographic findings in descending order of frequency were adenopathy (53.3%), pleural effusion (26.7%) and cavitation (6.7%) with an overall atypical presentation of 93.3%. This study failed to reveal any statistically significant correlation between CD4 positive cell count and radiographic manifestation as well as severity.

Conclusion: In CD4 positive cell count below 500, the dominant radiographic pattern of Tuberculosis is atypical presentation. At this level of immunity, CD 4 positive T cell dysfunction may play a deterministic role in TB radiographic manifestation.

• 1202

COMPARISON RADIATION DOSE IN INTERVENTIONAL CARDIOLOGY BETWEEN IRAN AND OTHER COUNTRIES: EVALUATION INFLUENCING FACTORS

Ayoub Momivand [1,*]

[1] *Urmia University of Medical Sciences, Iran*

[*] *Corresponding author: Ayoub Momivand, Urmia University of Medical Sciences, Iran. E-mail: ayoob.momivand@gmail.com*

Abstract:

Background: Interventional cardiology procedures result in substantial patient radiation doses due to prolonged fluoroscopy time and radiographic exposure. The procedures that are most frequently performed are coronary angiography (CA), percutaneous transluminal coronary angioplasty (PTCA), diagnostic electrophysiology studies and radiofrequency catheter ablation (RFA). When complex procedures are performed or procedures are repeated for the same patient, high-radiation dose levels can occur because procedures often require long fluoroscopy times and require high-quality images.

Objective: The objective of the study is to review patient radiation doses from interventional cardiology procedures in the Iran and the world and comparison between them.

Methods: In this article we checked the derived data from 20 relevant studies published during the last 20 years in international scientific literature at other country except Iran and 10 studies from Iran. The variables dose-area product (DAP), fluoroscopy time, number of sequences and frames per sequence were collected for each CA, PTCA, RFA and diagnostic electrophysiology and then the obtained mean values, were compared.

Results: Published results indicate that patient radiation doses vary widely among the different interventional cardiology procedures but also among equivalent studies. By comparing the mean values of DAP and the fluoroscopy time obtained in the studies carried out in Iran with other studies in this field in other counties, it is revealed that these values in Iran were lower than the outcomes of other studies in the world.

Conclusion: This difference was due to the high knowledge and experience of the cardiologist in Iran and type of justify patient.

Keywords: Patient Dosimetry; Interventional Cardiology

• 1203

PERIVENTRICULAR LEUCOMALACIA AND SEIZURE IN PRETERM INFANTS

Mahtab Amirheidari [1,*] Reza Nafisi Moghadam [1]; Mona Kharraji [1]

[1] *Shahidsadoughi Yazd university of Medical sciences, Yazd, Iran*

[*] *Corresponding author: Mahtab Amirheidari, Shahidsadoughi Yazd university of Medical sciences, Yazd, Iran. E-mail: amiheidarimahtab@gmail.com*

Abstract:

Introduction: prematurity neuropathology can be categorized as: Periventricular leukomalacia (PVL), white matter changes, and basal ganglion, cortex and thalamus disorders. These abnormalities may induce seizure in preterm neonate. The aim of this study was to evaluate the association between white matter abnormalities and seizure in 18 months preterm infants with delay Neurodevelopment (ND).

Method: this is an analytical cross-sectional study on 18 months preterm infants with ND delay who were referred to MRI department of Shaheed Sadoughi hospital of Yazd, 2015 - 16. The information of birth age (weeks), gender, seizure, and PVL on MRI were collected. All statistical analysis was done by SPSS19.

Results: totally 45 infants were studied. About 55.6% were male and 44.6% female. The mean of pregnancy duration was 32.72 - 2.78 weeks. Seizure frequency was 42.2%. The PVL grading was: 28.9% mild, 20% moderate and 4.4% sever. There was a statistically significance between PVL and birth age (week), Also between seizure and PVL.

Conclusion: The high light finding of our study was the higher frequency of seizure in infants without PVL. These findings can be explained by the inclusion criteria of our study.

Keyword: Periventricular Leukomalacia; Seizure; Preterm Infant

• 1204

MATHEMATICAL AND STATISTIC METHOD TO DIAGNOSTIC OF METASTASIS BASED ON RADIOLOGY IMAGES FOR BREAST CANCER

Minoo Tabandegan [1,*]; Ali Akbar Khadem [1]; Neda Mirzaie [1]; Jalal Jalal Shokouhi [2]

[1] *Azad University of Medical Sciences*

[2] *Jaam E Jam Medical Center, Tehran, Iran*

[*] *Corresponding author: Minoo Tabandegan, Azad University of Medical Sciences. E-mail: m.tabandegan@gmail.com*

Abstract:

One out of eight women face with the problem of breast cancer in her life. It is the second causes of women death in the world. Detection of breast cancer metastasis at the earliest stage is important to predict and control of breast cancer progression. It can spread to the different parts of the body, such as are the bone, liver, and lung and etc.

How and where does the breast metastasis grow and migrate may open many questions to the radiologist and medical Scientifics.

In this study, we discussed about the possibility of the breast metastasis to the other parts of the body and using statistic method we are able to estimate the frequency of metastasis from breast to the other parts.

We have selected statistic method to this research and we studied over 200 patients (effected by breast cancer) using radiology image data.

We save the history of the patient and gather all patient data in a table.

Result and Discussion: The result show that the most metastasis of breast occur in the brain and the

less occur in liver.

The result may help radiologist to understand better origin of metastasis and in case the possibility is high, the radiologist may ask for breast imaging.

A New discussion comes to the mind that, do we need to perform breast imaging if radiologist faced with metastasis on brain?

• 1205

INCREASED RENAL PARENCHYMAL ECHOGENICITY IN CHILDREN WITH ACUTE ABDOMINAL PAIN: CAN IT BE AN ALARMING SIGN?

Rahele Mehraeen [1,*]; Mehdi Maghsoudi

[1] *Babol University of Medical Sciences, Babol, Iran*

[*] *Corresponding author: Rahele Mehraeen , Babol University of Medical Sciences, Babol, Iran. E-mail: sany_monzavi@yahoo.com*

Abstract:

Background: Ultrasound is an important imaging modality in children whit acute abdominal pain. There are many etiologies which can cause acute abdominal illness. Both kidneys are evaluated in a routine abdominal sonography. Renal echogenicity in pediatric changes with age gradually, as in neonates and early infancy we can see increased echogenicity as normal variant. But there are several studies which have stated that increased echogenicity of the renal parenchyma are an indicator of renal disease in older children and adults. On the other hand, there are a few cases of renal hyper echogenicity in children with various abdominal diseases without any renal pathologic condition. This study aimed to investigate the relationship between renal echogenicity and the final diagnosis in children with acute abdominal pain.

Methods: This cross sectional study was done on 93 children referred to Amirkola children's hospital with complain of acute abdominal pain who were examined with sonography. Patients with a known history of renal disease or urinary tract infections were excluded. The renal parenchymal echogenicity evaluated by comparison with adjacent liver and was divided into three categories.

Results: Of all 93 assessed children (52 male, 41 female) with mean age 6.45 y/o, 18 cases (19.4%) had abnormal renal parenchymal echogenicity (equal or more than liver).The final diagnosis of the cause of abdominal pain in 43 cases (46.2%) was acute appendicitis, in 8 cases (8.6%) was mesenteric adenitis, in 4 cases (4.3%) was gastroenteritis and in 2 cases (2.2%) was invagination.

Conclusion: The results show that renal hyperechogenicity is nonspecific finding in children which presented with acute abdominal pain and does not necessarily an indicator of renal disease in these specific patients. According to this study, increased echogenicity of the kidneys should alert the radiologist to search the abdomen more thoroughly for a cause of the acute abdominal illness.

Keywords: Renal Parenchymal Echogenicity; Acute Abdominal Pain

• 1206

LEAD CONTAMINATED OPIUM AS UNUSUAL CAUSE OF ABDOMINAL PAIN- CASE SERIES

Anahita Sadeghi [1,*]; Hamidreza Soleimani [1]; Siavosh Nasseri-Moghadam [1]; Amir Reza Radmard [2]

[1] *Tehran University of Medical Sciences*

[2] *Shariati hospital, Tehran University of Medical Sciences*

[*] *Corresponding author: Anahita Sadeghi, Tehran University of Medical Sciences. E-mail: a-sadeghi@tums.ac.ir*

Abstract:

Introduction: Lead is a toxic metal which is widely distributed in the environment and can be accumulated in the many organs such as gastrointestinal system. Several clinical signs suggest lead poisoning include anemia, abdominal pain, constipation and/or neurologic signs. We report a case series of patients with abdominal pain due to lead contaminated opium who underwent diagnostic work up including plain abdominal radiograph and/or CT scan.

Methods: We hereby describe 119 consecutive patients hospitalized in our emergency department who presented with complains of acute, severe abdominal pain due to lead contaminated opium (September 2015 - October 2016). Upon admission they were first suspected to have lead poisoning due to their abnormal imaging findings. Demographic, clinical and laboratory data, imaging and levels of lead were collected for all patients.

Result: Of 119 enrolled patients, 116 subjects (97.5%) were male. The mean age of our patients was 50.4 ± 13.4 (18 - 92 years). They all had a history of oral consumption of opium on a daily basis. Half of the patients had a history of several hospitalizations. One

also had a history of a negative laparotomy. Several tiny metallic densities were visualized in the colon in the obtained plain abdominal radiographs that were confirmed in CT scan in some patients. Laboratory data revealed anemia in majority of them with mean hemoglobin 10.4 ± 2.4 g/dL. Mean blood lead level was 76.2 fL (range 20 - 316). Serum lead level was classified into four levels: Lead level < 50 fL (n = 42; 35.3%), 50 - 79.9 (n = 37; 31.1%), 80 - 100(n = 15; 12.6%), > 100 (n = 25;21.0%). All patients were referred to psychiatrist for quitting opium.

Conclusion: Our case series highlights the role of imaging in possibility of lead poisoning among opium users, that presented with acute abdominal pain with an unknown cause.

Keywords: Lead Poisoning; Opium; Abdominal Pain

• 1207

EVALUATION OF USAGE FMRI IN ALZHEIMER'S DISEASE DIAGNOSE

Sohaila Yazdani [1,*]; Karim Khoshgard [1]; Hasan Norouzi [1]

[1] *Kermanshah University of Medical Sciences, Kermanshah, Iran*

[*] *Corresponding author: Sohaila Yazdani , Kermanshah University of Medical Sciences, Kermanshah, Iran. E-mail: sohailayazdani@gmail.com*

Abstract:

Background: Alzheimer's disease (AD) is a state where neurons within the brain stop functioning, lose connection with other neurons and die. It's the most common cause of dementia, a loss of brain function that can harmfully impact memory, thinking, language, judgment and behavior. Alzheimer's is irreversible and progressive. Although the cause of Alzheimer's disease is unknown, scientists believe that a build-up of beta-amyloid plaques and neurofibrillary tangles in the brain are associated with the disease. Medications that slow the progression of the disease and manage symptoms are available, but there is no cure for Alzheimer's disease. Current diagnosis of AD is through clinical, neuropsychological, and neuroimaging assessments. Functional MRI (fMRI) measures brain activity during a cognitive, sensory, or motor task or at rest by measuring changes in blood oxygen level dependent (BOLD) MR signal.

Objectives: In this paper, we evaluate application of fMRI to detect AD.

Materials: The papers were searched in PubMed, Medline and Scopus databases with the relevant key words such as fMRI, Alzheimer disease and early detection.

Results: BOLD fMRI is considered to reflect the joined synaptic activity of neurons through MRI signal changes because of alterations in blood flow, blood volume, and the blood oxyhemoglobin/deoxyhemoglobin ratio. In patients with clinically diagnosed AD, the outcomes of fMRI have been quite consistent, showing reduced hippocampal activity during the encoding of new data. Several studies have reported increased prefrontal cortical activity in AD patients, suggesting that other networks may increase activity as an attempted compensatory mechanism during hippocampal failure. In particular, the event-related fMRI studies have found that hyperactivity was observed, which suggested that hyperactivity might represent a compensatory mechanism in the setting of early AD pathology. Also, fMRI of default mode network (DMN) brain activity during resting is lately achievement attention as a potential noninvasive biomarker to diagnose initial AD.

Conclusion: Both task-related and resting fMRI techniques have the potential to detect early brain dysfunction related to AD. However, the use of fMRI in AD populations thus far has been limited to a relatively small number of research groups.

Keywords: FMRI; Alzheimer Disease; Early Detection

• 1208

A REVIEW ON APPLICATION OF NANOTECHNOLOGY FOR EARLY BREAST CANCER DETECTION BASED ON MEDICAL IMAGING

Minoo Tabandegan [1,*]; Jalal Jalal Shokouhi [2]; Ali Akbar Khadem [1]; Neda Mirzaie

[1] *Azad University of Medical Sciences*

[2] *Jaam E Jam Medical Center, Tehran, Iran*

[*] *Corresponding author: Minoo Tabandegan, Azad University of Medical Sciences. E-mail: m.tabandegan@gmail.com*

Abstract:

Breast cancer is characterized by a distinct metastatic pattern involving the regional lymph nodes, bone marrow, lung and liver. Tumour cell migration and metastasis share many similarities with leukocyte trafficking, which is critically regulated by chemokines and their receptors. Detection of breast cancer

and its metastasis at the earliest stage is important for the management and prediction of breast cancer progression.

CT scans, X-ray, ultrasound imaging and MRI for various cancer detection. These traditional diagnostic methods however are not very powerful methods when it comes to cancer detection at very early stages. In general, they are quite useful clinically, but they are not enough and perfect. So if there is very few cells that have metastasized away from the primary at a distant site, they might miss them. It might say that there is nothing there when in fact there is something there. So especially micro metastasis,as they are called, smaller amounts of tumor burden, are the hardest things for all these technologies to solve.

Due to the highly engineerable nature of nanotechnology, targeted nanoparticles exhibit significant advantages including increased contrast sensitivity, binding avidity and targeting specificity.

A biomarker is characteristic of a specific state and therefore can be used as a marker for a target disease, like a protein, a fragment of a protein, DNA, or RNA-based. Cancer biomarkers, are an indication of cancer and by detecting them the existence of that specific cancer can be verified. Quantum dots, gold nanoparticles, and many other materials have been developed over the years for detecting .Gold nanoparticles (GNPs) have been in the bio-imaging spotlight due to their special optical properties. GNPs with strong surface-plasmon-enhanced absorption and scattering have allowed them to emerge as powerful imaging labels and contrast agents. Quantum dots are semiconducting, light-emitting Nano crystals that have emerged as a powerful molecular imaging agent since their discovery and they are an exciting material to work with due to their unique optical properties compared to traditional organic fluorescent labels.

in this study we demonstrate the possibility of new methods for breast cancer detection at a very early stage with Nano technology and their effects on treatment in near future.

• 1209

UNILATERAL ENLARGEMENT OF KIDNEY: A RARE MANIFESTATION OF AUTOSOMAL RECESSIVE POLYCYSTIC KIDNEY DISEASE

Elham Zarei [1,*]; Razieh Shahnazari [2]

[1] *Assistant Professor*

[2] *Resident*

[*] *Corresponding author: Elham Zarei, Assistant Professor. E-mail: eliday7@yahoo.com*

Abstract:

Background: Autosomal recessive polycystic disease (ARPKD) is a heritable but phenotypically variable disorder characterized by varying degrees of non-obstructive renal collecting duct ectasia, hepatic biliary duct ectasia and fibrosis of both liver and kidney.

The phenotypes of the ARPKD are distinguished by the age of the diagnosis at presentation and the predominance of renal over hepatic manifestations or vice versa.

Sonography is currently the imaging technique of choice in children with renal cystic disease.

Classic ARPKD is evident at birth with symmetrically enlarged kidneys with increased Parenchymal echogenicity at ultrasound with using a curved array transducer.

In previous reports, nephromegaly is a constant imaging finding at the time of diagnosis.

Asymmetrical enlargement has only been reported in one case report and the current case report is the second observation in this regard.

Case Presentation: A preterm neonate with suspicious RT renal mass and oligohydramnios at prenatal ultrasound was hospitalized due to respiratory distress and hypertension.

Although postnatal ultrasound showed enlarged echogenic Rt kidney and normal sized echogenic

Lt Kidney, regarding to linear array transducer findings, ARPKD was considered rather than renal mass.

The diagnosis was confirmed after nephrectomy and histologic examination.

Conclusion: because the abnormality in ARPKD affects the renal tubules, high resolution sonographic techniques with linear array transducer are well suited to the imaging of this disease.

Although, the patient showed asymmetric renal enlargement, unique findings on linear array transducer help to diagnosis of ARPKD regardless of renal size.

Also, the finding of asymmetric renal enlargement in this patient adds another radiologic finding that could be associated with ARPKD.

• 1210

APPLICATION OF PET/CT IN ONCOLOGIC IMAGING

Sohaila Yazdani [1,*], Homayon Fallah, Fahimeh Rezaie [2]

[1] Kermanshah University of Medic

[2] Univercity

* Corresponding author: Sohaila Yazdani, Kermanshah University of Medic. E-mail: sohailayazdani@gmail.com

Abstract:

Background: There are many challenges in oncologic imaging including: more accurate staging, determine site with highest probability of tumor existence for biopsy, especially for brain tumors because of the sensitive anatomical position, determine the exact location of the tumor for radiotherapy treatment planning and etc. Positron emission tomography (PET) is imaging modality which provides some special functional information. The basis of the PET system is detection of tow photons which are generated by positron/electron encounter which occurs directly after positron emission by radionuclide. However, it is powerless in providing anatomical information. Computed tomography (CT) generates three dimensional reconstructions of patients anatomy based on differences in x-ray attenuation. Combination of PET and CT is able to provide anatomical and physiological information of patients synchronizes.

Objectives: In this paper, we evaluate application of PET/CT for improve oncologic imaging.

Materials: The papers were searched in PubMed and Scopus databases with the relevant key words including, PET/CT, Oncologic Imaging and Cancer staging.

Results: The most relevant biomarker for PET is 8F-FDG (F-18 Fluorodeoxyglucose), which is incorporated into malignant cells by glucose transporters which are over expressed by cancer cells. CT is the common imaging modality in diagnosis the cancers. It is due to its speed, high special resolution and relative cost-effectiveness. The combination of these two modalities in one system produced PET/CT system which is more accurate than these two imaging modalities separately and enhances the sensitivity and specificity of diagnosis. For example in a study which used PET/CT for differentiation between the malignant and benign disease Presacral, sensitivity, specificity, the positive predictive value and the negative predictive value are 100%, 96%, 88% and 100% respectively. In another study, which was done for preradiotherapy staging of head-and-neck SCCs, it was shown that FDG-PET/CT detected 17 of 17 heminecks and 26 of 27 nodal zones histologically positive by dissection (100% and 96% sensitivity, respectively).

Conclusion: PET/CT can provide diagnosis and more accurate staging, location of tumor with its capability in providing the anatomical and physiological information synchronizes. Therefore PET/CT plays an important role in oncology.

Keywords: PET/CT; Oncologic Imaging and Cancer Staging

• 1211

EVALUATION OF THE ADVANCED NEUROIMAGING TECHNIQUES TO DETERMINE THE PEDIATRIC BRAIN TUMORS

Fariba Allahmoradi [1,*]; Abbas Haghparast [1]; Salman Zakariaee [2]

[1] Kermanshah University of Medical Sciences, Kermanshah, Iran

[2] Tehran University of Medical Sciences, Tehran, Iran

* Corresponding author: Fariba Allahmoradi, Kermanshah University of Medical Sciences, Kermanshah, Iran. E-mail:fariba.am93@gmail.com

Abstract:

Background: Conventional magnetic resonance imaging (MRI) method is the most common imaging approach for solid tumor diagnosis and management which is a practical method to determine the location and size of the tumor and involved functional centers.This imaging method provides limited information regarding tumor type and reliable information about tumor grade would not be achieved. For the last two decades, there has been a significant progress in MRI methods. Advanced MRI techniques could provide critical information from physiologic, morphologic, and metabolism characteristics of the tumor.

Object: In this paper, the accuracy of advanced MRI techniques including diffusion-weighted MRI (DWI), perfusion-weighted MRI (PWI), and MR spectroscopy (MRS) to determine the tumor specifications was evaluated.

Material and Methods: A computerized search using the databases SID, Google Scholars, Pub med and Science Direct, covering the period from 2000 to 2016, was conducted using the following key search

terms: Advanced magnetic resonance imaging technique, Pediatric brain tumors, MRI, Neuroimaging, Perfusion-weighted MRI , diffusion-weighted MRI, and MR spectroscopy. In total, 25 relevant papers were reviewed.

Results: The accuracy of DWI, PWI, and MRS methods to determine the tumor grade were 62%, 50.88%, and 65.9%, respectively. For tumor type identification, the accuracy of DWI, PWI, and MRS were 42.49%, 38.51%, and 49.73%, respectively. The diagnostic accuracy of them ulti-modal DWI-PWI and MRS-DWI-PWI techniques to determine the tumor specifications were 55.76% and 73.24%, respectively.

Conclusion: Advanced neuroimaging techniques including MR spectroscopy, diffusion-, and perfusion-weighted MRI provide valuable information regarding tumor specifications with high accuracy that significantly improve the treatment procedures for pediatric patients. Based on the results, it could be concluded that the advanced neuroimaging techniquesis a critical complementary examination method for clinical situations.

• 1212

IMAGING APPROACH TO CONGENITAL SKELETAL DYSPLASIA

Reza Esfandiari [1,*]

[1] *Dezful Medicine University, Khuzestan, Iran*

[*] *Corresponding author: Reza Esfandiari, Dezful Medicine University, Khuzestan, Iran. E-mail:esfreza1@yahoo.com*

Abstract:

- Chest

-Chest trunk length ratio less than 0.32

-Femur length abdominal circumference ratio less than 0.16

-Hypoplastic thorax occurs in lethal dysplasia, e.g. thanatophoric dysplasia, achondrogenesis, osteogenesis imperfecta.

- Hands and Feet

- Pre- or postaxial polydactyly

- Syndactyly

- Clinodactyly

- Skull

- Shape, mineralization, and degree of ossification

- Interorbital distance measured to exclude hyper- or hypotelorism

- Structure

- Bone density

- Exostoses and enchondromas

- Metaphyseal striations- osteopathia striata

- Bone islands e.g. osteopoikilosis

- Thanatophoric dysplasia

- Most common lethal neonatal skeletal dysplasia

- Short ribs with wide costochondral junctions

- Severe platyspondyly

- telephone receiver femora

- clover leaf skull

- Short broad tubular bones in the hands feet

- Multiple Epiphyseal Dysplasias And Pseudoachondroplasia

- Short limbs with normal head and face

- Platyspondyly with tongue-like anterior protrusion of the vertebral bodies

- Biconvex configuration of vertebral end plates

- Irregular metaphyses

- Chondrodysplasia Punctata/Stippled Epiphyses

- Stippled calcification in cartilage, particularly around the joints and in laryngeal and tracheal cartilages

- Metaphyseal Dysplasias

- Metaphyseal chondrodysplasia (Schmid)

- Metaphyseal flaring

- Increased density and unevenness of metaphyses, particularly of upper femora and around knees

- Morquio's Syndrome (MPS-IV)

- Normal intelligence

- Absent odontoid peg

- Platyspondyly

- Progressive disappearance of femoral capital epiphyses

- Increased Bone Density Without Modification Of Bone Shape

- Osteopetrosis

- Generalized increase in skeletal density

- Alternating bands of radiolucency and sclerosis

- Enchondromatoses (Ollier's disease/ Maffuci syndrome)

- Expansion of the bone with cortical thinning

- Areas of calcification within the lesions

• 1213

BENIGN OR MALIGNANT? IT MAKES EVEN A BIGGER DIFFERENCE WHEN IT COMES TO ORGAN TRANSPLANTATION

Meysam Mojtabaee [1,*]; Farahnaz Sadegh Beigee [2]

[1] *Shahid Beheshti University of Medical Sciences, Tehran, Iran*

[2] *Masih Daneshvari Hosptal, Shahid Beheshti University of Medical Sciences*

[*] *Corresponding author: Meysam Mojtabaee, Shahid Beheshti University of Medical Sciences, Tehran, Iran. E-mail: meysam.mo1991@gmail.com*

Abstract:

Background: Organ donation and transplantation has been widely performed from brain dead donors who had suffered from different types of brain tumors. However it is fundamental to carefully exclude malignant and high risk types of tumors from the benign ones in order to avoid risk of transfer of the malignancy to the Immunocompromised recipients. In this report, we discuss destiny of 8 brain dead potential organ donors whose radiology reports were high probability of malignant tumors.

Methods: After reconsidering the previous strategy based on radical exclusion of potential organ donors with probable malignant brain tumor (which were suggested by expert radiologists upon magnetic resonance imaging results), we decided to perform frozen section of these cases after organ retrieval. 8 tandem brain dead cases which were diagnosed as malignant brain tumors were biopsied and frozen sectioning was performed after craniotomy. Results of definitive pathology reports were compared to radiologist's diagnosis.

Results: 5 out of 8 cases were reported as benign and organ transplantations were performed without any tumor associated complications. Pathology reports included low grade astrocytoma, benign meningioma and low grade glioblastoma. 2 malignant tumors were in concordance with the radiology reports which were glioblastoma multiform and medulloblastoma. In 1 case, subarachnoid hemorrhage was responsible for brain death and no tumor was found.

Discussion: Occurrence of brain death can cause significant disorganization in brain tissue and anatomy. Even some expert radiologists may have errors in their diagnosis. Careful consideration of these changes can help to distinguish malignancies from benign conditions in this life saving decision making challenge.

• 1214

THE COMPARISON OF DIAGNOSTIC VALUE OF ANOMALY SCAN AND TRIPLE SCREENING TEST IN ANEUPLOIDY DIAGNOSIS IN THE SECOND TRIMESTER OF PREGNANCY

Mahyar Mohammadifard [1,*]; Nahid Ghanbarzadeh [2]; Mahmoud Zardast [3]; Mostafa Dehpanah [1]

[1] *Department of Radiology, Birjand University of medical sciences, Birjand, Iran*

[2] *Department of Genecology, Birjand University of medical sciences, Birjand, Iran*

[3] *Faculty of medicine, Birjand University of medical sciences, Birjand, Iran*

[*] *Corresponding author: Mahyar Mohammadifard, Department of Radiology, Birjand University of medical sciences, Birjand, Iran. E-mail: drmahyarmohammadifard95@gmail.com*

Abstract:

Background: Early diagnosis of congenital abnormalities in early pregnancy and abortion can prevent giving birth to disabled children who will be a burden for the families as well as society. Therefore, the present study aims to compare diagnostic value of anomaly scan and triple screening test in aneuploidy diagnosis in the second trimester of pregnancy.

Methods: This cross sectional study was done on pregnant women who had referred to midwifery clinic of Vali-Asr and Imam Reza hospitals as well as Women's Clinic for Faculty Members of Birjand University of Medical sciences in 1393 solar year. They were in their second trimester of pregnancy and had at least one of inclusion criteria. Data collection tools included a questionnaire in which information obtained from sonographic anomaly scan (NB, NT, and NF), triple test (Afp, BHCG, and Unconjugate striol), and Amino synthesis were recorded. Data were entered into SPSS15 software and related formulas were used to calculate sensitivity, features, positive and negative predictive values, and positive and negative likelihood.

Findings: According to the results, sensitivity, features, positive and negative predictive value, screening, and sonographic anomaly scan compared to amino synthesis were respectively 62.86%, 77%, 28.95%, and 93.3%. Moreover, sensitivity, features, positive and negative predictive value in triple test method compared to amino synthesis were respectively 97.15%, 8.5%, 13.6%, and 95.24%.

Conclusion: Given that sensitivity of triple test method was higher in diagnosis of Aneuploidy in

second trimester of pregnancy compared to sonographic anomaly scan, this method can be used as a routine screening method for the country.

Keywords: Sonographic Anomaly Scan; Triple Screening Test; Amino Synthesis; Aneuploidy; Second Trimester of Pregnancy

• 1215

MATHEMATICAL AND STATISTIC METHOD TO DIAGNOSTIC OF PROSTATE METASTASIS BASED ON MEDICINE IMAGES DATA

Minoo Tabandegan [1,*]; Jalal Jalal Shokouhi [2]; Ali Akbar Khadem [1]; Neda Mirzaie [1]

[1] *Azad University of Medical Sciences*

[2] *Jaam E Jam Medical Center, Tehran, Iran*

* *Corresponding author: Minoo Tabandegan, Azad University of Medical Sciences. E-mail: m.tabandegan@gmail.com*

Abstract:

Introduction: Prostate cancer is one of the most common types of cancer in men and usually grows slowly and initially remains confined to the prostate gland, where it may not cause serious harm. Prostate cancer is often associated with metastases to bone and soft tissue.

Although in the latest years there has been an active development of new bone targeted therapies, modern diagnostic techniques for bone metastases still relies mostly on bone scanning (BS) and plain X-ray. BS dramatically lacks specificity and sensitivity.

So In this study, we discussed about some geometrical, locational and etc. features of prostate cancer which have been in medicine imaging and find the relationship between possibilities of metastasis locations.

We have selected statistic method to this research and we studied over 200 patients (effected by prostate cancer) using radiology image data. We save the history of the patient and gather all patient data in a table.

Result and Discussion: The result may help radiologist to understand better origin of metastasis and can be the guideline to provide the physician with a framework for the early detection.

A New discussion comes to the mind that, do we need to perform prostate imaging if radiologist faced with metastasis?

The aim of this review was to present the recommendations from the group to identify optimal strategies for early identification of metastases in patients with prostate cancer.

Keywords: Prostate Cancer; Metastasis; CT; MRI

• 1216

BILATERAL GONADAL VEIN THROMBOSIS CAUSING PULMONARY THROMBOEMBOLI DETECTED ON ABDOMINAL MULTISLICE COMPUTED TOMOGRAPHY

Mehdi Karami [1]; Elham Ghorbani [1]; Mohammad Momeni [1,*]; Roya Azad [1]; Mehdi Baradaran [1]

[1] *Isfahan medical university of Medical sciences, Isfahan, Iran*

* *Corresponding author: Mohammad Momeni, Isfahan medical university of Medical sciences, Isfahan, Iran. E-mail: Dr.M.Momeni@gmail.com*

Abstract:

A 65 years old woman presented to our hospital complaining of a week history of dyspnea on exertion. Her past history was positive for colon cancer which was treated with segmental colectomy 6 months ago.

Physical exam and lab data were unremarkable. The patient underwent chest multislice computed tomography (MSCT), for evaluation of pulmonary thromboembolism (PTE). The MSCT revealed segmental and subsegmental PTE in both lower lobes. Subsequently, lower limbs venous Doppler ultrasound was performed which was negative for deep vein thrombosis. Furthermore, the patient underwent abdominopelvic MSCT for more evaluation of abdominal pain. The abdominopelvic MSCT revealed filling defects in the course of bilateral gonadal veins suggestive for thrombosis without extension to the inferior vena cava. (Figure 1) The patient started on anticoagulation and a follow up MSCT was scheduled for the patient.

Gonadal vein thrombosis causing pulmonary thromboemboli is a rare entity with a few known etiologies such as postpartum endometritis, pelvic surgeries, pelvic inflammatory disease, or hypercoagulable states such as malignancy.The risk of PTE is about 25% in untreated patients with mortality rate of about 4%.

The ovarian veins normally measure 3 - 4 mm in diameter and can be easily seen on MSCT at the level of inferior mesenteric artery. A thrombosed gonadal vein presents on contrast enhanced MSCT as ve-

nous dilation with central hypodensity and peripheral hyperdensity. Sensitivity of contrast enhanced MSCT for detection of gonadal vein thrombosis has been reported 100%.

In conclusion, our case emphasize that gonadal vein thrombosis is a rare, but highly important diagnosis due to possibility of causing PTE. Therefore, it is important to inspect ovarian veins in each abdominal MSCT especially in patients with history of malignancy, pregnancy, or pelvic inflammatory disease.

• 1217

RADIOGRAPHIC MANIFESTATION OF BENIGN BONE TUMORS IN CHILDREN AND ADOLESCENTS

Somaye Hajiahmadi [1,*]; Ali Hekmatnia [1]

[1] *Isfahan University of Medical Sciences, Isfahan, Iran*

[*] *Corresponding author: Somaye Hajiahmadi, Isfahan University of Medical Sciences, Isfahan, Iran. E-mail: nasohiyannosohiyan@gmail.com*

Abstract:

Most benign bone tumors have characteristic radiographic features and can be diagnosed with plain radiographs. It is important to be familiar with the radiographic appearance of the most common benign bone tumors. Benign bone tumors often are discovered incidentally, and recognition of benign lesions on plain radiographs can avoid unnecessary advanced imaging and invasive diagnostic studies. However, their natural evolution and complications may be the source of variations and errors in interpretation. It is therefore important to understand the possible sources of change in the radiological aspect and to be familiar with common pseudotumoral lesions. The main aim of this review is to review typical aspects of the most common benign bone tumors in children, as well as less frequent variants of these tumors.

• 1218

BILATERAL ABNORMALITIES OF THE BASAL GANGLIA AND THALAMI (CASE SERIES REVIEW)

Somaye Hajiahmadi [1,*]; Ali Hekmatnia [1]; Farzaneh Hekmatnia [2]

[1] *Isfahan University of Medical Sciences, Isfahan, Iran*

[2] *St Georges University of London*

[*] *Corresponding author: Somaye Hajiahmadi, Isfahan University of Medical Sciences, Isfahan, Iran. E-mail: nasohiyannosohiyan@gmail.com*

Abstract:

Basal ganglia and thalami are paired deep gray matter structures that may be involved by a wide variety of disease entities. These are classified in subgroups of neoplastic (lymphoma, glioma), infective (encephalitis), ischemic (hypoxia, venous infarction, basilar tip infarction), neurodegenerative (Wilson, Huntington), toxic disorders (Carbon monoxide and methanol intoxication and hypoglycemia). The imaging findings of the mentioned sub groups are varied and early detection and diagnosis are essential in preventing complications. We have gathered cases from the last 5 years in our department and will explain the clinical findings of each in this paper.

• 1219

CEREBRAL VENOUS THROMBOSIS: THE SPECTRUM OF FINDINGS IN MRI

Somaye Hajiahmadi [1,*]; Ali Hekmatnia [1]; Farzaneh Hekmatnia [2]

[1] *Isfahan University of Medical Sciences, Isfahan, Iran*

[2] *St Georges University of London*

[*] *Corresponding author: Somaye Hajiahmadi, Isfahan University of Medical Sciences, Isfahan, Iran. E-mail: nasohiyannosohiyan@gmail.com*

Abstract:

Cerebral venous thrombosis (CVT) is a serious neurologic disorder that is potentially reversible with prompt diagnosis and appropriate medical care. Appropriate management applied early in the course of disease can reverse the progression and significantly reduce the risk of acute and chronic complications.

Another important fact is its prevalence in our country. Imaging plays a primary role in the diagnosis. Magnetic resonance imaging (MRI), unenhanced computed tomography (CT), unenhanced time-of-flight MR venography, and contrast material enhanced MR venography and CT venography are particularly useful techniques for detecting cerebral venous and brain parenchymal changes that may be related to thrombosis. We focused our discussion on the MRI appearance of the normal venous anatomy and variants, and the spectrum of findings in cerebral venous thrombosis venous and

potential pitfalls in image interpretation.

In conclusion, this paper summarizes the most appropriate imaging techniques for early diagnosis of CVT.

• 1220

FUNCTIONAL RECOVERY PREDICTION OF RENAL ALLOGRAFT BY SONOGRAPHIC BASED VASCULAR INDICES: A REVIEW

Mitra Nasiri Partovi [1,*]; Farzam Tajalli; Seyed Morteza Bagheri [1,]

[1] *Department of Radiology, Iran University of Medical Sciences, Tehran, Iran*

[*] *Corresponding author: Mitra Nasiri Partovi, Department of Radiology, Iran University of Medical Sciences, Tehran, Iran. E-mail: mitraprtv@gmail.com*

Abstract:

Background and objectives: sonographic examination performed early after transplantation has a valuable role in identification and management of structural and vascular complications. The main objective of this review was to investigate diagnostic performance (abilities and limitations) of sonographic based vascular indices in predicting of renal allograft functional recovery.

Study design: Literature review was performed and relevant studies were identified in Pubmed and Cochrane databases after 1997. Each article was reviewed independently by two of three authers.

Results: Among the 76 unique articles, 10 studies were included and their results about various indices such as PSV (peak systolic velocity), EDV (end diastolic velocity), RI (resistive index), PI (pulsatility index), FTI (flow-time index) and power doppler indices were discussed.

Conclusion: The results suggest that calculated combined sonographic indices in consideration of clinical data, donor and recipient age and ischemic time can help in prediction of renal allograft functional recovery after ischemic reperfusion injury (in the absence of acute rejection and Calcineurine inhibitor toxicity).

• 1221

A CASE OF MULTIPLE INTRA-ABDOMINAL MESENTRIC CYSTS: A RARE PRESENTATION

Rahele Mehraeen [1,*]; Beniamin Miladi

[1] *Babol University of Medical Sciences, Babol, Iran*

[*] *Corresponding author: Rahele Mehraeen, Babol University of Medical Sciences, Babol, Iran. E-mail: sany_monzavi@yahoo.com*

Abstract:

Mesenteric cysts are rare, with a reported incidence of 0.5-1 per 100,000 admissions.

Etiology of the lesions varies according to the histology and consists of lymphatic, mesothelial, enteric: (enteric cyst and enteric duplication cyst), urogenital and non-pancreatic pseudocysts (infectious and traumatic cysts).

They can occur anywhere in the mesentery, from the duodenum to the rectum, or may extend into the retroperitoneum and can be characterized on the wall thickness and their loculation (unilocular or multilocular).

Some lesions may present a diagnostic challenge because of non-specific imaging features; however, other lesions are easily diagnosed using characteristic radiologic features and anatomic locations.

Despite the overlap of the radiologic appearance of various GI cystic lesions, the anatomic location and certain radiologic details of the lesion can help narrow the differential diagnosis.

Here, we describe a very rare case of cystic lympghangioma of mesentre as multiple uniloculated mesenteric cysts in a 45 years-old man presenting with a chronic dull abdominal pain.

The multimodality imaging features of the mentioned cystic lesions of the mesentre and correlation of these features with final pathologic finding are explained.

Keywords: Mesenteric Cysts

• 1222

VALUE OF CONTRAST-ENHANCED ULTRASOUND IN DIAGNOSIS OF LIVER LESIONS

Milad Moradi [1,*]; Sajad Moradi [2]; Maziar Jalalvandi [3]

[1] *Kermanshah University of Medical Sciences (KUMS), Kermanshah, Iran*

[2] *Nano Drug Delivery Research Center*

[3] *Tehran University of Medical Sciences, Tehran, Iran*

[*] *Corresponding author: Milad Moradi, Kermanshah University of Medical Sciences (KUMS), Kermanshah, Iran. E-mail: miladmoradi70@yahoo.com*

Abstract:

Introduction and Aim: Liver is a place for kind of

lesions and recognized these lesions as it has important therapeutic outcome. contrast-enhanced ultrasound (CEUS) is an imaging method that has been used for more than 10 years. The development of contrast-enhanced ultrasound opened up a new field in the diagnosis and follow-up of liver lesions. this is a review of literature on the indications and outcome of contrast-enhanced ultrasound in detection of liver lesions.

Methods: A systematic and comprehensive literature search of published studies in PubMed/Medline, Embase and Scopus databases regarding CEUS and liver lesions from past 10 years was performed.

Results: CEUS has improved the detection rate of liver metastases with 94.6% sensitivity and 85.4% specificity for differentiating benign versus malignant lesions.The accuracy of CEUS The diagnostic accuracy of CEUS was 81.7%, 96.5%, 93.1% ,86.2% for benign lesions, malignant lesions, liver metastases and hepatocellular carcinomas respectively and it for diagnosis of focal lesions was 93.6%. The positive predictive value and negative predictive value of contrast-enhanced ultrasound for the diagnosis of a malignant tumor was 94.9 % and 93.8% respectively.

Conclusions: The contrast enhanced ultrasound technique noticeably improved the sensitivity and specificity of liver lesions.

Keywords: Contrast-Enhanced Ultrasound; Liver Lesions; Liver Metastases,

• 1223

DOPPLER DUPLEX INDICES IN THE DIFFERENTIATION OF OBSTRUCTIVE FROM NON-OBSTRUCTIVE HYDRONEPHROSIS IN CHILDREN; WHEN ONE MAY BE EXEMPTED FROM A DIURETIC RENOGRAPHY?

Amirhossein Sarrami [1,*]; Maryam Riahinezhad [2]; Omid Shafaat [2]; Alaleh Gheisari [2]; Alireza Merikhi [2]

[1] *Radiology Resident*

[2] *Isfahan University of Medical Sciences, Isfahan, Iran*

[*] *Corresponding author: Amirhossein Sarrami, Radiology Resident. E-mail: a_sarrami88@yahoo.com*

Abstract:

Background: Diuretic renography is used to diagnosis of renal function and urinary obstruction, but the interpretation of its results and the definition of obstruction is controversial in different centers. Also, the indications of diuretic renography in the follow-up of hydronephrosis is another subject of debate. We assess the potency of different Doppler indices in the differentiation of obstructive and non-obstructive hydronephrosis. This study may provide an adjunct strategy to resolve controversial renogram results or to decrease the frequency of renograms in the follow-up of hydronephrotic kidneys.

Method: In this study, infants and children who were referred for evaluation of unilateral hydronephrosis were enrolled. Ultrasonography for assessment of the degree of hydronephrosis and a voiding cystourethrogram for the exclusion of vesicoureteral reflux was performed. Then, Doppler ultrasonography was done for both kidneys of each patient using four classic Doppler indices as well as the difference (delta) of each index between to kidneys. Diuretic renography with 99mTc-ethylene dicysteine (99mTc-EC) was performed for each patient.

Results: Thirty-nine patients met the inclusion criteria and were willing to complete the offered workup. Their age was ranged from two months to 13 years. After diuretic renography 29 (74.35%) patients had shown a non-obstructive pattern, and ten (25.65%) patients had a partial (intermediate) or complete obstruction. Using ROC curve, none of the classic indices of Doppler duplex (i.e. RI, PI, EDV, PSV) had the ability to make a difference between obstructive and non-obstructive hydronephrosis. However, by calculating the difference (delta) of these indices between two kidneys of each patient, delta RI could differentiate the non-obstructive condition, significantly (P value = 0.006). A cutoff value of 0.055 has 60% sensitivity and 82.8% specificity. Also, RI ratio between two kidneys of each patient could differentiate the non-obstructive condition, significantly (P value = 0.012). A cutoff point of 1.075 has 70% sensitivity and 82.8% specificity.

Conclusion: This study shows that RI ratio and delta RI with a high specificity could differentiate non-obstructive hydronephrosis and therefore it is a promising way to use especially in the follow-up of children with hydronephrosis.

• 1224

A COMPARISON OF ULTRASOUND AND EMG TESTING (ELECTRO-DIAGNOSTIC) FOR THE CARPAL TUNNEL SYNDROME DIAGNOSIS: A SYSTEMATIC REVIEW

Milad Moradi [1,*]; Sajad Moradi [2]; Maziar Jalalvandi [3]

[1] *Kermanshah University of Medical Sciences (KUMS), Kermanshah, Iran*

[2] Nano Drug Delivery Research Center

[3] Tehran University of Medical Sciences, Tehran, Iran

* Corresponding author: Milad Moradi, Kermanshah University of Medical Sciences (KUMS), Kermanshah, Iran. E-mail: miladmoradi70@yahoo.com

Abstract:

Background: The diagnosis of Carpal Tunnel Syndrome is based on clinical findings and the findings of EMG test are used to approve the diagnosis. On the other hand, Sonography as a non-invasive method to Carpal Tunnel Syndrome diagnosis has a special status. The present study was performed to assessment the sensitivity and specificity of Sonography compared with electro-diagnostic test in Carpal Tunnel Syndrome diagnosis.

Method: A systematic literature search on of ultrasound and EMG testing for the carpal tunnel from 2005 to 2016 was performed in PubMed/Medline, Scopus, Cochrane, and Embase databases.

Findings: According to different studies, Sonography, compared with electro-diagnostic test in Carpal Tunnel Syndrome diagnosis has the sensitivity of 94.1% and specificity of 92.4%, the positive predictive value of 89.5% and the negative predictive value of 59.3%. In addition, Sonography has the sensitivity of 81.6% and specificity of 81.5% in examining incoming cross-section of Carpal Tunnel Syndrome.

Conclusion: Based on different studies, Sonography is a suitable diagnostic method to examine Carpal Tunnel Syndrome. Due to its sensitivity, specificity and high positive predictive value, Sonography is also useful not only in diagnosing suspicious patients, but also in screening people exposed to danger.

Keywords: Carpal Tunnel Syndrome; Ultrasound;, Electro-Diagnosis

• 1225

EVALUATION OF THYROID STUNNING IN PATIENTS WITH HYPERTHYROIDISM AFTER IODINE THERAPY

Zahra Fazeli [1,*]; Ali Shabestani Monfared; Rasool Zakavi [1]

[1] Mashhad University of Medical Sciences, Mashhad, Iran

* Corresponding author: Zahra Fazeli , Mashhad University of Medical Sciences, Mashhad, Iran. E-mail: ghazal7.fazeli@yahoo.com

Abstract:

Background and Aim: Thyroid stunning is a radiobiological phenomenon in which a diagnostic radioiodine dose leads to the reduced uptake of a subsequent therapeutic dose by the remnant thyroid tissues or functioning metastases. Thyroid stunning occurs when a diagnostic dose is administered before therapeutic dose. It seems that even low doses of radioactive iodine (131I) might lead to thyroid stunning. With this background in mind, this study aimed to evaluate thyroid stunning in patients with hyperthyroidism following iodine therapy.

Materials and Methods: This clinical trial was conducted on 42 patients with hyperthyroidism, referred to the Nuclear Medicine Research Center of Ghaem Hospital, Mashhad, Iran and Shahid Beheshti Hospital of Babol, Iran for iodine therapy. The patients were divided into two groups of fixed-treatment dose and low primary dose of 131I. The patients in the fixed-dose group received the conventional treatment dose, while the primary-low-dose group was administered a primary dose of 10 Ci, in addition to the conventional treatment dose. Then, in both, thyroid scanning was performed to determine thyroid uptake after 48 h, using a gamma camera with high-energy collimators. Planar quantification was performed using the geometric mean approach.

Results: The mean total count of thyroid cells in the primary-low-dose and fixed-dose groups was 304529.751 - 205198.1 and 246309.76 - 133991.723, also uptake of the total activity in thyroid (A) was 48.95% and 45.55% in the fixed-dose and primary-low-dose groups, respectively.

• 1226

PREDICTION OF SURVIVAL USING CT IMAGE BIOMARKER AND ARTIFICIAL NEURAL NETWORK FOR LUNG CANCER PATIENT

Isaac Shiri [1,*]; Sajad Shaysteh [2]; Hamid Abdollahi [2]; Seied Rabi Mahdavi [1]

[1] Department of Medical Physics, Iran University of Medical Sciences, Tehran, Iran

[2] Iran University Of Medical Sciences, Tehran, Iran

* Corresponding author: Isaac Shiri , Department of Medical Physics, Iran University of Medical Sciences, Tehran, Iran. E-mail: isaac.sh92@gmail.com

Abstract:

Introduction: Prior to the start treatment in cancer patient, prediction of tumor's response to treatment by enabling the personalization of treatment

lead to enhance clinical care management. The main aim of this study was to develop a robust model to predict survival time using image biomarker and artificial neural network (ANN) in lung cancer.

Material and Methods: seventy patient with 2 years of follow-up imaged with contrast enhanced CT scans who had non-small cell cancer with biopsy-verified adenocarcinoma were used for survival time analysis. Lung Lesions were segmented using competitive region-growing based algorithm. Following delineation and segmentation of lesions, 60 quantitative 3D features and texture based on intensity histograms (IH), gray level run-length (GLRLM), gray level co-occurrence (GLCM), gray level size-zone texture matrices (GLSZM), neighborhood-difference matrices (NDM), and geometric features were extracted from the 3D-tumor volumes of each lesion. Supervised back-propagation artificial neural network (ANN) classifier used to predict survival time in patient.

Result: The ANN was found effective in prediction of survival in lung cancer patient. In cross-validation on test data sensitivity was 66.65%, specificity 76.2% and Area under the curve 0.67 (AUC).

Conclusion: Recent advancements in image biomarker have opened another path to personalize medicine which lead to enhance clinical care management. Using image biomarker and advance machine learning method such as artificial neural network improve decision-support in cancer treatment response assessment and provide noninvasive way to quantify and monitor tumor characteristic in clinical practice.

Keyword: Image Biomarker; Texture Analysi; ANN

• 1227

DIFFUSION-WEIGHTED MR IMAGING WITH GUSTATORY STIMULATION OF PAROTID GLANDS: ASSESSING FUNCTIONAL CHANGES

Fahimeh Rezaie [1,*]

[1] *Univercity*

[*] *Corresponding author: Fahimeh Rezaie, Univercity. E-mail: rezai.f93@gmail.com*

Abstract:

Background: Parotid glands usually are located into radiation therapy fields in radiotherapy of head and neck cancers. Xerostomia or mouths dryness is a common side effect in patient with head and neck cancer treated by radiotherapy. Radiation damages to acinar cells and disturbances their salivary function. The mechanism of disruption induced radiation in these glands is not known completely and interventions to reduce Xerostomia are limited. Then it seems more studies about these glands are necessary. Diffusion-weighted MR imaging (DWI) is a non-invasive technique based on MRI which provides apparent diffusion coefficient (ADC) values, related to motion of water molecules in tissues. It seems this technique is proper to assessing tissue damage. The method to measuring ADCs in parotid glands is different because of parotid glands different condition in rest situation and stimulated situation. Then imaging of these glands to assess salivary function should be with gustatory stimulation (using ascorbic acid tablet or lime juice on patients tongue).

Objectives: In this paper we evaluated the salivary function changes in parotid glands after radiotherapy using DWI with gustatory stimulation.

Materials: In this study we reviewed related articles in recent years. The papers were searched with the relevant keywords including Diffusion-weighted MR Imaging, Gustatory stimulation, Parotid glands, Head and neck and Radiation therapy.

Results: DWI with gustatory stimulation of parotid in some steps in glands show a pattern. ADC values are different in every step. This pattern of ADC in parotid glands is approximately similar but higher than ADC pattern related to before radiotherapy. First, there is some decrease in ADC values then there is a progressive increase. ADC values increase as parotid glands secret less saliva.

Conclusion: DWI with gustatory stimulation is a suitable technique to assess salivary function of parotid glands.

Keywords: Diffusion-Weighted MR Imaging; Gustatory Stimulation; Parotid Glands; Head and Neck; Radiation Therapy

• 1228

BREAST CANCER DIAGNOSIS FROM MAMMOGRAPHY USING IMAGE BIOMARKER AND MACHINE LEARNING

Isaac Shiri [1,*]; Hamid Abdollahi [2]; Sajad Shaysteh [2]; Seied Rabi Mahdavi [1]

[1] *Department Of Medical Physics, Iran University of Medical Sciences, Tehran, Iran*

[2] *Iran University Of Medical Sciences, Tehran, Iran*

* Corresponding author: Isaac Shiri , Department Of Medical Physics, Iran University of Medical Sciences, Tehran, Iran. E-mail: isaac.sh92@gmail.com

Abstract:

Introduction and Aim: Breast cancer is the most commonly diagnosed cancer with high mortality and morbidity. There are different biomarkers to detect and classify breast cancer, but they may be obtained invasively. Image biomarkers are newly advanced markers which extracted from mammography images and can be used to diagnosis, prognosis and classify breast cancer. The main aim of current study was to test these biomarkers using machine learning (ML) for classification of malignant and benign breast cancer

Methods: This retrospective study was done on mammography image dataset including 320 malignant and 339 benign breast cancer patients (659 patients). Different features such as fractal dimension (FD), shape, density, margin, mass, and convexity were extracted from mammography image and used as input for ML approach. To find the best prediction model, 4 different machine learning methods were tested and their accuracy, area under the curve (AUC), recall and precision calculated.

Results: Among tested machine learning methods including Decision tree C4.5, Logistic regression, artificial neural network (ANN) and Naive Bayes, Logistic regression had the best results. Our results for accuracy, area under the curve, recall and precision for Logistic regression were 80.6, 84.2, 80.5 and 80.7.

Conclusion: Image classification using image features based on ML is advanced technique which demonstrated high precision and yielded good accuracy and ML are powerful for breast cancer diagnosis. Using these methods, malignant and benign breast cancers can be distinguished with high accuracy and sensitivity. Also by using these methods, breast cancer malignancy can be detected non-invasively such as biopsies.

Keywords: Image Biomarker; Machine Learning; Mammography

• 1229

MRI-DETECTED SUSPICIOUS BREAST LESIONS IN PATIENTS WITH BREAST CANCER, AND SECOND LOOK SONOGRAPHY AS AN INVESTIGATING TOOL

Maryam Farghadani [1,*]

[1] Assistant Professor of Isfahan University of Medical Sciences, Isfahan, Iran

* Corresponding author: Maryam Farghadani , Assistant Professor of Isfahan University of Medical Sciences, Isfahan, Iran. E-mail: dr_mar_far@yahoo.co.uk

Abstract:

Purpose: The purpose of this presentation is to mention the use of second-look ultrasonography (US) for investigating additional suspicious lesions detected on preoperative staging magnetic resonance imaging (MRI) for breast cancer

Introduction: There have been many reports on the clinical implementation of breast magnetic resonance (MR) imaging for preoperative planning, monitoring treatment response, and screening in patients who have breast cancer or a high breast cancer risk because of a BRCA gene mutation or family history. Breast MR imaging also is indicated in the evaluation of patients with metastatic axillary lymphadenopathy and an unknown primary malignancy. However, despite its high sensitivity and high negative predictive value, MR imaging shows variable and generally lower specificity than mammography and ultrasonography (US). Histologic confirmation is warranted for MR imaging detected suspicious lesions.

To reduce the number of unnecessary mastectomies performed, the presence of multifocal disease must be confirmed at biopsy before recommending mastectomy for patients with newly diagnosed breast cancer. Nonetheless, MR imaging guided biopsy has many limitations. The procedure is time-consuming and expensive and may require the intravenous administration of contrast material. Access to posteriorly located lesions may be difficult. It has been reported that the probability of malignancy in any particular lesion at MR imaging is higher if it also is seen at US.

Therefore, regardless of whether antecedent bilateral whole-breast US was performed, second-look US is usually prescribed before MR imaging guided biopsy. Second-look US is an additional targeted breast imaging examination in which the findings from MR images are used in establishing or excluding the presence of a correlative lesion at US; the term second-look is used even when there was no initial US examination. US-guided biopsy has considerable advantages over MR imaging guided biopsy, including accessibility, efficacy, real-time visualization of lesions and biopsied tissue, and less patient discomfort.

Lesion detection at second-look US is improved by localizing breast lesions based on breast MR images and recognizing the possible differences in presen-

tation of identical lesions at US and MR imaging. A thorough review of the lesion's characteristics and surrounding tissues enables accurate correlation between the two modalities. Use of appropriate imaging techniques for better visualization at second-look US also will aid in lesion evaluation.

This review describes the principles of and useful tips for identifying and correlating MR imaging detected breast lesions when performing second-look US. Differences in lesion presentation at US and MR imaging will be described, and methods for localizing lesions on the basis of findings on MR images are reviewed. Methods for accurate correlation of lesions seen on US and MR images will be discussed, along with imaging techniques for more accurate lesion identification. Management will be discussed according to the presence or absence of a sonographic correlate, and appropriate actions based on biopsy results are presented.

Keywords:

Breast MRI; Second Look Ultrasonography; Preoperative Staging of Breast Cancer

• 1230

MR IMAGING OF PEDIATRIC BONE MARROW APPEARANCE, FROM CONVERSION AND VARIANT TO PATHOLOGIC DISORDERS

Maryam Farghadani [1,*]

[1] *Assistant Professor of Isfahan University of Medical Sciences, Isfahan, Iran*

[*] *Corresponding author: Maryam Farghadani , Assistant Professor of Isfahan University of Medical Sciences, Isfahan, Iran. E-mail: dr_mar_far@yahoo.co.uk*

Abstract:

Introduction: Bone marrow (BM) assessment is an important aspect of paediatric MRI, with the marrow cavity visible on almost every clinical MR examination. In practice, however, assessment for marrow infiltration in paediatric patients can be challenging.

It is composed of a combination of hematopoietic red marrow and fatty yellow marrow, and its composition changes throughout life in response to normal maturation (red to yellow conversion) and stress (yellow to red reconversion).

MR imaging is highly sensitive for detection of altered marrow signal intensity, and the T1-weighted spin-echo sequence provides the most robust contrast between yellow marrow and disease. Heterogeneous red marrow and red marrow hyperplasia can mimic marrow disease, but should be distinguished from neoplastic replacement (leukemia, lymphoma, primary bone sarcomas, hematogenous metastases) and expected posttreatment changes (radiation therapy, chemotherapy, colony-stimulating factor, bone marrow transplant). Nonneoplastic edema-like processes can also alter marrow signal intensity, including trauma, infection, inflammation (chronic recurrent multifocal osteomyelitis, juvenile inflammatory arthritis), altered biomechanics, and chronic regional pain syndrome. Unfortunately, MR imaging findings are often nonspecific and overlap among many of these vastly different causes. Therefore, a definitive diagnosis is reliant on a combination of imaging findings, clinical evaluation, laboratory assessment, and occasionally tissue analysis

Keywords: MRI; Bone Marrow; Pediatrics

• 1231

IMAGING OF DIZZINESS

Alireza Zahiri [1,*]

[1] *Neuroradiologist*

[*] *Corresponding author: Alireza Zahiri, E-mail:*

Abstract:

the dizziness is not un common symptom in many neurologic or head and neck disease and in many time should be need for neuro imaging investigation.

l- talk about the common and uncommon etiology of dizziness especially in infra tentorial compartment temporal fossa and vascular origin causes i will show specific mri sequence that will be need for imaging study and also common and uncommon imaging finding with variable mri procole such as Ciss-Grass-SPGR or another new sequance.

• 1232

CEREBRAL VEIN AND SINUS THROMBOSIS

Nader Jamalzadeh [1,*]

[1] *MD, Radiologist*

[*] *Corresponding author: Nader Jamalzadeh, MD, Radiologist. E-mail: naderjamalzadeh@gmail.com*

Abstract:

Although cerebral venous thrombosis is an uncommon cause of stroke among the young, it is being increasingly recognised. A prothrombotic risk factor is identified in the majority of the patients. In most instances it is seen in women in the post-partum period and those on oral contraceptives. Magnetic resonance imaging (MRI) has improved our ability to diagnose this condition however the variability of radiological and clinical presentation remains a challenge. MR in combination with MR venography (MRV) is the single most sensitive diagnostic technique. The MR appearance of the thrombus within the dural sinus or cortical vein is variable and is largely dependent on its age. The loss of the normal flow void on spin echo T2 images is a sensitive parameter. Thrombus on MRV is seen as loss of high flow signal from the sinus. Focal parenchymal changes occur in approximately 50% of cases and are due to oedema and infarction, with or without haemorrhage. Appearances of these lesions too are dependent on their age. Diffuse changes of raised intracranial pressure with gyral effacement may also be present.

• 1233

A SURVEY OF KNOWLEDGE AND ATTITUDE OF STAFF AND HOSPITAL ADMINISTRATORS IN THE IMPLEMENTATION OF ARCHIVING AND TRANSMISSION OF MEDICAL IMAGES (PACS) IN HOSPITALS IN AHWAZ

Fateme Panahi [1,*]; Mehrdad Gholami [2]; Sera Mayahi

[1] *Lorestan University of Medical Sciences, Lorestan, Iran*

[2] *MD*

[*] *Corresponding author: Fateme Panahi, Lorestan University of Medical Sciences, Lorestan, Iran. E-mail: panahi.fateme.radiology71@gmail.com*

Abstract:

Background and Objective: Medical image archiving and transmission system (PACS) aresystems used to capture, store, transmit and display medical images and archive medical images used. Information is exchanged through an internal network in the health center or the Internet platform. The aim of this study was to analyze the degree of knowledge and attitude of staff and hospital administrators in the implementation of archiving and transmission of medical images (PACS) in hospitals in Ahwaz.

Materials and Methods: This study is cross-sectional study. The population under study were the staff and hospital administrators at the medical schools in Ahwaz. A total of 176 questionnaires were distributed. Data collection tool was a questionnaire with two parts: the first part of the questionnaire consisted of demographic information whichhad 10 multi choice questions about the knowledge and attitude of staff and hospital administrators in the implementation of archiving and transmission of medical images (PACS).And the second Data collection tool was a check list about assessing the technical and other potential obstacles.

Results: The average score of the knowledge of the users and administrators with PACS and related systems were65/30 and 5/27 respectively. The attitudes of users and administrators in implementing PACS system were2/76 and 5/59 respectively. According to the managers, the major obstacles for the implementation of PACS system were a lack of awareness of the benefits of PACS for both the users and administrators and cost.

Conclusion: According to the present study, the potential barriers to the implementation of PACS in hospitals is the lack of knowledge of the managers and employees of the benefits of PACS system (80%). Before the implementation of PACS systems in hospitals it must be considered necessary background to increase knowledge of the workers and managers in this regard, short-term in-service training courses and providing educational pamphlets can be useful also.

Keywords: PACS; Awareness; Barriers to Implementation; Staff and Administrators

• 1234

THE INVESTIGATION OF LORESTAN UNIVERSITY OF MEDICAL SCIENCES RADIOLOGY STUDENTS ATTITUDE TOWARD DIGITAL RADIOLOGY

Fateme Panahi [1,*]; Kourosh Gorji [2]

[1] *Lorestan University of Medical Sciences, Lorestan, Iran*

[2] *Babol University, Mazandaran, Iran*

[*] *Corresponding author: Fateme Panahi, Lorestan University of Medical Sciences, Lorestan, Iran. E-mail: panahi.fateme.radiology71@gmail.com*

Abstract:

Introduction: Considering the graduate community in the future, defining the perception of students

of radiology of the benefits of digital technology is essential to improve the quality of the images is essential. The aim of this study was to investigate students of Radiology;s attitude about digital radiology in Lorestan University of Medical Sciences.

Material and method: This cross-sectional study was carried out in 1393 on 38 radiology students who were selected by convenience sampling. The instrument used was a 14-item questionnaire (both digital and conventional radiology department) to assess demographic information and attitude of students of digital radiology. The validity was confirmed by experts and its reliability by Cronbakh's alpha test and SPSS19 software. At the end statistical data were analyzed using t-test and plenty of tables.

Result: The general attitude of the students was that the digital radiology, by reducing the dose can improve the density and contrast of images, enhanced details and will lead to improved radiological techniques. According to the study, 6/78 percent of students had correct information and 7.7% of them had incorrect information from digital radiology. Also the remaining respondents information was considered as moderate.

Conclusion: In this study Radiology students believed digital radiology can enhance the production efficiency and quality of the images. They also had the right information about digital radiology. However, it is recommended in order to prevent the emergence of problems caused by change of radiology equipment and efficiency of the professional in-service training the theoretical training needs to be improved.

Keyword: Attitude; Students of Radiology; Digital Radiology

• 1235

BENIGN OR MALIGNANT: A CASE REPORT OF MULTIFOCAL EPITHELIOID HEMANGIOMA OF FIBULA

Roshan Fahimi [1]; Hamid Rajebi [1,*]

[1] *Tabriz Azad Medical University, Tabriz, Iran*

[2] *UT Health San Antonio*

* *Corresponding author: Hamid Rajebi, UT Health San Antonio. E-mail: rajebi@uthscsa.edu*

Abstract:

Clinical Presentation: A 63-year-old female with no significant prior trauma and relevant past medical history presented with a 2-month history of severe, persistent, gradually worsening, sharp and non-radiating pain over her left distal fibula. Physical examination revealed extreme tenderness to palpation over the lateral distal fibula. There was soft tissue prominence over the mid to lower third of the fibula.

Imaging Findings/Lab Data: Left lower leg radiographs depicted two ill-defined osteolytic destructive lesions measuring 29 and 37 mm in length in the fibular diaphysis. A pathologic fracture was present through the distal lesion. A laboratory test, including serum protein electrophoresis, alkaline phosphatase and basic metabolic profile, was ordered to evaluate for multiple myeloma. CT scans of the chest and abdomen were obtained to evaluate for primary malignancy or any evidence of metastatic disease. The results of these tests were unremarkable. Image-guided biopsy of the lesions was performed and revealed epithelioid hemangioma (EH).

Treatment/Follow-Up: The patient was initially managed with a walker boot. At the 2-month follow-up, an additional third smaller lesion was detected along with an interval increase in size of the two previously seen lesions. The patient proceed with preoperative embolization followed by surgical curettage and open reduction and internal fixation. Angiogram was done and tumor feeding artery was identified but tumor embolization was unsuccessful. The patient underwent fibular bone lesion curettage, PRO-DENSE bone grafting and open reduction and internal fixation with the left fibular diaphyseal plate. Radiographs revealed continued healing with bone graft incorporation at 1.5-, 3- and 7-month follow-ups. The patient was permitted to return to all activities without restriction 1.5 months after the surgery.

Discussion/Learning Points: EH is an uncommon, slow-growing vascular tumor that generally presents on the skin and the subcutaneous soft tissues of the head, with osseous EHs being rare. Although osseous EHs can present as multifocal lesions, the majority of bony EHs are solitary and arise in the diaphysis or metaphysis of long tubular bones, with a predilection for the lower extremity. Radiographically, EH may present as well-defined lytic lesions with sclerotic margins or mixed lytic and

sclerotic lesions. These lesions are often located eccentrically and may demonstrate a disrupted or intact cortex.

• 1236

GALLBLADDER FUNDUS: A SPECTRUM OF ABNORMALITIES

Maryam Tavakoli [1,*]; Bijan Bijan [2]

[1] North Khorasan University of Medical Sciences, Iran
[2] University of California Davis Medical Center, USA

* Corresponding author: Maryam Tavakoli, University of California Davis Medical Center, USA. E-mail tavakolimnf@gmail.com

Abstract:

Fundal gallbladder abnormalities result from broad spectrum of pathologic that most of them have no pathological significance and normally causes no symptoms. Conversely, early incidental detection of malignant lesions is important because symptomatic lesions are often incurable. So use proper imaging to differentiate between them is important.

Although ultrasound has been the choice screen method of gallbladder diseases, making an accurate diagnosis may be impossible. Now day, multiphase MRI and CT scan have become the imaging technique that are widely used to detect and to characterized gallbladder abnormalities.

In cross-sectional imaging analysis of finding included evaluation of thickness, contour, intralesional cystic areas, enhancement pattern, presence of stone, etc. may help to differentiated fundal gallbladder abnormalities.

The porpoise of this educational exhibit is to describe gross anatomy and pathologic appearance of each abnormalities and demonstrate features of them in ultrasound, CT scan and MRI with emphasis on the specific characteristics and will review the role of imaging in the differentiation of these.

Abnormalities included:

- Phrygian cap:

Most common congenital anatomic variant of gallbladder that is asymptomatic and characterized by folding of the fundus on the body. Although ultrasound isn't always conclusive but usually clearly identify in CT scan and MRI.

- Fundal septation:

It is rare and usually asymptomatic and result of incomplete cavitation of gallbladder bud. In ultrasound demonstrated as an echogenic band crossing the lumen and in CT scan and MRI usually clearly identify.

- localized chronic cholecystitis:

Most common form of clinically symptomatic gallbladder diseases that there is evidence of chronic inflammation in pathology and may have a history of biliary colic. Ultrasound demonstrate gallbladder wall thickening and usually with cholelithiasis, without any pericholecystic inflammation. In CT scan, focal fundal thickening with flat contour and adjacent gallbladder thickening is seen. The most common finding in MRI is cholelithiasis and wall thickening without any pericholecystic inflammation.

- Adenomyomatosis:

Has been reported in 2% - 8% of cholecystectomy specimens and have a predilection for the middle and elderly aged women and is usually asymptomatic or paucisymptomatic. It is widely accepted to be a degenerative disease and is characterized by Rokitansky- Aschoff sinuses that are responsible for the imaging finding. Specific ultrasound signs are anechoic intramural diverticulum with or without comet tail artifacts. Optimal CT scan evaluation of gallbladder require IV contrast and Rosary sign is highly suggestive. MRI finding are focal mass, mural thickening and pearl necklace sign.

- Fundal gallbladder cancer:

Uncommon but most common primary biliary carcinoma and predominantly affects elderly women that often present when extend to liver or adjacent structures. Over 90% are adenocarcinoma. Cross-sectional appearance is that of a mass replacing the gallbladder (40-65%), focal wall thickening (20% - 30%) or an intraluminal polypoid mass (15% - 25%). Ultrasound isn't usually useful if there isn't any invasion but there are several features that may be useful, polipoid lesions greater than 1 cm, focal wall thickening >1 cm, heterogeneous mass or asymmetric thickening. CT scan with contrast is extremely helpful (dual phase) and finding suggesting cancer are hypo or iso attenuating heterogeneous mass, adjacent invasion, pronounced wall thickening (>1 cm), thickness with mural irregularity or marked asymmetry. Caner in MRI is typically T1 hypo intense and T2 hyper compare with liver parenchyma, typically shows early irregular contrast enhancement which persists into delayed images. Stones are common.

Conclusion: All of gallbladder fundal abnormalities should be kept in the mind during imaging and knowledge of the characteristic imaging finding of each abnormalities are essential in order to manage patients.

• 1237

OPERATOR RADIATION EXPOSURE IN TRANS-RADIAL FROM CORONARY ANGIOGRAPHY PROCEDURES; EFFECT OF PELVIC AND RADIAL LEAD SHIELDS

Ali Tarighatnia [1,*]; Aida Khaleghifard [2]; Alireza Farajollahi [3]; Amir Hossein Mohammad Alian [4]; Morteza Ghojazadeh [5]

[1] *SSO*

[2] *Department of medical physics, Tabriz University of medical sciences, Tabriz, Iran*

[3] *Medical Education Research Centre, Tabriz, Iran*

[4] *Interventional Cardiology Unit, Aalinasab Hospital, Tabriz, Iran*

[5] *Liver and Gastrointestinal Disease Research Center,Tabriz University of Medical*

[*] *Corresponding author: Ali Tarighatnia, SSO. E-mail: tarighat56@yahoo.com*

Abstract:

Purpose: The aim of present study was to determine the impact of radial and pelvic lead shields on possible reduction of operator radiation dose during Trans-Radial (TRA) coronary procedures.

Methods and materials: We randomized 456 patients to undergoing coronary angiography and Angioplasty (CA, PTCA) with radial approach.

First group with 226 patients were carried out radial and pelvic shields and other group with 226 patients were non-shield. The operator radiation exposure was measured by electronic dosimeter.

Results: operator radiation dose in the group of patients who underwent CA with pelvic and radial shields was 19.21 ± 4.05 μSv and without shield was 31.23 ± 7.59 μSv ($P < 0.05$). And operator radiation dose in other group who underwent CA + PTCA with pelvic and radial shields was 40.12 ± 12.25 μSv and without shield was 85.59 ± 12.23 μSv ($P < 0.05$).The patient radiation exposure and fluoroscopy time were the same in two groups ($P = 0.38$).

Conclusion: Use of radial and pelvic shielding is reducing operator radiation dose in Trans-Radial (TRA) coronary procedures effectively.

• 1238

THE PREVALENCE OF WORK-RELATED MUSCULOSKELETAL DISORDERS AMONG RADIO TECHNOLOGISTS THOSE WORKING IN RADIOLOGY CENTERS OF THE HOSPITALS AFFILIATED IN AJA UNIVERSITY OF MEDICAL SCIENCES IN 2016.

Mohammad Hossein Yekta Kooshali [1,*]; Behnam Shokati [2]

[1] *Guilan University of Medical Sciences, Guilan, Iran*

[2] *Aja University of Medical Sciences*

[*] *Corresponding author: Mohammad Hossein Yekta Kooshali, Guilan University of Medical Sciences, Guilan, Iran. E-mail: Yektakooshali.mh1995@yahoo.co.uk*

Abstract:

Background: Musculoskeletal disorders are considered as one of the most important employment effects. The aim of this study was to investigate the prevalence of musculoskeletal disorders Radio technologists and nurses working in hospitals affiliated with AJA University of Medical Sciences in 2016.

Patients and Methods: This controlled cross-sectional study was conducted on the radio technologists (case) and nurses (control) employed in hospitals Islamic Republic of Iran-Tehran, AJA University of Medical Sciences (n = 144) and assigned at least one-year work experience in 2016. In order to evaluate disorders of the body, the Nordic Musculoskeletal Questionnaire (NMQ) and to assess the risk of musculoskeletal disorders (QEC) was used. Collected data using independent t-test and Pearson were analyzed by SPSS16.

Results: The results obtained from the questionnaire showed that in the past year, the prevalence of musculoskeletal disorders among radio technologists was reported in the leg, cervical, shoulder and knee, 80.5, 50, 41.6 and 41.6 percent respectively, and also in nurses were reported in cervical, femur, leg and back, 48.6, 47.2, 47.2 and 44.4 percent, respectively, more than other parts of the body. The nonrelationship found with occupational hazard awareness, shifts in a month and experience with Musculoskeletal disorders. More occupational awareness was found in radio technologists.

Conclusions: Considering the high prevalence of

musculoskeletal disorders and poor posture at work and hazardous work conditions, ergonomic intervention to reduce the speed of work and working hours are recommended.

• 1239

THE ROLE OF RADIOLOGIC TECHNOLOGIST IN THEINTERVENTIONAL RADIOLOGY PROCEDURES

Ali Tarighatnia [1,*]; Asghar Mesbahi [2]; Mohammad Reza Ahrabi [3]

[1] SSO

[2] Medical Radiation Sciences research Team, Tabriz University of Medical Sciences,

[3] Interventional Radiology Unit, Aalinasab Hospital, SSO, Tabriz, Iran.

* Corresponding author: Ali Tarighatnia, SSO. E-mail: tarighat56@yahoo.com

Abstract:

Interventional Radiology (IR) is a specialty branch of a radiology which utilizes different imaging modalities such as fluoroscopy-ray Computed Tomography (CT), ultrasound, and magnetic resonance imaging (MRI), for diagnosis and treatment of many medical problems and conditions.

The effectiveness of treatment by this approach has been often better than with traditional treatments. The advantages of this technique includes; reduced mortality risks, shorter hospital and earlier return to work, lower costs, greater comfortand improve health outcomes.

The Medical conditions are diagnosed and treated using interventional procedures, including diseases related to several anatomic site such as ;Thorax, abdomen, Heart and blood vessels, Musculoskeletal, Genitourinary, Other organs and soft tissue. The main role of radiologic technologist in IR procedures; is to optimize the use of radiation, give advice on medical radiological equipment, performance of quality assurance, the surveillance of the medical radiological installations; the training of practitioners and other staff in relevant aspects of radiation protection, even as medical physicist.

The purpose of this course is to provide information about the interventional radiology procedures and also to evaluate role of radiologic technologist in this context.

• 1240

A REVIEW: THE ROLE OF SWIFT IN DENTAL MRI

Sina Ehsani [1,*]

[1] Mazums

* Corresponding author: Sina Ehsani, Mazums. E-mail: sinaehsani350@yahoo.com

Abstract:

Background: Previously, MR image acquisition of mandibular/dental area, on the other hand receiving a favorable signal from those tissues was like a complex problem. In fact, lack of proton density and very short T2 relaxation time causing the result. So, in this study, the “SWIFT” sequence as a solution discussed.

Material and methods: As a review study, the last 5 years’ articles all about Dental MRI and SWIFT sequences reviewed. 22 full text article was found and studied. The advantages and disadvantages of swift considered and its ability comprised to others sequences and modalities like CBCT.

Results: SWIFT sequence by applying especial flip angels and changing X gradient and Y gradient at the same time and other hardware can provides 3D images. sensitivity of SWIFT to very short T2 relaxation times, enable it to provide high contrast images from tissues like enamel and dentin. Albeit it’s a fast sequence but in contrast with others doesn’t have loud acoustic noise. From patients’ view the Ligyrophobia it’s very important. It’s also less sensitive to motion artifact, because it don’t have actually - echo time -. SWIFT can demonstrate cracks with 20-µm width, which is 10 times narrower than the imaging voxel size that not visible in GRE, even with a short echo time of 2.75 mS.

Conclusion: SWIFT as a noninvasive method can be used for imaging both soft and hard tissues, especially in dental MRI, also in early stages diagnosis or even finding micro cracks.

Key words: swift, Ligyrophobia, X gradient, Y gradient

• 1241

FETAL MRI

Afrooz Hosseini [1]; Jamal Abdolmohammadi [1]; Zahra Zandi [1]

[1] Kurdistan University of Medical Sciences, Kurdistan, Iran

* Corresponding author: Afrooz Hosseini, Kurdistan university of Medical Sciences, Kurdistan, Iran. E-mail: Hoseini7212@gmail.com

Fetal magnetic resonance imaging (MRI) is most frequent technique used to evaluate the fetus in utero and pregnancy structures. In case of contemplated fetal surgery, idiopathic diagnosis or obsession anomalies MR imaging play adjunctive rule. In past 3 decades MRI has been used for the assessment of fetal abnormalities. By means of multiple planes within a larger field of view, Fetal MRI images evaluated fetus easily. This facility doable by recent advances in technology, such as rapid pulse sequences, parallel imaging and advances in coil design. The most important MR imaging benefit is a noninvasive diagnostic examination that does not involve ionizing radiation. T2-weighted ultrafast sequences as first generation Modern fetal MRI because of avoiding motion artifact was primarily used for the examination of the fetal brain. T2w contrast provides an excellent delineation between fluid such as cerebrospinal fluid (CSF) and tissue. The progression of ultrafast sequences has influenced all aspects of fetal MRI. Imaging protocols have to be adjusted to the rapidly developing fetal anomalies and to the clinical question. Substantially, the most common indication of Fetal MRI is devastating the fetus intracranial anatomy. As a matter of fact, deliberating the developing fetal MR anatomy as essential guidance lead to detect abnormalities that they are classified according to their severity and tensity. Accurate interpretation of fetal MRI can provide valuable information that helps prenatal counseling, facilitate management decisions, guide therapy, and support research studies. It was studied about 43 articles. We try to review the most common techniques those that are obtainable, for fetal MRI. All this information help to optimize basic methods and noble techniques for promoting quality of fetal MR imaging.

Keywords:
MRI; Fetal; Pregnancy; HASTE; True FISP

• 1242

EVALUATE THE EFFECT OF CONTRAST MEDIA ON PATIENT DOSE IN CT EXAMINATION OF ABDOMEN-PELVIC PERFORMED WITH AEC

Omid Seraydarmansour [1,*]

[1] Taimaz co.

* Corresponding author: Omid Seraydarmansour, Taimaz co. E-mail: mansour.omid@yahoo.com

Abstract:

Background: The aim of our study was to investigate the relative dose increase when an abdomen-pelvic CT examination is carried out after administration of oral and IV contrast medium with respect to the same CT scan without contrast medium.

Patients and Methods: Forty patients who underwent both unenhanced and contrast-enhanced abdomen-pelvic CT scan. All examinations were performed using an automatic tube potential selection tool on a 16 MDCT scanner (Ingenuity, Philips) with the following protocol: Collimation 16 × 1.5 mm, 120 Kvp, pitch 1.37, rotation time 0.5 seconds. All CT images were reconstructed at 5-millimeter section thickness with a standard reconstruction algorithm. The oral contrast agent was made up of 40 mL of meglumine compound (370 mgI/ml) mixes in 1 liter of water 3 houres before scanning. Iodinated contrast medium (Ultravist 350) containing 350mgI/ml was administered IV at a dose of 1.2 ml/kg of patient weight. Contrast-enhanced CT examination was performed 60 seconds after the start of injection. Two abdominal radiologists evaluated the images for diagnostic confidence.

Results: CTDI vol values obtained for each patient on dose report at the end of CT examinations. An increase in patient dose was noted in all CT examinations with IV and oral contrast compared to unenhanced CT examinations. Average dose increase was 11%.

Conclusion: Our evaluation showed an increase in patient dose when iodinated contrast medium is used in CT examination of abdomen-pelvic basing on the increment in Hounsfield units on the organs.

• 1243

ASSESSMENT OF PATELLAR CARTILAGE CHONDROMALACIA WHIT DWI AND ADC MAP

Zeynab Yazdi Sotoodeh [1,*]; Vida Sargazi [2]

[1] MSC of Medical Imaging, Department of Radiology, faculty member of paramedici sience

[2] zahedan medical

* Corresponding author: Zeynab Yazdi Sotoodeh, MSC of Medical Imaging, Department of Radiology, faculty member of paramedici sience. E-mail: zeynab_yazdi2016@yahoo.com

Abstract:

Goal: Survey findings of DWI and apparent diffusion coefficient map in the patellar cartilage in patients with patellar chondromalacia

Materials and methods: 31 patients, 12 healthy volunteers and 19 patientswith Patellar conderomalacia were examined, in this study. Diffusion-weighted imaging was performed using whit magnetic resonance imaging system GE 5.1 Tesla with set Knee surface coils, in the plan axial and achived quantity ADC maps for all patients. Then calculated the average amount of ADC for lesion by drawing ROI.

Results: patellar cartilage lesions in patients with patellar chondromalacia and in Diffusion-weighted imaging focal increase in non homogeneous signal intensity and observed.thickening of cartilage with surface irregularities as well as reactive changes subchondral and bone marrow edema. The mean ADC values of coderomalacia group and health group were respectively 1.34 × 10^{-3} mm^2/s and 1.07 ×10^{-3} mm^2/s.

Conclusion: diffusion weighted imaging can be used as a powerful Tool in the diagnosis of articular cartilage lesions and ADC maps provides quantitative assessment of cartilage lesions.

Keywords:

Diffusion Weighted Imaging; Apparent Diffusion Coefficient Map; Patellar Chondromalacia

• 1244

THE ROLE OF DIFFUSION- WEIGHTED IMAGING (DWI) IN DIAGNOSIS OF BRAIN TUMORS

Zeynab Yazdi Sotoodeh [1,*]; Vida Sargazi [2]; Jalal Ordoni [2]

[1] *MSC of Medical Imaging, Department of Radiology, faculty member of paramedici sience*

[2] *Zahedan University of Medical Sciences*

* *Corresponding author: Zeynab Yazdi sotoodeh, MSC of Medical Imaging, Department of Radiology, faculty member of paramedici sience. E-mail: zeynab_yazdi2016@yahoo.com*

Abstract:

Magnetic resonance imaging (MRI) plays an imrortant role in the detection of brain tumors. It is generally accepted that conventional magnetic resonance imaging (MRI) tends to underestimate the size of tumor, which in turn can lead to a suboptimal treatment. New functional magnetic resonance imaging sequences such as diffusion tensor imaging (DTI) and diffusion-weighted imaging (DWI) have been widely used to evaluate such tumors.

Diffusion-weighted imaging (DWI) is an acceptable technique for studing the movements of water molecules of tissue. In diffusion-weighted imaging we may face with drastically different signals, depending on cell density and the type of tissue. Measuring the diffusion coefficient in brain tumors allows the classification of tumor types and provide a difinitive diagnosis of some kinds of tumors.

Information obtained by diffiusion for cellular response to drug treatment and/or radiation therapy are important in tumor diagnosis. The high signal diffiusion-weighted is used for spatial separation of malignant brain tumors, edema around the tumor and normal brain tissue.

The diffusion-weighted imaging findings describes the special differences in the structure of membrane and its limitations, and finally they are useful in measuring the spreading direction and evaluating consistancy of white matter.

Such information are useful for treatment planning, especially for advanced post-processing methods. Diffusion-weighted imaging technique which allows information analysis and spreading directon specification, is usually used for patients with brain tumors. Other advanced techniques need an improvement in speed and spatial resolution to obtain clinical information.

• 1245

RISK OF EXPOSURE-INDUCED CANCER DEATH VALUES ASSOCIATED WITH THE ABDOMINAL COMPUTED TOMOGRAPHY ANGIOGRAPHY

Ali Chaparian [1,*]

[1] *Technology of Radiology Department*

* *Corresponding author: Ali Chaparian, Technology of Radiology Department. E-mail: ali_chaparian@yahoo.com*

Abstract:

Background/Objectives: Radiology examinations and computed tomography (CT) scans are suitable imaging techniques for diagnosis of the different diseases. However, one major disadvantage of these X-ray examinations is the potential risk of cancer related to ionizing radiation exposure. For assessing the potential benefit-risk ratio of various methods, the physicians need to have some knowledge about the magnitude of the risk of exposure-induced cancer death (REID) values associated with these procedures. The purpose of this study was to estimate the REID values for the abdominal CT angiography (CTA).

Patients and Methods: Organ doses and the effective dose were calculated with the combination of experimental measurements and Monte Carlo simulations for 50 patients (28 men and 22 women). The REID values were estimated for the abdominal CTA, using models developed by the Biological Effects of Ionizing Radiation VII (BEIR VII)-Phase 2 report.

Results: The REID values varied from 53 to 456 per million depending on the age and gender of patients. In this study, a variation in radiation cancer risk as a function of age and gender of the patients was found. The REID values were considerably higher for females (194 ± 72 per million) than males (101 ± 25 per million), and higher for younger than older patients.

Conclusions: The results of this investigation will increase the level of knowledge of physicians and allow them to justify the abdominal CTA. This information will hinder either overestimation or underestimation of radiation risks. The physicians who underestimate the risks of radiation and order too much CTA scans can be concerned by knowing the REID values. On the other hand, the physicians who overestimate the risks of radiation and have an excessive fear of requesting these scans, can reduce their concern based on this results and benefit from the advantages of using this methods for diagnosis of diseases reasonably.

• 1246

THE S AND G2-M PHASES VARIATION AFTER EXPOSURE TO 2 GY Γ-RAY AT DIFFERENT

Parinaz Mehnati [1,*]; Farzad Salehpour [1]

[1] *Tabriz University of Medical Sciences*

[*] *Corresponding author: Parinaz Mehnati, Tabriz University of Medical Sciences. E-mail: parinazmehnati@yahoo.com*

Abstract:

Objective: When cells are exposed to ionizing radiation, one of the important responses of cells is delay on the cell cycle. Some factors such as cell doubling time, cell sensitivity to radiation, the length of each phase of cell cycle, cell fixation time post irradiation, cell type, cell death response to radiation, are important to in cell response to radiation. Nowadays, the study of cell cycle progress for determining of organism damage is interest. The aim of current study was to investigate radio-response of cells as a marker of cancerous tissue or organ to radiotherapy.

Materials and Methods: Chinese hamster ovary (CHO) cell line was exposed to 2 Gy of γ-irradiation. The analysis of cell population abundance in S and G2-M phases was prepared at 6, 24, and 72 hours post irradiation by Flow Cytometry method.

Results: The higher frequency of S-phase was 28.01% at 72 h in exposed CHO cells, while the lower frequency was 5.17% at 24 h. At 72 h after irradiation, cells number was significantly lower than the control. The percentage of cells in the G2-M phase after 2 Gy was 22.31, 16.35, and 14.35% at 6, 48, and 72 hours, respectively.

Conclusion: The results of different time post irradiation induces to variation on the cell cycle distribution of ovary cell. Furthermore, this study suggests that cell reply could be use for prediction of ovary radiation treatment response.

Keywords: Cell Cycle; Γ-Radiation; Generation Time; Cell Delay

• 1247

INTRAVASCULAR BRACHYTHERAPY FOR L CORONARY AND PERIPHERA VASCULAR DISEASE AFTER ANGIOPLASTY OR STENT SURGERY

Mohsen Mohammadi [1,*]

[1] *(MSc.) staff of radiology and ctscan Departement, Imam Khomeini Hospital, Ardabil University of Medical Sciences, Ardabil, Iran*

[*] *Corresponding author: Mohsen Mohammadi, (MSc.) staff of radiology and ctscan Departement, Imam Khomeini Hospital, Ardabil University of Medical Sciences, Ardabil, Iran. E-mail: mradiobiology313@gmail.com*

Abstract:

Placement of an endovascular stent has become a common procedure to successfully reopen blocked arteries. Even so, the treated vessel may once again narrow (restenosis), restricting blood flow.

However, up to 15 percent of people who receive even the most modern type of stents — called drug-eluting stents - will experience restenosis, or re-narrowing of the artery, due to the formation of scar tissue around the stent. In the femoral and popliteal arteries in the leg, the use of nitinol stents magnifies this problem. About 20 to 40 percent of these stent patients experience restenosis 2 years after angioplasty. The risk of restenosis (i.e., in-stent restenosis) in patients who undergo with stent placement, is estimated at 20% Now, an improved radiation technique may provide a safe and effective solution.

Beta sources produce high-energy particle radiation which rapidly loses activity over short distances of the vessel wall.

Alternative methods for delivering the radiation involve the insertion of a permanent lowactivity radioactive stent with a radioactive half-life tailored to the purpose, for example phosphorus-32, with vanadium-48 and yttrium-90 considered as alternatives.

Intravascular brachytherapy has also been investigated as an adjunct to percutaneous transluminal angioplasty of the femoropopliteal systems, as a technique to reduce the risk of a de novo restenosis, either in native or grafted vessels, both with or without stent placement. The greatest amount of clinical experience with intravascular brachytherapy is in the coronary artery system, However there Intravascular Vascular brachytherapy (IVBT) significantly decreases recurrence rates after treatment of ISR.

• 1248

CLINICAL APPLICATION OF QUANTITATIVE FAT IMAGING IN CHRONIC LIVER DISEASES

Vahid Shahmaei [1,*]; Amir Eftekhari [1]

[1] *Shahid Beheshti Univesrsity of Medical Sciences, Tehran, Iran*

[*] *Corresponding author: Vahid Shahmaei, Shahid Beheshti Univesrsity of Medical Sciences, Tehran, Iran. E-mail: vahidshahmaei.sbmu@gmail.com*

Abstract:

Nonalcoholic fatty liver disease (NAFLD) is a frequent cause of chronic liver diseases. Steatosis, the accumulation of fat-containing vacuoles within hepatocytes, is a key histologic feature of fatty liver disease. Liver biopsy, the current standard of reference for the assessment of steatosis, is invasive, has sampling errors, and is not appropriate in some settings. Moreover, it can cause morbidity and complications and cannot be repeated often enough to monitor treatment response. Noninvasive methods that accurately and objectively quantify liver fat are needed. Quantitative non-invasive biomarkers of liver fat would be beneficial. MRI methods for detection of liver fat are: Dixon or "In-phase" and "out of phase" (IOP) imaging with an echo time at which the fat and water signals are in phase, the signals add constructively and when they are out of phase, the signals cancel. Fat detection is possible by comparing the signal intensity on the in-phase and out-of-phase images. Frequency-selective Imaging Fat quantification may also be performed by acquiring two images, one with and one without a fat-saturation pulse, applied around the CH2 peak to null the dominant component of the fat signal. Complex chemical shift based water-fat separation methods that can measure 0 - 100% fat and methods measure proton density fat fraction (PDFF). IDEAL IQ provides volumetric whole-liver coverage in a single breath-hold and generates estimated t2* and triglyceride fat fraction maps in a non-invasive manner. The technique is designed for water-triglyceride fat separation with auto t2* correction and estimation based on the IDEAL technique. These techniques permit the breakdown of the net MR signal into fat and water signal components, allowing the quantification of fat in liver tissue, the use of these techniques as a quantitative biomarker of intracellular liver fat hold great promise to provide cost-effective, accessible and accurate evaluation of diffuse liver disease. Potential clinical applications for liver fat quantification are detection and monitoring of nonalcoholic fatty liver disease, monitoring liver fat content to assess obesity and insulin resistance, pre transplantation evaluation of living liver donors, detection and monitoring of hiv-associated lipodystrophy, monitoring of hepatic steatosis related to hepatic neoplasms.

• 1249

QUANTITATIVE SUSCEPTIBILITY MAPPING (QSM) BASIC AND APPLICATION

Vahid Shahmaei [1,*]; Amir Eftekhari [1]

[1] *MRI MSc student , Shahid Beheshti Univesrsity of Medical Sciences, Tehran, Iran*

[*] *Corresponding author: Vahid Shahmaei, MRI MSc student , Shahid Beheshti Univesrsity of Medical Sciences, Tehran, Iran. E-mail: vahidshahmaei.sbmu@gmail.com*

Abstract:

Susceptibility-weighted imaging (SWI) is a magnetic resonance imaging (MRI) technique that enhances image contrast by using the susceptibility differences between tissues. The method enhances image contrast qualitatively, relying on phase shifts due to differences in magnetic susceptibility between tissues, however, does not provide quantitative measures of magnetic susceptibility. This limitation is currently being addressed with the development of quantitative susceptibility mapping (QSM), QSM extending SWI in an elegant way, is a new sophisticated post processing technique that numerically solves the inverse source-effect problem to derive local tissue magnetic susceptibility (source) from the measured magnetic field distribution (effect) as it is reflected in the phase images of gradient-echo sequences. To il-

lustrate the effect of phase from susceptibility only, a flow-compensated, three-dimensional (3D), gradient echo (GRE) susceptibility-weighted imaging (SWI) sequence is used. This sequence was theoretically designed to be fully flow-compensated and tested in the case of linear flow to ensure that no phase effects from flow remained .By choosing an appropriate TE, the resulting phase images provide excellent contrast between GM, white matter (WM).QSM signal processing includes the following steps: brain mask, phase unwrapping, background field removal, Truncated K-space Inverse Filtering and Iterative K-space Updating Algorithm. With QSM being sensitive to tissue magnetic properties, paramagnetic (e.g. deoxyhemoglobin and iron storage) and diamagnetic (e.g. calcium and myelin content) substances can be visualized and quantified with higher accuracy and reliability.QSM has many potential clinical application, such as quantification of cerebral iron deposition or calcium. Excessive iron deposition in dep gray matter structure such as basal ganglia has been observed in many neurodegenerative disease including: Alzheimer's disease, Parkinson's disease ,Huntington disease and multiple sclerosis(MS). Recent QSM studies largely agree that the paramagnetic susceptibility of deep brain nuclei is predominately due to iron deposition. Postmortem MRI and mass spectrometry have validated that susceptibility measured by QSM is linearly correlated with iron concentration in the deep brain nuclei. Another application of QSM is measuring calcification in intracranial arterial wall for ischemic stroke patient. Measurement of venous oxygen saturation is another application of QSM, it has been shown the change in venous oxygen saturation can reflected by the change in susceptibility, it can be used to quantify cerebral metabolic change in stroke and other neurodegenerative disease.

Keywords: Susceptibility; Magnetic Resonance Imaging; QSM, Iron

• 1250

PULSE SEQUENCES OPTIMIZATION AND TECHNICAL CONSIDERATION RELATED TO APPLICATION OF CONTRAST MEDIA

Vahid Shahmaei [1,*]; Ali Saeedi [2]

[1] MRI MSc student, shahid beheshti Univesrsity of Medical Sciences, Tehran, Iran

[2] Jam-E-Jam Medical Imaging Center

* Corresponding author: Vahid Shahmaei, MRI MSc student, shahid beheshti Univesrsity of Medical Sciences, Tehran, Iran. E-mail: vahidshahmaei.sbmu@gmail.com

Abstract:

Nowadays MRI examinations have been widely used in clinical applications for many diagnoses. The use of contrast agent in MRI improves lesion detection and characterization and causes more accurate diagnosis. It is very important to know optimal parameters of all pulse sequences and how much contrast medium should be injected to achieve maximum signal intensity in the region of interest. Pulse sequences are categorised according to the contrast agent mechanism: changes in proton density,relaxivity, magnetic susceptibility and resonant frequency shift. Applications in morphological imaging, magnetic resonance angiography, dynamic imaging and cell labelling are described.The importance of optimizing the pulse sequence for each application is emphasized.This review has outlined some of the pulse sequence approaches that have been used to image tissue following the administration of contrast agents. The primary appli-cation remains morphological imaging following the administration of either a positive or a negative relaxivity-based agent. Magnetic resonance angiography is probably the next biggest application requiring rapid image acquisition during the first pass of a positive relaxivity-based agent.Dynamic contrast-enhanced imaging is a rapidly developing field that allows the contrast agent kinetics to be mea-sured, potentially providing quantitative information on organ or tumour function. Finally the combination of novel MRI pulse sequences together with the recent developments in targeted contrast agents are discussed in the paper.

Keywords: Contrast Agents, Relaxivity, Pulse Sequence

• 1251

HIGH-RESOLUTION MAGNETIC RESONANCE IMAGING OF THE BRACHIAL PLEXUS USING AN ISOTROPIC 3D T2 STIR (SHORT TERM INVERSION RECOVERY) SEQUENCE AND COMPARATIVE EVALUATION OF 3D-T2-STIR WITH AND WITHOUT CONTRAST ENHANCEMENT FOR BRACHIAL PLEXUS INJURY

Sonia Rezaee [1,*]

[1] Shahid Beheshti Univesrsity of Medical Sciences, Tehran, Iran

* Corresponding author: Sonia Rezaee, Shahid Beheshti Univesrsity of Medical Sciences, Tehran, Iran. E-mail: sonia.rezaee01@gmail.com

Abstract:

The brachial plexus is a complicated network of

nerves stemming from the ventral branches of spinal nerves C5 to T1 that supply motor and sensory branches to the upper extremities. Imaging the brachial plexus is a challenge because of its complicated structure. Magnetic resonance imaging is renowned for its excellent soft tissue contrast and spatial resolution. Recently, there is an increased interest in diagnosing brachial plexopathies via magnetic resonance imaging (MRI) techniques.

The major disadvantage of conventional MRI sequences used to evaluate the brachial plexus was that maximum intensity projection (MIP) can be done but with less image quality. High-quality MR neurography of the brachial plexus is possible using the 3D-STIR sequence; the nerve are clearly visualized. 3D-STIR sequence demonstrates better capacity than conventional 2D acquisitions to depict anatomy and lesions of the brachial plexus and to identify the number of lesions, but also to analyze their spatial extension within and along the nerve tracts. The anatomical coverage offered by the 3D acquisition and the ability to slice through the volume of interest help to analyze how the lesion modifies and impacts the nerves course. It can be very useful in the tumoral pathology since nerve distortion and/or compression caused by the lesions can be nicely displayed by MIP and MPR. 3D SPACE STIR acquisition without flow compensation to be very useful for the initial screening of patients with tumoral etiologies of the brachial plexus.

3D-T2-STIR images can be improved via suppressing signals of surrounding tissues and paraspinal vessels. After contrast agent administration, the T1 relaxation time of blood in vessels will be reduced whereas that of nerves remains the same.

In conclusion, The MIP image of 3D-T2-STIR technique with contrast agent is superior to that without. It might be a better way to evaluate anatomies and pathologies of the brachial plexus. Therefore, post-contrast 3D-T2WI-STIR sequence could effectively improve the diagnosis rate of brachial plexus injury.

• 1252

MEASURING THE ENTRANCE SURFACE DOSE AND EFFECTIVE DOSE OF PATIENTS IN RADIOLOGY OF CHEST AND ABDOMEN IN HAMADAN AND COMPARISON WHIT THE INTERNATIONAL STANDARD

Maryam Pourkaveh [1,*]; Safoora Nikzad [2]

[1] *Department of Radiology, Faculty of ParaMedicine, Hamadan University of Medical Sciences*

2 Department of Medical Physics, Faculty of Medicine, Hamadan University of Medical Sciences

** Corresponding author: Maryam Pourkaveh, Department of Radiology, Faculty of ParaMedicine, Hamadan University of Medical Sciences. E-mail: m.poorkaveh@yahoo.com*

Abstract:

Objective: The aim of this study was to estimate the Entrance Surface Dose (ESD) and Effective Dose (ED) of patients in imaging (Chest and Abdomen) whit diagnostic radiology systems in Hamadan. In next stage the measured data from this study compared whit reported results of other cities in Iran and the international atomic energy agency (IAEA) standard.

Material and methods: Samples collected from the patients of Hamadan radiology centers. Three Thermoluminescent dosimeters (TLD) used to measure the dose of each patient. The measurements performed on ten patients (for each organ and system) and the information of patient, system and exposure qualification registered. The ESD and ED calculated and compared with the data reported in other studies and the IAEA standard level.

Results: The ESD results showed that there was no significant differences between various models of radiology systems ($P > 0.05$). The mean ESD in this study for Chest and Abdomen were 0.43 ± 0.09 and 2.51 ± 0.19 mGy, respectively; and the mean ED calculated for Chest and Abdomen were 0.05 and 0.33 mSv, respectively.

Conclusion: The calculated ESD for Chest was higher and for Abdomen was lower than the IAEA level. The mean ED for both Chest and Abdomen radiology technique were lower than the IAEA standard level.

Keywords: Entrance Surface Dose; Effective Dose; Absorbed Dose; Chest Radiology; Abdomen Radiology

• 1253

INVESTIGATION OF BREAST DOSE IN THORACIC CT SCAN BY AXIAL AND SPIRAL SCANNING MODES

Vida Sargazi [1,*]; Parinaz Mehnati [2]; Masome Farsizaban [1]; Zeynab Yazdi Sotoodeh [1]

[1] *MS*

[2] *Tabriz University of Medical Sciences, Tabriz, Iran*

** Corresponding author: Vida Sargazi, MS, E-mail: vidasargazi8@gmail.com*

Abstract:

Introduction: Thorax CT is one of the high requested diagnostic assays in radiology centers. The female breast is in scanning field during thorax CT. Increasing of breast cancer risk due to sensitivity of breast tissue to ionizing radiation induced to more considering on the factors which can reduce breast dose. In this study axial and spiral modes as well as scanner detectors such as single- and multi- detectors selected as a effective factors on the breast dose during thorax CT.

Material and method: In the woman chest phantom TLD places was considered. Each breast phantom contained 16 TLD cavities. Four cavities were used per phantom. Absorbed radiation dose of breast was measured in axial and spiral modes. This was repeated for single-and multi- detectors. Results were compared by T-test.

Results: In single detector CT scanner: the mean absorbed dose at 100 mA in spiral mode was 9.18 ± 0.22 mSv and in axial mode was 14.3 ± 0.03 mSv. In 16-detector CT scanner, the mean absorbed dose of breast during chest CT at 100 mA in spiral mode was 13.31 ± 0.03mSv and in axial mode was 9.32 ± 0.03mSv.

Conclusion: The possibility of breast dose reduction in 16- detector CT scan at 100 mA during spiral and axial chest CT was 40% and 29%, respectively. The possibility of breast dose reduction in single detector at 100 mA during spiral and axial chest in 100 mA was 10% and 19%, respectively.

Keyword: Chest CT Scan; Breast Absorbed Dose; Reduction Ma

• 1254

POTENTIAL ROLE OF DIFFUSION TENSOR IMAGINGIN THE EARLY DETECT OF ALZHEIMER'S DISEASE AND MILD COGNITIVE IMPAIRMENT

Tofigh Janeh [1,*]; Navid Sarmast Alizadeh [1]

[1] *Shahid Beheshti University of Medical Sciences, Tehran, Iran*

[*] *Corresponding author: Tofigh Janeh, Shahid Beheshti University of Medical Sciences, Tehran, Iran. E-mail: tofighjaneh@sbmu.ac.ir*

Abstract:

Alzheimer's disease (AD) is themost common cause of dementia, with mild cognitive impairment (MCI) often indicating a pre-AD phase, but even atthis-point, brain pathology has been accumulating form manyyears. Because of the known relationship of medial temporal lobe structures and episodic memory processing and because of the profound declarative memory impairment associated with AD and MCI, these structures have been a major focus of MRI investigations.

Structural magnetic resonance imaging (MRI) studies of Alzheimer's disease and mild cognitive impairment (MCI) have focused on the hippocampus and entorhinal cortex, gray matter structures in the medial temporal lobe. Few studies have investigated the integrity of white matter in patients with AD or MCI. Diffusion tensor imaging (DTI) is based on sensitizing the MR signal to movement of hydrogen on the order of several microns through the application of diffusion weighted gradients in at least six non-collinear gradients simultaneously, and measuring the direction and magnitude of hydrogen movement.This MRI technique that allows for the interrogation of the microstructural integrity of white matter.Based on increases in translational diffusion (mean diffusivity: MD) and decreases directional diffusion (fractional anisotropy: FA) damage to white matter can be assessed. Studies have identified regions of increased MD and decreased FA in patients with AD and MCI in all lobes of the brain, as well as medial temporal lobe structures including the hippocampus, entorhinal cortex and parahippocampal white matter. The pattern of white matter integrity disruption tends to follow an anterior to posterior gradient with greater damage noted in posterior regions in AD and MCI. Recent studies have exploited intervoxel directional similarities to develop models of white matter pathways, and have used these models to assess the integrity of inter-cerebral connections. Particular focus has been applied to the parahippocampal white matter (including the perforant path) and the posterior cingulum. Although many studies have found DTI indicators of impaired white matter in AD and MCI, other studies have failed to detect any differences in MD or FA between the groups, demonstrating the need for large replicative studies. DTI is an evolving technique and advances in its application ought to provide new insights into AD and MCI.

Keywords:

Dementia; Alzheimer's Disease; DTI; Mean Diffusivity; Tractography; Entorhinal Cortex; Magnetic Resonance Imaging; Hippocampus; Medial Temporal Lobe

• 1255

NEW MOLECULAR IMAGING METHODS IN BREAST CANCER DETECTION AND CHARACTERIZATION

Tofigh Janeh [1,*]; Navid Sarmast Alizadehti [1]

[1] Shahid Beheshti University of Medical Sciences

* Corresponding author: Tofigh Janeh, Shahid Beheshti University of Medical Sciences. E-mail: tofighjaneh@sbmu.ac.ir

Abstract:

Introdaction: Breast cancer is the most common cancer among women. The lifetime risk for the development of breast cancer is currently 1 in 8 (12%) in the developed world. Breast cancer is the second leading cause of death for women worldwide and it affects > 8% of women during their lifetime. Early detection is the key to improving breast cancer prognosis since the earlier the cancer is detected, the earlier proper treatment can be provided.

Conventional: conventional diagnostic tools for breast cancer detection, including mammography, ultrasound (us), magnetic resonance imaging (MRI) and computed tomography (CT scan) that provide largely anatomic in nature, using tissue features such as size, shape, and density to identify breast cancer.

Molecular: Molecular imaging including positron emission tomography (PET), single photon emission computed tomography (SPECT), Molecular magnetic resonance imaging (MMRI), optical imaging, and Molecular ultrasound provides noninvasive in vivo information on important biological and molecular events, which can ultimately lead to improved early detection and characterization of therapy response. The goal of molecular imaging is to detect and quantify biological processes at the cellular and subcellular levels in living subjects. With advancements in instrumentation and introduction of novel targeted probes, molecular imaging firmly establishes its role in drug development and in clinical assessment.

Results: Early detection is the key to improving breast cancer prognosis since the earlier the cancer is detected, the earlier proper treatment can be provided.

Conclusion: Molecular detection techniques increasingly allow reproducible clinical imaging of the molecular components of tumor and/or normal tissue in breast. While these are exciting and potentially important advances, much work will be required to identify the technologies that truly Increase Diagnostic Accuracy And Improve Patient Outcomes.

Keywords: Breast Cancer; Molecular Imaging of Breast; Optical Imaging; Molecular Magnetic Resonance Imaging

• 1256

EVALUATION TECHNIQUES RADIOTHERAPY FOR BREAST CANCER

Bahar Faramarzi [1,*]; Mehran Yarahmadi [2]; Sohaila Yazdani [1]

[1] Kermanshah University of Medical Sciences
[2] Kurdistan University of Medical Sciences

* Corresponding author: Bahar Faramarzi, Kermanshah University of Medical Sciences. E-mail: bahar.faramarzi89.bf@gmail.com

Abstract:

Background: 8 years after the discovery of Roentgen, external beam radiation therapy (RT) immediately showed them as useful for treatment. Breast cancer is the most common cancer among women, radiotherapy after surgery is for early stage breast cancer and a standard method used to prevent local recurrence. In a recent survey in Europe and America on the impact of radiation therapy after surgery breast general is given. 10-year risk of recurrence of primary radiation from 35 to 19 and 15 year from 25 to 21 reduced. Common breast cancer radiation therapy techniques are the tangential wedged beams (TWB) and field-in-field (FIF) and most of the times match up with the supraclavicular field. Other techniques are tangential IMRT-T, Multi-beam-IMRT and VMAT.

Objectives: In this paper, we evaluate techniques radiotherapy including FIF and TWB for breast cancer.

Materials: The papers were searched in PubMed and Scopus databases with the relevant key words including breast cancer, radiotherapy techniques, field-in-field and tangential wedged beams.

Results: Three-dimensional analysis tangent technique showed that a large heterogeneity exists within the target volume. Now the problem is get the acceptable homogeneous dose in the target volume because of the continuous changes and impact of lung tissue with low-density lead to heterogeneity in the volume of irradiated. However, this nonuniformity of dose leads to side effects such as pneumonia, breast pain and heart disease.

The common wedge filter used to reduce the nonuniformity. With the development MLC by the

Japanese, new techniques replaced TWB. Recent research on FIF technique showed that this technique reduces non-uniformity of dose.

Conclusion: RT after breast surgery significantly reduces local recurrence. FIF technique has been easy setup that saved time because you do not need to run again in the treatment room. The dose homogeneity index is better than TW techniques. There is a more homogeneous dose distribution in the target volume; dose scatter and dose in healthy tissue is reducing. Monitoring unit (MU) in this technique and the workload device is less.

Keywords: Breast Cancer, Radiotherapy Techniques, Field-In-Field and Tangential Wedged Beams

• 1257

ROLE OF PHASE SENSITIVE INVERSION RECOVERY COMPARED WITH STIR AND T2W TSE IN DETECTION OF CERVICAL CORD MULTIPLE SCLEROSIS LESIONS

Zahra Abidi [1,*]; Fariborz Faeghi [2]; Mohammad Sakhaei [1]; Jamil Abdolmohamadi [3]

[1] *Social Security Organization*

[2] *Shahid Beheshti University of Medical Sciences, Tehran, Iran*

[3] *Kurdistan university of Medical sciences, Kurdistan, Iran*

* *Corresponding author: Zahra Abidi, Social Security Organization. E-mail: abidi4805@sbmu.ac.ir*

Abstract:

Multiple sclerosis (MS) is a chronic inflammatory disease in brain and spinal cord. Spinal cord MS lesions usually are accompanied by brain lesions. But, about 20% of patients with spinal cord lesions have no plaques in their brain. T2W-TSE, STIR (short TI inversion recovery) sequences routinely are used in imaging study of MS patients to depict spinal cord lesions.

We aimed to investigate the importance of PSIR sequence in detection of MS lesions in spinal cord.

Methods: Fifteen patients with MS underwent on a 1.5 Tesla Philips (Ingenia) MRI scanner using protocols included T2W- TSE, STIR and PSIR sequences in the sagittal plane with 3 mm thick slices.

Results: The contrast between MS lesions and surrounding tissue in spinal cord was significantly higher in PSIR. Radiologist observed better delineation of lesions in PSIR compared to T2W-TSE and STIR sequences. The lesions in PSIR were shown more clearly.

Discussion: Spinal cord MRI would be beneficial for early diagnosis and recognizing clinical subtypes of MS due to high spread of lesions in patients with definite MS.

STIR is still considered as a gold standard sequence in detection of cervical cord lesions. But, these advantages of PSIR persuaded us to recommend PSIR as a complementary sequence to detect cervical cord lesions.

• 1258

COMPARISON OF AUTOMATED 3D BREAST ULTRASOUND TO HAND-HELD ULTRASOUND AND MAMMOGRAPHY

Negar Zamani [1,*]

[1] *Medical University*

* *Corresponding author: Negar Zamani, Medical University. E-mail: negarzamani_edu@yahoo.com*

Abstract:

Introduction: Handheld ultrasound is an operator-dependent examination for lesion detection and diagnosis. It is difficult to localize a twodimensional (2D) image plane and reproduce the same image plane at the same location later down the track (1). Therefore automated three-dimensional (3D) ultrasound was developed. the frequencies used is 3.9 - 4.5 MHz. Automated three-dimensional (3D) breast ultrasound (US) systems are meant to overcome the shortcomings of hand-held ultrasound (HHUS).

Purpose: The aim of this study is to analyze and compare clinical performance of an automated 3D-US system by comparing it with (HHUS) hand-held ultrasound, mammography.

Material and methods: in the study that was done with Michael Golatta and et al ,Nine hundred and eighty three patients (=1,966 breasts) were enrolled in this monocentric, explorative and prospective cohort study. All examinations were analyzed blinded to the patients' history and to the results of the routine imaging. The agreement of automated 3D-US with HHUS, mammography and the gold standard was assessed with kappa statistics. Sensitivity, specificity and positive and negative predictive value were calculated to assess the test performance.

In the other study done with D. Kotsianos-Hermle and et al., Ninety-seven patients with a total of 107 breast lesions had mammograms, manual US and an automated breast US scan. Multiplanar recon-

structions in coronal, axial and the sagittal view were reconstructed from the automated dataset and visualized. The data were evaluated according to the BIRADS (breast imaging reporting and data system) classification.

In the third study done with Su Kyung Jeh and et al., ABUS and HHUS images of suspicious breast lesions were obtained for 173 consecutive women scheduled to undergo ultrasonography (US)-guided or stereotactic biopsy. There were a total of 206 lesions, 46 of which were malignant and 160 benign. Three breast radiologists took part in this study, the biopsiedlesion-detection rates were obtained. Using the breast imaging reporting and data system (BI-RADS), the images of the biopsied lesions were evaluated. Factors affecting ABUS detectability were analyzed.

Results: in first study our results showed a high negative predictive value (NPV) of 98%, a high specificity of 85% and a sensitivity of 74% based on the cases with US-guided biopsy. Including the cases where the lesion was seen in a second-look automated 3D-US the sensitivity improved to 84% (NPV = 99%, specificity = 85%).

In the second one The BIRADS criterion "margin" was significantly related to the overall BIRADS classification, independently of the US method being used. The sensitivity of mammography was significantly lower than of each US method (Fisher's exact test with $P < 0.05$). There were no significant differences between the US methods.

In third study the overall detection rates were 83.0% for ABUS and 94.2% for HHUS. Of the 194 HHUSdetected lesions, 169 were detected by ABUS and 25 benign were not. ABUS less frequently detected lesions of smaller size as well as those of benign appearance and lower final-assessment category ($P ¼ 0.011$ and $P < 0.0001$, respectively).

Conclusion the Results of This Study Let Us Suggest, That Automated 3D-US Might be a Helpful New Tool in Breast Imaging, Especially in Screening

• 1259

CLINICAL APPLICATIONS OF SUSCEPTIBILITY-WEIGHTED IMAGING IN DETECTING AND GRADING INTRACRANIAL GLIOMAS AND PROSTATE CANCER

Navid Sarmast Alizadeh [1,2]; Samaneh Barzegar; Azam Alipour [2]

[1] *MSC Student of Medical Imaging (MRI)*

[2] *Shahid Beheshti University of Medical Sciences, Tehran, Iran*

[3] *MRI Technologist*

* *Corresponding author: Navid Sarmast Alizadeh, MSC Student of Medical Imaging (MRI). E-mail: Alizadeh_nsa@sbmu.ac.ir*

Abstract:

SWI is a new MRI technique which is more sensitive than CT, conventional MR and T2*WI GRE sequences in detecting paramagnetic blood products such as deoxyhemoglobin, methemoglobin and haemosiderin in central nervous system. It has been widely used in detecting microbleeds in a variety of brain diseases such as brain trauma, stroke and vascular malformation. Another property of SWI that could prove to be a major asset in the differential diagnoses of intra axial masses is its ability to identify calcium. The strength of SWI lies in its ability to better distinguish blood from the surrounding tissue. Hence, it will be help-ful for us to begin our discussion with a short insight into the life cycle of tumors and the role of blood. It has been shown that neoangiogenesis and neovascularization play a central role in the growth and spread of tumors, particularly for solid tumors such as oligodendrogliomasand glioblastomas. Neoangiogenesis is the process of vascularization of a tissue that includes the development of new vessels in order to feed the growing tumor cells. They also differ from the normal capillaries by their immature walls and increased endothelial gaps.Calcification is a very important indicator in diagnosis and differential diagnosis of brain tumors. Calcification cannot be definitively identified by MR imaging because its signals are variable on conventional spin echoT1-orT2-weighted images and cannot be differentiated from hemorrhage by GE images because both local magnetic field changes and appear as hypo intensities, phase image scan help differentiate calcification from hemorrhage because calcification is diamagnetic. SWI may provide valuable information for the differential diagnosis between prostate cancer and prostatic hyperplasia.More apparent prostate hemorrhages were detected on SWI than on conventional MRI or CT.

• 1260

APPLICATION OF NANOPARTICLES IN IMPROVING THE SENSITIVITY IN MRI

Sohaila Yazdani [1,*]; Karim Khoshgard [1]; Negin Farshchian [2]; Bahar Faramarzi [1]

[1] *Kermanshah University of Medical Sciences*

[2] *Faculty Member, Kermanshah University of Medical Sciences*

* Corresponding author: Sohaila Yazdani, Kermanshah University of Medical Sciences. E-mail: sohailayazdani@gmail.com

Abstract:

Background: Magnetic resonance imaging (MRI) as a noninvasive imaging modality can provide tomographic information with high spatial resolution and good contrast for soft tissues. The main problem in MRI technique is its low diagnostic sensitivity. Currently, 40–50% of MRI scans use magnetic metal ions as contrast agents to enhance the intensity of signal. Owing to developments in nanotechnology, many types of nanomaterials have been developed and used as MRI contrast agents. These contrast agents improve the sensitivity of MRI for enhancing the tumors'detection.

Objectives: The main objective of present study was evaluation of the application of nanoparticles as contrast agents to improve the sensitivity in MRI.

Materials: In this article we reviewed the latest papers related to application of nanoparticles in improving the sensitivity in MRI. The papers were searched in PubMed and Scopus databases with the relevant keywords such as MRI, nanoparticles and contrast agents.

Results: Several types of low molecular weight Gd3+-based complexes and dextran-coated superparamagnetic iron oxide (SPIO) nanoparticles have been used for clinical tumor diagnosis; these agents are as longitudinal relaxation time (T1) and transverse relaxation time (T2) MRI contrast agents, respectively. To further improve the sensitivity, new types of chelates as T1 MRI contrast agents and also combination of low molecular weight T1 MRI contrast agents with different types of carriers have been investigated; they demonstrated a higher sensitivity and specificity for MRI. T2 MRI contrast agents in clinical applications use biocompatible SPIO. Nanoparticles with the size of below 50 nm are appropriate for use in in-vivo conditions. Nanoparticles' properties required to be used as contrast agents in MRI are including: high torque and super paramagnet's uniformity, high colloidal stability in physiological condition, low toxicity and high biocompatibility, ability to escaping from reticuloendothelial system.

Conclusion: Nanoparticles, specially SPIO, as contrast agents can significantly improve the sensitivity in MRI and consequently increase the diagnostic quality.

Keywords MRI; Nanoparticles; Contrast Agents

• 1261

SUSCEPTIBILITY-WEIGHTED IMAGING IN MIGRAINE

Fardis Mosayebian [1,*]

[1] Saadat Abad

* Corresponding author: Fardis Mosayebian, Saadat Abad. E-mail: fardis.mosayebian@gmail.com

Abstract:

Migraine is a common condition, classically presenting with unilateral debilitating painful headaches associated with photophobia, phonophobia, nausea, and vomiting. Migraine with aura typically presents with acute neurologic deficits, which may pose diagnostic difficulties. Acute ischemic cerebrovascular disease, vasculitis, focal infections, etc, must be considered in the differential diagnosis. 1 In this article, we report that SWI showed transient prominence of the venous vasculature within areas of impaired perfusion. With a special focus on parts of the brain known to related to hemiplegic migraine symptoms, we were able to see clear changes in things like blood flow and magnetic susceptibility. This imaging technique may play a helpful role in assessing the vascular events in migraine.

Keywords: Susceptibility-Weighted Imaging.migraine; MRI

• 1262

RADIATION DOSE OF BREAST DECREASED BY USING BISMUTH SILICONE SHIELD IN CHEST CT SCAN

Mehran Arash [1,*]; Parinaz Mehnati [2]; Mostafa Ghavami [3]; Mohammad Zakerhamidi [4]

[1] Iranian

[2] Tabriz University of Medical Sciences, Tabriz

[3] MD, Department of Radiology, School of Medicine, Tabriz University of Medical Sciences, Tabriz

[4] Research Institute for Applied Physics and Astronomy, Tabriz University, Tabriz

* Corresponding author: Mehran Arash, Iranian E-mail: arash.mehran556@gmail.com

Abstract:

Background/ objective: Since Chest CT in comparisons of chest X-ray induces to high dose of radiation in mediastinum organs. The breast is one of the critical and sensitive organs in the field of chest CT examination that receive higher dose and must be protected from radiation. In this study using Bismuth Silicon shield micro particles with different percentages of Bismuth can be reduce absorbed dose of breast while not cause distortions in CT image quality.

Methods: In this study Bismuth Silicon shield contains 5%, 10% and15% percentages of micrometer metal beads of Bismuth and Silicone matrix of composite.

Single-slice CT tube (High Speed) by 120 kV, fixed tube current 80 mA, pitch = 1.3 and thickness = 10 mm. Chest phantom including breast which considered TLD place on the skin and breast was used in this study. Test of the protective effects of breast shield performed in chest CT scan by the result of thermoluminescence radiation dosimeter.

Results: The breast dose of chest CT imaging with and without shield was different. The unshielded breast dose was 6.15 mGy. Using Bismuth Silicon shield by thickness of 1.1 mm and 5% , 10% and15% of Bismuth, the breast dose reduce to 4.20,4.00 and 3.80 mGy respectively. Therefore, Bismuth shields can protect from 32% to 38% dose of breast.

Conclusions: Results showed a significant difference was between using of the shield on the breast during chest CT with different percentages of Bismuth. It can protect and reduce of breast cancer risk.

Keywords: Bismuth Shield; Dose Reduction; Bismuth Silicon Composite

• 1263

INDUCTION OF SPERM DNA DAMAGE IN MICE IRRADIATED ALONE OR IN COMBINATION WITH CHEMOTHERAPEUTICS

Hamid Saghaei [1,*]; Hosein Mozdarani

[1] *Board member, Tehran Branch, Iranian Radiographics Sciences Association*

[*] *Corresponding author: Hamid Saghaei, Board member, Tehran Branch, Iranian Radiographics Sciences Association. E-mail: hamid2952@yahoo.com*

Abstract:

Background: Exposure to ionizing radiation, exogenous chemicals, or chemotherapeutic agents, DNA damage in male germ cells is the most common cause of male infertility. The single-cell gel electrophoresis (Comet) assay has been widely used to measure DNA damage.

Objective: In this study, the effect of in vivo radiation, chemotherapy drug (Actinomycin-D), and the combination effect of both on spermatogenic cells from mice was investigated.

Material and Methods: 32 mice were divided into 8 groups: 3 irradiation groups (1, 2, and 4 Gy), drug group (Actinomycin-D (AD)), 3 AD/irradiation groups, and a control group. Mice received intratesticular injection of 7 μg/25 g of Actinomycin-D before being irradiated with X-ray. After 48 hours, mice were sacrificed and epididymis and testes were removed. DNA damage sperm and morphology were investigated. Results: The result showed that drug alone had no significant effect on DNA damage, but significantly increased it when combined with irradiation (especially 1 and 2 Gy). There was a significant difference between the experimental and the control group in DNA sperm damage, but no significant differences were observed in sperm morphology ($P < 0.001$). In the AD + 4Gy group, DNA damage increased by 365% compared to the controls.

Conclusion: Better patient and provider education, as well as deliberate, coordinated strategies at comprehensive cancer care centers are necessary to make fertility preservation for male cancer patients a priority during pretreatment planning.

Keywords: Spermatogenic; Comet Assay; DNA Damage; Infertility

• 1264

BREAST CANCER SCREENING, DIGITAL BREAST TOMOSYNTHESIS IN COMPARISON WITH MRI

Mohammad Tavakkoli [1,*]

[1] *Radiologic technologist, BSc, paramedical school, Tabriz University of Medical Science, member of USERN*

[*] *Corresponding author: Mohammad Tavakkoli, Radiologic technologist, BSc, paramedical school, Tabriz University of Medical Science, member of USERN. E-mail: mhmmdtvkkl@gmail.com*

Abstract:

Background: Breast cancer is the most common malignancy in women and early detection is important for its successful treatment. This article is an overview of the available modalities for breast cancer screening. The two common modalities discussed include Digital breast tomosynthesis (DBT) and Magnetic Resonance Imaging (MRI). Well, early detection has been shown to be associated with reduced breast cancer morbidity and mortality.

Materials and methods: For this review study we researched breast MRI and DBT studies with entering appropriate keywords. We found about 300 articles in databases such as Google scholar, PubMed, Microsoft Academic, JAMA, and Springer that due to limitation we selected about 20 important ones between them.

Results: For DBT, in one research, cancer detection rates rose from (4.0 to 4.1) breast cancers exams with digital mammography alone to (5.4 to 6.6) breast

cancers per 1,000 exams with added DBT; and Recall rates declined with the addition of DBT in all studies. Across all modalities, invasive cancers (rather than ductal carcinomas in-situ) comprised 67 to 86 percent of cancers detected by MRI, and 68 to 92 percent of those detected by DBT. The sensitivity for breast MRI and DBT, was 93.1%, and100%, respectively; while the specificity was 60.7%, and 75%, respectively.

Harms of supplemental screening with ultrasound or MRI of women with dense breasts include higher recall and biopsy rates when compared with digital mammography alone. Harms of breast MRI include risk of nephrogenic systemic fibrosis for women with advanced chronic kidney disease. DBT is capable of finding tumors that traditional mammography can't and improves the characterization of additional MRI findings not identified. An advantage of breast MRI has been found to be more sensitive in detecting cancers than mammograms. However, a major disadvantage is that breast MRI screening results in more false positives

Conclusion: Breast MRI studies are ideal for women with silicone breast implants and those when breast cancer recurrence is suspected. It's also ideal for high risk patients, with a 20% - 25% lifetime risk, or those with hard-to-asses abnormalities. The important advantage of DBT in studies was associated with a decrease in recall rate and an increase in cancer detection rate. However, DBT had higher diagnostic performance than mammography and higher positive predictive value (PPV) than MRI. Further studies are needed to assess the relationship to clinical outcomes.

Keywords: Digital Breast Tomosynthesis; MRI; Breast Cancer

• 1265

CLINICAL APPLICATION OF CT SCAN IN PATIENTS WITH TRAUMATIC SPINAL CORD INJURY IN AHWAZ MOHAMADREZA KORDANI*,

Mohamadreza Kordani [1,*]

[1] *Paramedical faculty*

** Corresponding author: Mohamadreza Kordani, Paramedical faculty. E-mail: mmohamadreza1992@yahoo.com*

Abstract:

Background and Objective: Traumatic Spinal Cord Injury (TSCI) is a condition where the neural elements suffer acute trauma, resulting in sensory and motor problems, either temporary or permanent. This study aimed to determine the prevalence of TSCI in Ahwaz with emphasis on demographic characteristics of patients, level of injury, injury mechanisms as well as to evaluate the role of computerized tomography (CT) scan in determination of type of fractures and severity

of injury among the TSCI patients.

Materials and Methods: In a retrospective study, all TSCI and spinal fracture patients whom admitted to one of the main trauma centers in Ahwaz, Iran, were selected from early 2012 to end of 2015. For all patients with pain and sensory-motor symptoms, radiography and CT scan (from neck, thoracic and lumbar vertebrae) were requested.

Four independent radiology experts reported and confirmed the level of injury blindly.

All data were computed, and were analyzed using SPSS.

Findings: Overall, a total of 280 patients with traumatic spinal fractures were identified; the majority of patients were male (77.9%). The mean age was 29.8 ± 7.0 years. The peak frequency of injuries, in both men and women, occurred in the 21 - 30- year-old age group. The most common mechanisms of injury were motor vehicle related and falling from height (43.4% and 30.2%, respectively) followed by violence, sport and recreation. The Thoracic vertebrae was the most common level of injury (30.2%) followed by the Lumbar and cervical vertebrae. Using the American spinal injury association (ASIA) classification, 136 (26.2%) patients were classified as having ASIA scale of E (normal) injuries, followed by ASIA scale of B. Both men and women stayed in the hospital less than one week and more than 4 weeks, respectively.

Conclusion: The findings of this study showed that car accident is the leading cause of traumatic spinal fracture injury, followed by falling from height. Prevention policies and programs should be considered to decline the load and effects of TSCI.

KeyWords: Trauma; Spinal Cord Injury; Etiology; CT Scan

• 1266

CRANIAL NERVE MRI

Negar Abdi [1,*]; Jamil Abdolmohamadi [1]; Shadi Tahmasebi [1]

[1] *Kurdistan University of Medical Science*

** Corresponding author: Negar Abdi, Kurdistan University of Medical Science. E-mail: Negar.abdi.n@gmail.com*

Abstract:

Introduction: Neuroanatomy is the study of the anatomy of nervous system. In human there are twelve cranial nerves pairs. Olfactory nerve and optic nerve emerge from the cerebrum and the remaining ten pairs arise from the brainstem. Because the cranial nerves are very tiny structures thin section imaging and high resolution are essential to this evaluation. Thereupon the best modalities for cranial nerves imaging is MRI and using different and particular sequences.

Material and Methods: It is evaluated more than 37 related published article in AJR and official journal of the American Academy of neurology from 2001 to 2015 in order to find out optimized protocols used in cranial nerves MRI articles.

Results: Transverse 3D CISS GRE and so, 3D T2-weighted fast spin echo (SPACE) with sub millimeter pixel size are one must evaluate the VII and VIII nerves with a very high resolution. MRI with contrast enhancement is a valuable tool for detecting and characterizing disease of the cranial nerves. Since demyelinating disorders are a common cause of cranial neuropathies one needs to utilize FLAIR imaging with high resolution. Diffusion weighted imaging aids in the detection of acute stroke processes.

Conclusion: Aneurysms of nearby vessels may impinge on cranial nerves thereby causing deficits so we should performed spin echo scans for any signs of unusual flow voids that might indicate an aneurysm. For both CN VI and CN VI palsies, etiology depends on age and prognosis depends on etiology. Cranial nerve enhancement MRI may sometimes be the first or only indication of an underlying disease process. Gadolinium administration increases the ability of MRI to detect such abnormalities.

Keywords: MRI; Cranial Nerve; Brainstem

• 1267

COMPARISON OF TOMOSYNTHESIS AND MOLECULAR BREAST IMAGING WITH MAMMOGRAPHY IN CANCER DETECTION

Fatemeh Tabatabayi [1,*]; Somayyeh Faramarzi [2]; Sara Narimani

[1] *Tabriz University of medical Sciences, Tabriz, Iran*

[2] *Tabriz paramedical college, Tabriz, Iran*

[*] *Corresponding author: Fatemeh Tabatabayi, Tabriz University of medical Sciences, Tabriz, Iran. E-mail: fatemehtb74@gmail.com*

Abstract:

Introduction: Breast cancer is the most commonly diagnosed cancer in women.The current standard of care for breast cancer screening is mammography, but women with dense breasts or genetic risk factors require additional imaging. The two newest modality in this field are tomosynthesis and molecular breast imaging. Tomosynthesis is used in conjunction with mammography for routine screening, where it helps eliminate tissue overlap that obscures masses and Molecular breast imaging (MBI) is a new imaging technique that can be used as an adjunct to traditional mammography.

Materials and methods: We reviewed published articles in breast cancer imaging modalities .we conducted a review study with the search on Pubmed and RSNA radiology in papers published between 2010 to 2016 using keywords “Tomosynthesis”, “Breast cancer” and molecular “breast imaging”.

Results: tomosynthesis allows to examine all the layers of breast tissue separately and from all different angles. It also allows doctors to be more accurate in determining the size, shape and type of any abnormalities. Studies show that all of these benefits combine to result in a 15% reduction in recall rate and up to a 40% increase in invasive cancer detection with 3D tomosynthesis over standard mammograms. MBI is more comfortable for claustrophobic patients and is not contraindicated in patients with metallic implants or renal disease. And the test can be performed on an outpatient basis, with less radiation exposure and less discomfort because the breast does not need to be compressed.

Conclusion: using tomosynthesis Increases comfort because of producing 2D and 3D images in a single compression and Improves imaging for large dense breast tissue and the specificity of MBI is better, decreasing the number of false-positive findings. Best of all, MBI scans can identify potential problems that other techniques like conventional mammograms, And a better chance for early detection so a better chance for successful treatment.

Keywords: Mammography;Tomosynthesis; Molecular Breast Imaging (MBI)

• 1268

COMPARISON OF RADIOSENSITIVITY IN HEALTHY WARM, MODERATE AND COLD MIZAJ PERSONS

Fatemeh Asghari [1,*]; Kourosh Gorji [1]; Seyyed Ali Mozaffarpour [1]

[1] *Babol University of Medical Sciences*

* Corresponding author: Fatemeh Asghari, Babol University of Medical Sciences. E-mail: Fatemehasghari98@Yahoo.Com

Abstract:

Background: Radiosensitivity is the relative vulnerability of cell, tissues, organs or organisms to the dangerous effect of ionizing radiation. The response to radiation depends on many factors such as physical characteristic of ionizing radiation including its type, energy and dose rate and also enviromental condition.

Inherent characteristic is one of the important resons of differences in radiation sensitivity.

Most of traditional medicine cultures have often based their diagnosis and treatment order on physical and mental traits of patients which called mizaj (temperament). Mizaj is an inherent trait which indicates the properties of a cell, a tissue, an organ of the organism as a whole and represents the physical and chemical properties of body.

In this study, the association between the radiosensitivity and mizaj was investigated by comet assay in a cytogenetic study.

Material and Method: Thirty 20 - 40 years old healthy volunteers were divided into 3 groups of warm, moderate and cold mizaj using a standard questioner, 2 milliliter blood samples of them were taken and the samples were divided into two part. One part was exposed to 4 Gy of gamma rays from an accelerator sourse and the second one was considered as control.The exposed and non-exposed blood samples were studied by comet assay.

Result: Our study showed that the radiosensitivity index of warm mizaj persons was significantly higher than other persons, also the sensitivity of moderate mizaj persons was more than the cold ones.

Conclusion: According to the findings, it seems that mizaj type can be used as a radiosensitivity index for determining the given dose to radiotherapy, although more studies are necessary.

• 1269

ESTIMATION OF CARDIAC CT ANGIOGRAPHY RADIATION DOSE TOWARD THE ESTABLISHMENT OF NATIONAL DIAGNOSTIC REFERENCE LEVEL IN IRAN

Mohammad Bagher Hosseini Nasab [1,*]; Ali Shabestani Monfared [2]; Mohammadreza Deevband [1]; Reza Paydar [3]; Mehrdad Nabahati [2]

[1] Shahid Beheshti University of Medical Sciences, Tehran, Iran
[2] Babol University of Medical Sciences, Mazandaran, Iran
[3] IUMS

* Corresponding author: Mohammad Bagher Hosseini Nasab, Shahid Beheshti University of Medical Sciences, Tehran, Iran. E-mail: aryou_mbh@yahoo.com

Abstract:

Background: In recent years, with the introduction of 64-slice CT and dual-source CT technology, coronary CT angiography (CCTA) has emerged as a useful diagnostic imaging modality as a non-invasive assessment of coronary heart disease. CT produces a larger radiation dose than other imaging tests and cardiac CT involves higher radiation dose with the advances in the spatial and temporal resolution. The aims of this study are patient dose assessment and establishment of national diagnostic reference level for CCTA in Iran.

Method: A questionnaire was sent to CCTA centers. Data for patient and CT protocols were obtained. The volumetric CT dose index (CTDIvol), dose length product (DLP) and total DLP were considered in the 32 cm standard body phantom. Calculation of estimated effective dose (ED) was obtained by multiplying the DLP by a conversion factor (k = 0.014 mSv (mGy cm) -1).

Results: Mean value of CTDIvol and DLP for CCTA was 50 mGy and 825 mGy cm. The third quartile (75th) of the distribution of mean CTDIvol (66.54 mGy) and DLP (1073 mGy cm) values was expressed as the diagnostic reference level (DRL) for CCTA in Iran. The median of ED was 10.26 mSv and interquartile range of ED was 7.08 - 15.03 mSv.

Conclusion: A large variety in CTDIvol and DLP among CT scanner and different sites due to variability in CT parameter is noted. It seems that training could help to reduce patient's dose.

Keywords: CTDI vol; DLP; Coronary CT angiography; Diagnostic Reference Level; Patient Dose- Effective Dose

• 1270

PREDICTING TREATMENT RESPONSE USING DIFFUSION-WEIGHTED MR IMAGING IN CHEMORADIOTHERAPY OF HEAD AND NECK SQUAMOUS CELL CARCINOMA

Fahimeh Rezaie [1,*]; Karim Khoshgard [2]; Abdolazim Sedighi [3]

[1] MSc Student of medical physics, Students Research Committee, Kermanshah University of Medical Sciences, Kermanshah, Iran

[2] Department of Medical Physics, Faculty of Medicine, Kermanshah University of Medical Sciences, Kermanshah, Iran

[3] Radiation Oncologist, Mahdieh Oncology and Radiotherapy, Hamedan, Iran

* Corresponding author: Fahimeh Rezaie, MSc Student of medical physics, Students Research Committee, Kermanshah University of Medical Sciences, Kermanshah, Iran .E-mail: Rezai.f93@gmail.com

Abstract:

Background: Chemo-radiotherapy is the standard treatment for advanced head and neck squamous cell carcinoma (HNSCC). However some of the patients don't response to chemoradiotherapy and they should be undergone another treatment. Then, chemoradiotherapy of these patients only deliver excessive dose to their healthy tissues. Therefore, identification these patients before or early after starting the treatment is important. Diffusion-weighted MR imaging (DWI) is an noninvasive technique which is sensitive to thermally driven motion of water molecules in tissues. These are quantitated by Apparent diffusion coefficient (ADC) values and consequently these values may be useful for evaluating the cellular damage.

Objectives: In this paper, we evaluate the capability of ADC parameter for predicting the treatment response in chemoradiotherapy of HNSCCs.

Materials: In this study we reviewed related articles in recent years. The papers were searched in PubMed and Scopus databases with the relevant keywords including diffusion-weighted MR Imaging, Head and neck, Squamous cell carcinoma, Chemoradiotherapy, and Predicting treatment response.

Results: A negative correlation between ADC and cell density had been reported in literature. ADC values are increased during chemoradiotherapy. Some studies have shown that mean ADC values of primary tumors and lymph nodes before treatment, are significantly lower in complete responders compare to partial and nonresponders to chemoradiotherapy. It has been reported that the range of changes in ADC values in early after beginning of treatment is a suitable marker to predict the treatment response. A study has shown that ADC changes below 14% - 24% within third week of chemoradiotherapy indicate treatment failure in patients.However some other articles have explained that ADC values are valuable at the end of treatment period and a significant fall in ADC values is correlated to the tumor recurrence. Then, ADC can predict the failure of treatment before the morphological changes will be occurred.

Conclusion: DWI significantly improves the positive and negative predictive values compared to conventional anatomical MR imaging. ADC indicator is a suitable marker to predict the chemoradiotherapy response in HNSSC patients. The high values of ADC of tumoral tissues before the chemoradiotherapy or a low changes in ADC values during treatment period indicates poor outcome.

• 1271

THE STUDY OF BYSTANDER EFFECT INDUCED BY X-RAY RADIATION, ACTINOMYCIN D AND THEIR COMBINATION ON HUMAN LYMPHOCYTES BY MICRONUCLEUS ASSAY

Parisa Ramezanpour Shafie [1,*]; Hossien Mozdarani; Aziz Mahmoodzadeh

[1] Shahid Beheshti University of Medical Sciences, Tehran, Iran

* Corresponding author: Parisa Ramezanpour Shafie, Shahid Beheshti University of Medical Sciences, Tehran, Iran. E-mail: parisa_mr_a@yahoo.com

Abstract:

Objective: The aim of current study was to evaluate the bystander effect of inducing X-ray and ACTD alone separately, along with the combination of X-ray and ACTD by micronucleus assay. This method of mutagenic test system was used to identify chromosomal damage caused by radiation and chemical drugs.

Materials and Methods: In this study, the peripheral blood lymphocytes of a healthy individual exposed to different dose of X-rays (0 - 4 Gy) and ACTD (0 - 200 μg / mL) separately and the combined of X-ray and ACTD drug likewise. After treatment, cells were cultured and the number of micronuclei was determined for each group (target group) by Micronucleus assay. In addition, the bystander effect was studied with the same method by medium transfer of irradiated cells with X-ray radiation and treated cells of ACTD drug and the combination of both factors (radiation + druge). Consequently after a 4-hour treatment, each group of media were collected separately and transferred to fresh lymphocytes to grow with each other. Then the micronuclei number of these lymphocytes group (Non-target group) was measured too. And, in each group, a sample of one-thousand dual-core cells were counted as well as their number of micronuclei recorded. Finally, the results were analyzed using ANOVA and Tukey statistical methods and Independent Samples t-Test.

Results: ACTD and X-ray radiation and also the combination of these two factors increased the number of

micronuclei compared to the control group (P value < 0.001). In addition, the number of micronuclei in non-target groups of non-irradiated ones with X-ray radiation or untreated with ACTD or combined procedure was increased interestingly compared to the control group (P value < 0.001), in order to just media transfer of irritated or treated cells. Moreover, there was a significant difference in the number of micronuclei in each group compared to control group and the target group compared to non-target group.

Conclusion: The attained results of increased numbers of micronuclei in non-target cells than the control group provided evidence for bystander effects induced by X-ray separately, treatment with ACTD drug and the combined treatment of both X-ray and ACTD using Micronucleus assay. Furthermore, bystander effect of the combined treatment of X-ray and ACTD was severely more than each of the treatments separately.

Keywords:

Bystander Effect, Micronucleus Assay, X-ray, Actinomycin D, Lymphocyte

• 1272

RADIOPROTECTIVE EFFECT OF MELATONIN IN HYPERTHYROID PATIENTS TREATED WITH IODINE-131; A DOUBLE BLIND-PLACEBO CONTROLLED STUDY

Soudabe Alidadi [1*]; Ali Shabestani Monfared [1]; Mehrangiz Amiri [1]; Ebrahim Zabihi [1]; Amir Gholami; Zoleikha Moazezi; Ehsan Assadollahi

[1] *Babol University of Medical Sciences*

[*] *Corresponding author: Soudabe Alidadi, Babol University of Medical Sciences. E-mail:soudabealidadi@yahoo.com*

Abstract:

Background: Due to the increasing use of radioactive iodine to treat hyperthyroidism, it would be important to find a suitable radiation protector to reduce radiation-induced chromosomal damages and secondary malignancies. Since melatonin is one of the endogenous body compounds and also a non-toxic substance, and its radiation protection effects have been proven, we aimed to investigate its radio-protective effect in an in-vivo setting in patients who are treated with iodine-131.

Patients and methods: In this double blind-placebo controlled study, all fifty-two females received 10 to 20 mCi iodine-131 for treating hyperthyroidism. Patients then, were randomly assigned to receive a capsule containing 300 mg of melatonin powder or placebo. One hour later, just before receiving iodine-131, blood samples were taken from individuals. Second blood samples were taken one hour after administration of iodine-131. In order to identify the chromosomal damages before and after receiving radioiodine, micronuclei assay was performed.

Results: Findings of this study indicate that, treatment with iodine-131 in both groups has significantly increased the number of micronucleus (Placebo group: P < 0.001; Melatonin group; P = 0.002). Paired T-test analysis also showed that the difference between the groups is significant (P value < 0.001).

Conclusion: According to the findings of this study, we can conclude that melatonin can play a positive role in reducing the amount of chromosomal damages and subsequently, decreasing the risk of possible secondary cancers. Given that melatonin did not have substantial negative side effects on patients, it can be proposed as a useful supplement alongside conventional drug treatment for hyperthyroidism patients who are treated with ionizing radiation.

Keywords: Hyperthyroidism; Melatonin; Radiation

Iranian Registry of Clinical Trials (IRCT); Registry No.: IRCT2014090419045N1

• 1273

THE ESTIMATION OF POPULATION DOSE FROM NUCLEAR MEDICINE PROCEDURES IN MAZANDARAN PROVINCE IN 2014

Fatemeh Niksirat Soostani [1*]; Ali Shabestani Monfared [1]; Mehrangiz Amiri [1]; Amir Golami; Mohammad Reza Deevba

[1] *Babol University of Medical Sciences*

[*] *Corresponding author: Fatemeh Niksirat Soostani, Babol University of Medical Sciences E-mail: MPRRP.mubabol@gmail.com*

Abstract:

Background/Objectives: In recent years, the use of ionizing radiation in medical imaging has increased leading to remarkable increase of collective effective dose to the population. Nuclear Medicine diagnostic imaging has a significant contribution in the ionizing radiation population exposure. Collective effective dose comprises of NM procedures within the range of 0.4 - 14.5 percent. So justification and optimization of examination in nuclear medicine departments are highly recommended in near future to avoid unnecessary collective effective dose. We conducted a review of nuclear medicine services

within Mazandaran, with a view to provide updated data on population radiation exposure resulting from diagnostic nuclear medicine procedures.

Methods: All hospitals and private clinics (7 nuclear medicine departments) in all cities of Mazandaran in the North of Iran participated in this study from March 2014 to February 2015. The survey was performed through filling out the checklist which included the following items: Center name, the type and amount of administered activity (AA) per procedure. The gathered data were analyzed via SPSS (V. 18) using descriptive statistics. The dose to the population of this region from diagnostic NM procedures was estimated using the factor given by International Commission on Radiological Protection (ICRP) 106 and 80. The Collective effective dose (man- Sv) were calculated by multiplying the frequency of the examinations by the corresponding effective dose per examination. The effective dose per capita was obtained by dividing the collective effective dose by the number of inhabitants that make up the population.

Results: Based on the data of this study, the number of nuclear medicine procedures in one year in Mazandaran was 21290. The frequency of nuclear medicine examinations per 10000 population was 67 and the average effective dose per examination was 4.89 msv. The collective effective dose from diagnostic nuclear Medicine procedures has been estimated to be 95628.16 man Sv, with an annual average effective dose of 0.03 msv per capita. It was also observed that myocardial perfusion was the most common procedure (50%). Myocardial perfusion scan accounted for 67% of total collective effective dose followed by bone and thyroid with about 19% and 8%, respectively.

Conclusion: Myocardial perfusion was responsible for most of collective effective dose, due to geographical condition and prevalence of the heart related disease in north of Iran. To reduce administered activity, it is better to reconsider the scan protocol as far as it is possible.

Keywords: Nuclear Medicine; Radiation Exposure; Collective Effective Dose; Effective Dose

• 1274

RADIOPROTECTIVE EFFECT OF ZAMZAM WATER (ALKALIN WATER) AGAINTS GAMMA-IRRADIATION IN MOUSE BONE MARROW CELLS: BY MICRONUCLEI ASSEY

Fateme Keramatiyazdi [1,*]; Ali Shabestani Monfared

[1] Medical University

* Corresponding author: Fateme Keramatiyazdi, Medical University. E-mail: f.keramatiyazdi@gmail.com

Abstract:

Radioprotectors are useful compounds to reduce radiation toxicity of normal cells. Meny natural radioprotectors have antioxidant power and display fewer toxicity and side effects than the chemical ones. Alkalin waters such as Zamzam has antioxidant power potentialy.This study aimed to investigate the radioprotective effect of Zamzam water in mice bone marrow exposed to gamma radiation by micronuclei test. There are five groups,with five mice .The control group with ordinary water, Another Group only with Zamzam water and radiation groups was received 2Gy gamma with ordinary and Zamzam water for 10 days and another for 20 days .The frequency of micronuclei in 1000 PCEs (MnPCEs) and the ratio of PCE/PCE + NCE were calculated for each sample.Before radiation, no significant difference was found between Zamzam and control in the number of micronuclei and the cell proliferation ratio (PCE / PCE + NCE). After radiation, Zamzam groups were not significant differences in the frequencies of MnPCE, but reduced MnNCE and increased the ratio of PCE / PCE + NCE compared to ordinary water. Zamzam group was 20- days, less decrease of PCE/PCE+NCE comper to 10 days. Dose reduction factor (DRF) was 1.36 and 2 for Zamzam water groups of 10 days and 20 days, respectively. The results demonstrated that holly Zamzam water could reduce clastogenic and cytotoxic effects of gamma irradiation.

Keywords: Micronucleus Teste; Erythrocyte; Bone Marrow Cell; Zamzam Water; Radiation Protective Agents

• 1275

DESIGN, IMPLEMENTATION AND EVALUATION OF MOBILE BASED APPLICATION FOR TEACHING OF GENERAL RADIOGRAPHY TECHNIQUES

Sharareh Rostamniakan [1]; Manijeh Pakravan [1]; Borhan Eslahi [1,*]; Atoosa Nikfar [1]; Donya Abolqasemkhah [1]; Ali Shoorgashti [1]; Mohsen Azad; Elnaz Hasanpour [1]; Mohammad Fadaee [1]

[1] Tehran University of Medical Sciences, Tehran, Iran

* Corresponding author: Borhan Eslahi, Tehran University of Medical Sciences, Tehran, Iran. E-mail: borhaneslahi@gmail.com

Abstract:

Introduction: Run careless or mistake of general x-ray techniques to create disadvantages in the radiography images and it causes interpretation difficult and sometimes impossible , that's why learning of students for these techniques should continue until end of career. Soft mobile app suitable for training on time, low cost, fast and reliable.

The purpose of this research is to design implementation and evaluation a mobile-base software to train general radiography techniques and provide mobile education for students and trainees that is very avialable and fast.

Method: The original research was conducted in 1395 in Tehran University of medical sciences. In thisproject, two-step software development and evaluation was performed.

Production stage includes five phases: investigation needed, determine content, classification efficient design, implementation of contained in interface and final edition.

In general, after assessment of students in the form of oral interviews and reviews of all products educational in general radiographic techniques this subject was elect.

By determining and collecting the necessary content of the reference, software development group created anew classification for the material and place it under the android operating system.

Finally, the twenty specialized user involvement with software and collect comments by questionnaire 18 questions with alpha reliability coefficient equal to 0.709 researcher and its validity by three members of the faculity and lecturer in Tehran university of medical science was certified.

Result: The first phase of research which included the design and implementation of software, content, classification with a six part categorical was conducted for finding a technique intended user step by step and fast search methods were considered.

In the second phase, analysis the results of evaluation of this app was done.

The result showed: eliminate the constraints time and place of learning,accessible, taxonomies, access the content that user need, all of them have caused. Satisfaction of user in high level

(95%).

Conclusion: Providing education and educational content under products of software-based mobile cause fundamental changes in how teaching, effectiveness and decrease of patient dose with decrease human error/.

• 1276

POTENTIAL OF USING CT PERFUSION IN ACUTE STROKE

Fahimeh Rezaie [1,*]; Karim Khoshgard [2]; Hamid Reza Ibrahimi [3]; Abdolazim Sedighi [4]; Mohammad Hadi Gholami [5]; Alireza Khoshghadam [5]

[1] *MSc Student of medical physics, Students Research Committee, Kermanshah University of Medical Sciences, Kermanshah, Iran*

[2] *Department of Medical Physics, Faculty of Medicine, Kermanshah University of Medical Sciences, Kermanshah, Iran*

[3] *Radiologist, Hamedan, Iran*

[4] *Radiation Oncologist, Mahdieh Oncology and Radiotherapy, Hamedan, Iran*

[5] *Medical physicist, Radiation therapy Mahdieh center, Hamedan, Iran*

[*] *Corresponding author: Fahimeh Rezaie, 1 MSc Student of medical physics, Students Research Committee, Kermanshah University of Medical Sciences, Kermanshah, Iran. E-mail:rezai.f93@gmail.com*

Abstract:

Background: Identifying the ischemic core (irreversible damaged brain tissue) and penumbra (salvageable tissue) is a critical subject in patients with cerebral stroke. CT perfusion (CTP) is a suitable imaging modality to achieve this goal. Acquisition a nonenhanced CT and then acquisition some consecutive scans after injection of contrast medium from a region of interest (ROI), provides perfusion parameters of tissues within the ROI. Some advantages of CTP are its fast scans, wide availability of its scanners and low cost; however high level of radiation dose is the main limitation.

Objectives: In this paper, we have evaluated the diagnostic potential of using CTP in acute stroke and discussed its level of absorbed radiation dose in the patients based on the former studies.

Materials: In this study we reviewed relevant articles in recent years. The papers were searched with the relevant keywords including CT perfusion, acute stroke, radiation dose.

Results: An advantage of CTP is linear relationship between the contrast medium concentration and signal intensity. It seems that cerebral blood volume (CBV) is a proper parameter to identify the ischemic core. The regions with significant low CBV values are indicator of ischemic core. Also area with remarkable decrease in cerebral blood flow (CBF) and/or

time to peak (TTP) parameters are indicator of penumbra. However, a study demonstrated that the optimal threshold of below 31% in CBF relative to the mean CBF in the contralateral hemisphere is more reliable indicator of ischemic core.

The high level of radiation dose is the main disadvantage of CTP. There are some methods to reduce CTP's high radiation dose such as use of dual-energy CT or use of dose-optimization strategies for example applying the iterative methods instead of filter back projection in reconstruction of images. Lower tube current is possible using iterative techniques which yielding lower effective dose value.

Conclusion: Use of CTP is increasing and also is suitable imaging technique in ischemia imaging. More multicenter studies are needed to introduce proper optimal thresholds of perfusion parameters for accurate identifying the ischemic core and penumbra.

Keywords: CT Perfusion; Acute Stroke; Radiation Dose

• 1277

DIFFUSION TENSOR IMAGING OF THE CERVICAL SPINE: TECHNICAL CONSIDERATIONS

Amir Eftekhari [1,*]; Vahid Shahmaei [1]

[1] *Shahid Beheshti University of Medical Sciences, Tehran, Iran*

[*] *Corresponding author: Amir Eftekhari, Shahid Beheshti University of Medical Sciences, Tehran, Iran. E-mail: amireftekhari_1371@yahoo.com*

Abstract:

Diffusion tensor imaging (DTI) is a magnetic resonance technique capable of measuring the magnitude and direction of water molecule diffusion in various tissues. Recently this technique has been used for many purposes in central nervous system, including the brain and the spinal cord. Unlike the brain, diffusion tensor imaging in the cervical spine confronts many difficulties like the EPI distortion due to the variety of the tissues in cervical region, flow of the CSF and the fine structure of the spinal cord. To solve these problems we have to follow some technical considerations to achieve images with best quality. These considerations involves the improvement of the magnet's shimming, employing the multi-channel phased array coils and using parallel imaging, optimizing the pulse sequence to minimize the susceptibility, increasing the number of diffusion gradient directions, etc. The purpose of this review article is to explain the possible technical considerations for achieving the DTI images with less artifact and the highest quality.

• 1278

EVALUATION OF THE GENE EXPRESSION OF MLH1 AND MSH2 AMONG INHABITANTS OF HIGH NATURAL RADIATION AREAS IN RAMSAR

Elahe Bakhtiari [1,*]; Kourosh Gorji [1]; Ali Shabestani Monfared [1]

[1] *Babol University of Medical Sciences, Mazandaran, Iran*

[*] *Corresponding author: Elahe Bakhtiari, Babol University of Medical Sciences, Mazandaran, Iran. E-mail :e_bakhtiari92@yahoo.com*

Abstract:

Background: The annual effective radiation dose from natural and man-made sources for the world's population is about 2.5 mSv/y, which includes exposure to alpha radiation from radon and its progeny nuclides but this is 10.2 mSv/y for inhabitants of Ramsar, a city in northern Iran. Carcinogenesis is one of the most studied effects of radiation, despite the fact that considering LNT and ALARA, public health in high background radiation areas (HBRAs) seems unaffected. On the other hand, the life span of HBRA residents also appears no different than that in residents of nearby NBRAs. There are a lot of questions about effects of ionizing radiation; maybe Radioadaptive response proves positive effects of low radiation doses. In humans, there are several DNA repair pathways that are essential for genome integrity, including base excision repair (BER), nucleotide excision repair (NER), DNA double-strand breaks (DSBs) and mismatch repair (MMR). A highly conserved set of MMR proteins has long been known to be primarily responsible for repairing bases mismatched during DNA replication. However recent studies have commonly reported that MLH1, MSH2, MSH6 and PMS2 plays a central role in the MMR system in mismatch strand excision and subsequent repair.

Materials and method: Thirty residents of high background radiation areas that their age is between 25 - 35 years old will select randomly and they'll sign informed consent. 2 cc fresh peripheral blood will take in sterile and RNase free condition.

Blood samples transfer to babol in 4° centigrade temperature and total RNA isolation will perform

immediately by using trizol reagent. Expression levels of MSH2 and MLH1 will analyse by reverse transcription quantitative polymerase chain reaction (RT-qPCR). Statistical analyses will perform by one way ANOVA.

Results: We are evaluating expression of two specified DNA repair genes, MLH1 and MSH2, for justifying these contradictory results.

We have some preliminary results that need more reviews to present in this congress.

• 1279

ASSESSMENT OF TUBAL DISORDERS BY HYSTEROSALPINGOGRAPHY AMONG A LARGE SAMPLE OF IRANIAN INFERTILE WOMEN

Maryam Niknejadi [1]; Maryam Javam [1]; Fereshteh Hoseyni [1]; Fataneh Tehrani [1,*]; Fatemeh Niknejad [1]

[1] *Department of Reproductive Imaging, Reproductive Biomedicine Research Center, Royan Institute for Reproductive Biomedicine, ACECR, Tehran, Iran*

[*] *Corresponding author: Fataneh. Tehrani, Department of Reproductive Imaging, Reproductive Biomedicine Research Center, Royan Institute for Reproductive Biomedicine, ACECR, Tehran, Iran. E-mail:easternwind60@yahoo.com*

Abstract:

Objectives: Hysterosalpingography (HSG) plays a significant role in infertility workup, particularly to assess tubal patency. The aim of this study was to investigate tubal patency and disorders among infertile women by means of HSG.

Patients and Methods: This was a cross sectional study carried out among infertile patients who underwent HSG at Royan Institute, Tehran, Iran, between September 2010 and April 2014. All women who underwent HSG at our imaging department during this period of time were recruited in the study. Patient's history files, HSG images and reports were assessed to collect data. Demographic information, HSG findings and prevalence of each were analyzed with SPSS16 software using descriptive statistics.

Results: Total numbers of 3071 infertile women underwent HSG during 3.5 years and enrolled in this investigation. Patients aged 29.46 ± 5.4 years in average and the duration of infertility was 1-29 years among them. During the study, 2708 infertile women (88.18%) had patent tubes, but at least one tubal disorder was detected in other 363 patients (11.82%). Abnormal tubal appearances among studied patients were as follow: 80 cases of hydrosalpinx (2.6% of all women), 191 cases of tubal occlusion (6.2% of all patients) and 92 cases of limited passage of contrast media (3% of all patients).

Conclusion: Our study demonstrated that tubal occlusion was the most common tubal disorder among infertile women undergoing HSG. Using HSG to identify tubal patency can help infertile couples to undergo treatment procedures.

Keywords: Hysterosalpingography (HSG); Fallopian Tubes; Infertility

• 1280

A COMPARATIVE STUDY ON HYSTEROSALPINGOGRAPHY BY MEANS OF "FOLEY CATHETER METHOD" AND "CANNULA METHOD": QUALITY, PROS AND CONS

Maryam Niknejadi [1]; Maryam Javam [1]; Fereshteh Hoseyni [1]; Fataneh Tehrani [1,*]; Fatemeh Niknejad [1]

[1] *Department of Reproductive Imaging, Reproductive Biomedicine Research Center, Royan Institute for Reproductive Biomedicine, ACECR, Tehran, Iran*

[*] *Corresponding author: Maryam Niknezhady, Department of Reproductive Imaging, Reproductive Biomedicine Research Center, Royan Institute for Reproductive Biomedicine, ACECR, Tehran, Iran. E-mail: mniknezhady1390@gmail.com*

Abstract:

Background: To compare advantages of performing hysterosalpingography by means of "Foley catheter" with routine Jarcho cannula method.

Patients and Methods: This was a retrospective cross-sectional study carried out among infertile patients who underwent HSG at Royan Institute, Tehran, Iran, from April 2016 to December 2016. All women who underwent HSG at our imaging department during this period of time were recruited in the study. Patient's demographic information and HSG technical reports were assessed to collect data. Quality of HSG images were evaluated by an expert radiologist and checked at questionnaire. Data was analyzed with SPSS16 software using descriptive statistics.

Results: Total numbers of 887 HSG scans were performed at our imaging center during the study period. Of these, 50 examinations were done using folly catheter. Other 837 patients underwent routine "Jarko and Canula" method (group 1). From those who underwent catheter method, catheter was placed within the uterine cavity in 35 patients

(group 2) and within the cervical canal among other 15 patients (group 3). Image quality, duration of the examination, volume of applied contrast media and patient's cooperation were assessed and compared within these three groups. Results will be presented in this lecture. Besides, we will provide several hysterosalpingograms taken by catheter method to compare the quality of which with images obtained by "cannula method".

Conclusion: "Folly catheter method HSG" is a reliable approach that makes less discomfort for the patients. Cervical catheter provides full visualization of uterine cavity and high quality images. So it can be used by radiology technicians.

Keywords: Hysterosalpingography; Folly Catheter; Jarcko, Uterine Cavity

• 1281

EVALUATION OF CARDIOLOGISTS RADIATION EXPOSURE IN RADIAL AND FEMORAL ARTERY APPROACHES FOR DIAGNOSTIC CORONARY ANGIOGRAPHY

Fatemeh Niksirat Soostani [1,*]; Ali Shabestani Monfared [1]; Kourosh Gorji [1]

[1] *Babol University of Medical Sciences*

[*] *Corresponding author: Fatemeh Niksirat Soostani, Babol University of Medical Sciences. E-mail: MPRRP.mubabol@gmail.com*

Abstract:

Introduction: The radial route is widely used to perform coronary angiograms (CA) in order to reduce vascular peripheral arterial complications, to improve patient comfort, and to lower costs. in logic of reinsurance, differences between radial and femoral approaches have been reported to be inversely related to increasing operator experience, leading many operators to believe that special radiation exposure precautions were unnecessary with greater experience in the radial technique. In contrast, others suggested that specific radiation exposure protections were needed for additional protection against the increased radiation exposure using the radial route. Although underestimated by interventional cardiologists for a long time, radiation exposure of operators and patients during CAs is currently a major concern, mainly due to the stochastic risk of cancer induction. The main objective of the present study was to compare accurately the related peripheral arterial route radiation exposure of experienced operators.

Method: 60 patients undergoing cardiac catheterization (elective diagnostic coronary angiograms) were prospectively assigned in a random fashion to the radial access (RA) or femoral access (FA). All procedures were performed by 3 cardiologists with vast experience in radial Procedures and standard measures for radiation protection were used. Operator radiation exposure was assessed using electronic personal dosimeters thermo luminescent dosimeters (TLDs) located on wrist, thorax, Lumbar and one for measuring whole body dose. After informed consent was obtained, the catheterization procedure was performed randomly either from a femoral or a radial approach by the same operator. Radiation exposure to the operator assessed and Comparisons between groups were done with the Student's t-test. A P value of < 0.05 was considered significant.

Results and Conclusion: we expected that the radial route was related to increased operator and patient radiation exposure, when compared with the femoral route. Although the radial route decreases peripheral arterial complication rates, previous studies have reported that the radial route was related to increased operator and patient radiation exposure, when compared with the femoral route. Increased radiation exposure of operators despite extensive use of specific protection devices is currently a growing problem for the interventional cardiologist health. Radial route indication should be promptly reconsidered in the light of the present findings.

Keyword: Operator Radiation Exposure; Radial; Femoral; Angiography

• 1282

COMPARISON OF DIFFERENT MAGNETIC RESONANCE IMAGING (MRI) SEQUENCES FOR EVALUATION OF DIABETIC FOOT

Maryam Nourizadeh [1]; Samaneh Barzegar [1,*]; Javad Haji Aghapour [2]

[1] *MSc. of Medical Imaging Technology (MRI), School of Allied Medical sciences, Shahid Beheshti University of Medical Science, Tehran, Iran*

[2] *B.S of Radiology, MRI Technician, Rohani Hospital, Babol, Iran*

[*] *Corresponding author: Samaneh Barzegar, MSc. of Medical Imaging Technology (MRI), School of Allied Medical Sciences, Shahid Beheshti University of medical science, Tehran, Iran. E-mail:barzegarsa@yahoo.com*

Abstract:

Background: Diabetic foot is often quite a dreaded

disability and its ulcers is one of the most feared complications of diabetics.

Optimal patient management is dependent on the early detection and the extent of ulcers. The aim of this study was to evaluate the role of different MRI sequences to depict and characterize the changes seen in diabetic foot ulcers.

Materials and methods: 31patients (16 women and 15 men) with diabetic foot were evaluated and examined with MRI during treatment. Foot MRI was carried out in T1-weighted, T2-weighted, fat sat and diffusion weighted imaging (DWI: b-factor of 0,500 , 700) sequences to compare the value of these sequences for characterizing ulcer. The MRI findings were compared to clinical and/or histopathological findings.

Conclusion: The findings indicate that MRI is a sensitive and accurate imaging modality for the evaluation of foot infections in diabetic patients and for planning proper treatment. The DWI is a new noninvasive imaging in the evaluation of the diabetic foot and it provides accurate information regarding the presence and extent of ulcer in these patients, which allows appropriate planning of surgical intervention.The apparent diffusion coefficient (ADC) values (obtained from DWI) compare to other sequences is more sensitive and helpful for detecting and characterizing diabetic foot ulcer.

KEYWORDS: Diabetic Foot; MRI; DWI; Fat Sat; Histopathological; ADC Values

• 1283

IS THE DIFFUSION MR IMAGING AND ADC MAPPING A RELIABLE METHOD FOR EVALUATION OF ASL TEARS IN THE KNEE?

Atefeh Ghaedrahmati [1,*]; Maryam Noorizade [1]; Javad Hajiaghapour [2]

[1] *MSc.of Medical Imaging Technology, School of Allied Medical sciences, Shahid Beheshti University of Medical Science, Tehran, Iran*

[2] *B.S of Radiology, MRI technician, Rohani hospital, Babol, Iran*

[*] *Corresponding author: Atefe Ghaedrahmati, MSc.of Medical Imaging Technology, School of Allied Medical sciences, Shahid Beheshti University of Medical Science, Tehran, Iran. E-mail:Atefe.ghaedrahmati@gmail.com*

Abstract:

Background: MR imaging shows high accuracy in the identification of internal pathologies of the knee, especially the ACL tears and inguries. MR imaging provides important information about bone and soft tissue disorders in and around the knee joint. It can help avoiding unnecessary diagnostic arthroscopy and show the size, location and characteristics of ACL tears that will guide treatment.

Aim and objectives: to evaluate usefulness of DWI in the diagnosis of the ASL tears.

Methods and materials: we evaluated 32 patients who underwent knee MR with DWI because of knee pain. We measured the signals of the DWI and ADC values on the oblique sagital DWI with b values 0, 600 and 1000. The diagnostic accuracies of the oblique sagital T2w image and each DWI with an ADC value with a different b value were evaluated.the CNR and ADC value were compared. The diagnostic performances of the various imaging methods were evaluated using the sensitivity and specificity and accuracy of differentiating between normal and ASL injury as determined by the use of T2w with additional DWIs.

Conclusion: the CNRs of the torn ASL with each b value (600 and 1000) were significantly higher than those in normal ligament, although the ADC values of the torn ligament were not different from normal ligament.

Keywords: Asl Tear; Dwi; Mr Imaging; Quantitative Mri; Adc Mapping; B-Factors

• 1284

THE OPTIMUM LINEAR ACCELERATORS DOSE TO PREVENT TRANSFUSION-ASSOCIATED GRAFT-VERSUS-HOST DISEASE

Bahareh Aboufazeli [1,*]; Ali Shabestani Monfared [1]; Ebrahim Zabihi; Zeinab Abedian

[1] *Babol University of Medical Sciences*

[*] *Corresponding author: Bahareh Aboufazeli, Babol University of Medical Sciences. E-mail:bahareh.aboufazeli@yahoo.com*

Abstract:

Purpose: Transfusion-associated graft-versus-host disease is a complication that is mortal in %90 of cases. Today, Co-60 devices are utilizing for the suppression of the lymphocytes to prevent this complication. Due to problems such as radioactive source age, problems in source replacement and protection risks, we were looking to replace linear accelerator for this objective and careful determination of its x-ray dose and other settings.

Methods: Firstly, the venous blood of the right-

handed people with blood group O^+ were exposed to different radiation doses of Linac and were diluted. The proliferative responses of the samples were exposed cells were examined with MTT Assay and TB in comparison with the control after 48 hours. The average percentage of cell survival in each delivered dose and also the required dose of radiation for the inhibition of lymphocyte proliferation checked and the optimal dose of radiation was obtained 25 Gy in special radiation condition.

Results: The results indicated that irradiation with 25 Gy with 3.5 Gy/min in internal mid-plan by compact 6MV for 30 × 30 field size, 8 cm distance of the samples to the source, and 1370 monitor unit completely suppress the lymphocyte. At same condition and 1096 monitor unit for total 20 Gy we did not find optimal results.

Conclusion: In this research, we have found that linear accelerator with specific exposure condition is a suitable alternative for Cobalt-60 sources and the above-mentioned condition of irradiation can be used to get rid of GVHD concern.

Keywords: GVHD; LINAC; Red Blood Cell Transfusion

• 1285

APPLICATION OF DIFFUSION-WEIGHTED MRI METHOD IN ONCOLOGY

Fariba Allahmoradi [1]; Abbas Haghparast [2]; Seyed Salman Zakariaee [3,*]

[1] *MSc Student of Medical Physics, Students Research Committee, Kermanshah University of Medical Sciences, Kermanshah, Iran*

[2] *Department of Medical Physics, Faculty of Medicine, Kermanshah University of Medical Sciences, Kermanshah, Iran*

[3] *Department of Medical Physics and Biomedical Engineering, Faculty of Medicine, Tehran, University, of Medical Sciences, Tehran, Iran*

[*] *Corresponding author: Seyed Salman Zakariaee, Department of Medical Physics and Biomedical Engineering, Faculty of Medicine, Tehran, University, of Medical Sciences, Tehran, Iran, E-mail: salman_zakariaee@yahoo.com*

Abstract:

Background: Diffusion-weighted imaging (DWI) is preformed based on the detection of the Brownian microscopic motion of free water molecules in the body. This imaging method doesn't require to the exogenous contrast medium and is accomplished quickly. DW-MRI is a conventional clinical technique that is particularly applied for oncologic patients. DWI is a most promising tool for early detection of malignancy and treatment response monitoring.

Objective: In this paper, application of DW-MRI technique in oncology was evaluated.

Material and methods: A computerized search using the databases SID, Google Scholars, Pubmed and Science Direct, covering the period from 1999 to 2015, was conducted using the following key search terms: "MRI", "diffusion-weighted MRI", and "oncology". In total, 28 relevant papers were reviewed.

Results: DW-MRI approach has been proved in the evaluation of abnormal tissues in the breast, liver, and kidney as well as hepatic, peritoneal and prostatic diseases. DWI is a promising method for diagnosis of the focal lesion in the liver and improves local T-staging in newly diagnosed carcinoma of the urinary bladder. DWI for evaluation of bone metastases and bone marrow diseases (e.g. multiple myeloma) is growing, but lung examinations remind challenging.

Conclusion: Diffusion-weighted MRI provides valuable information regarding the physiological specifications of the tissue that significantly improves the tumor diagnosis. Based on the results, it could be concluded that the diffusion-weighted MRI is a critical complementary examination method for clinical situations.

Keywords: MRI; Diffusion-Weighted MRI; Oncology

• 1286

COMBINED EFFECT OF FAMOTIDINE AND CIMETIDINE ON IRRADIATED MICE SURVIVAL FRACTION; AN IN-VIVO STUDY

Karim Afsar [1,*]

[1] *Babol University of Medical Sciences, Babol, Iran*

[*] *Corresponding author: Karim Afsar, Babol University of Medical Sciences, Babol, Iran. E-mail: karimafsar@gmail.com*

Abstract :

Background: The radiation damages could be repaired but some which fail to repair could result in cell death or mutation. The induced damages could be modulated by radioprotectors. Cimetidine and famotidine are belonged to antagonists to the histamine H2 receptor which their efficacy in protection against radiation was studied. The aim of this study was the assessment of combined effects of famotidine and cimetidine on irradiated mice survival.

Methods: 270 male NMRI mice were provided and divided in 11 groups including sham control. Some

of these groups were divided in more than one subgroup. The study groups were irradiated with different doses of radiation and different concentrations of drugs. Then, their survival fractions was measured until 30 days after irradiation.

Results: LD50/30 for radiation alone was determined as 7.47 Gy. By treating the mice with concentration of 4 and 20 mg/kg for famotidine and cimetidine, respectively, the survival fraction of animals was significantly higher than LD50/30 group. The combined regimen of famotidine+ cimetidine in radioprotection had higher DRF than each of them separately. The DRF of combined, famotidine, and cimetidine groups were 1.09, 1.08, and 1.01 respectively.

Conclusions: Our finding suggesting that famotidine is better radioprotector than cimetidine but their combination is slightly more powerful. Also the comparison of their effects in lower and higher doses of radiations needs to be assessed in more detail.

Keyword: Famotidine; Cimetidine; Survival; Radiation

• 1287

OVERVIEW OF PREGNANT PATIENTS' AWARENESS OF THE PRINCIPLES OF RADIATION PROTECTION IN NUCLEAR MEDICINE CENTERS

Arezoo Imani [1,*]

[1] Tehran University of medical sciences, Tehran, Iran

* Corresponding author: Arezoo Imani, Tehran University of medical sciences, Tehran, Iran. E-mail:a-imani@alumnus.tums.ac.ir

Abstract:

Background: In nuclear medicine gamma rays are used to assess and diagnose the patient's organs. Exposure to this type of radiation can be threatening to the health of living beings. Different people have different sensitivity to radiation. There is a high sensitivity to radiation in human embryo since these cell have high growth rate. The protection of pregnant women is particularly importance.

Methods: This study is a review of studies from 2010 to 2016 by searching in valid database and with keywords such as radiation protection, nuclear and medical pregnant women.

Results: review on studies showed that nearly half of the patients had relative awareness of the dangers of radiation and ways to protect against it and the rest had not good level of awareness of the risks and benefits of radiation.

Conclusions: with measures including the installation of clear posters , warning signs ,more description of personnel for patients, raised awareness of patient to radiation and helped to reduce the risks that, in an impressive step to improve patients' health.

Keywords: Nuclear Medicine; Pregnant Women; Radiation; Radiation Protection

• 1288

FAT SUPPRESSION IN MRI BY USING MULTIPOINT DIXON METHOD

Ali Shamooshaki [1,*]; Salman Safdari [1]; Mahshid Torabi [2]; Reza Koohi [1]; Fariborz Faeghi [1]

[1] Shahid Beheshti Univesrsity of Medical Sciences, Tehran, Iran

[2] Tabriz University of Medical Sciences, Tabriz, Iran

* Corresponding author: Ali Shamooshaki, Shahid Beheshti Univesrsity of Medical Sciences, Tehran, Iran. E-mail:ali.sh.6707@gmail.com

Abstract:

Background and Objective: The Dixon technique is an MRI method used for fat suppression and/or fat quantification. The difference in magnetic resonance frequencies between fat and water-bound protons allows the separation of water and fat images based on the chemical shift effect. The purpose of writing this review is to assess fat suppression in MRI method.

Search Method: To address the following questions, 36 different published papers dealing with Dixon method were reviewed: what are Dixon method and its application? Is there any difference between 2 point and 3 point Dixon methods? What is the Physics of Dixon method?

Findings: Dixon method relies on acquiring an image when fat and water are "in phase" and another in "opposed phase" (out of phase). And can deliver up to 4 contrasts in one measurement: in phase, opposed phase, water and fat images. These images are then added together to get water-only images, and subtracted to get fat-only images. Applications of Dixon method include fat quantification in liver, spinal column metastases, adrenal adenoma, fat saturation in MRA and as well as in breast MRI.

Conclusion: Fat suppression based on Dixon method can be very effective in area with high magnetic susceptibility, where other techniques fail. An additional benefit of Dixon imaging is that source images and fat images are also available to the diagnosing physician; however this technique increases minimal TR because both in- and opposed phases data must be acquired. This can be compensated for by using integrated Parallel Acquisition Techniques (iPAT)

Keywords: MRI; Dixon Method; 2 Point; 3 Point; Fat Suppression; Water Only; Fat Only

• 1289

COMPARING TRIPLE-BOLUS MULTI DETECTOR CT UROGRAPHY AND MAGNETIC RESONANCE UROGRAPHY FINDINGS IN URINARY TRACT

Mohammad Reza Dehbashi [1,*]

[1] ISO

* Corresponding author: Mohammad Reza Dehbashi, ISO. E-mail: dehbashi1350@yahoo.com

Abstract:

Among the vast array of imaging techniques to evaluate the Urinary System, MRU and Triple bolus CTU are the techniques, by which visualization of renal parenchymal, excretory, and vascular contrast-enhancement phases are more achievable. In CT urographic technique, called Triple-Bolus Multi detector CT Urography the entire urinary tract in one acquisition is obtained, and also providing intravenous urogram like (IVU) images in a coronal reformatted view. The MR urographic techniques used to display the urinary tract can be divided into two categories: (a) T2-weighted MR urography, or MR hydrography, and (b) excretory MR urography or T1-weighted MR urography. When findings of both techniques are compared, CTU showed slightly better intrarenal cavity visualization but consistently poorer visualization towards the distal ureters due to the hydration and diuresis protocol used, while MRU achieved better overall excretory phase visualization than CTU.

This study as a descriptive investigation is to make a comparison between Triple-Bolus Multidetector CT Urography with MRU Technique in Urinary Tract to illustrate their advantages and disadvantages in terms of improved image quality and patients dose absorption.

Keyword: Triple-Bolus; Multidetector CT; T2-Weighted MR Urography; T1-Weighted MR Urography; MR Hydrography; Excretory MR Urography

• 1290

DESIGNING A NEW BITE BLOCK FOR COMPENSATION TONGUE SHADOW ERROR IN PANORAMIC RADIOGRAPHY

Sina Ehsani [1,*]

[1] Mazums

* Corresponding author: Sina Ehsani, Mazums. E-mail: sinaehsani350@yahoo.com

Abstract:

Introduction: the most common positioning error in panoramic radiography is “Tongue Shadow Error”, due to the patient not raising the tongue against the palate, so it results in radiolucent area over the roots of the maxillary teeth. Unfortunately, it can interfere with diagnosis. Up to now, many solutions have suggested, which were more related to instructing the patient, like “TRM”. But those methods couldn’t afford it completely. Our study suggests a new design bite block for compensation this error.

Material and Method: After investigations on 3D pattern and anatomical structure of palate in individual with different ages, groups, sex, and measurements, finally the new bite block out of special radiolucent plastic, was built by the 3D printers. 15 volunteers for each Control and study group was selected. A panoramic radiography (OPG) was taken for all of them. Then images collected and the dark area of airspace was measured in each image by an already approved method in other literatures. Wilcoxon Mann-Whitney U-Test was used.

Results: images taken with the new bite block showed less errors. The mean value of dark space distance in the study group was 1.7 mm in midsagittal while it was 5.2 mm in control group. Statistical evaluation showed significant difference between two groups ($P < .0001$).

Conclusion: this study demonstrates that the new design bite block can reduce the “tongue shadow error”. Also, it’s easy to use and comfortable for pediatrics and old people as they implied after test.

• 1291

WHAT IS THE EOS IMAGING?

Soheila Refahi [1,*]; Hakimeh Saadati [1]

[1] Ardabil University of Medical Sciences

* Corresponding author: Soheila Refahi, Ardabil University of Medical Sciences. E-mail: soheila52@yahoo.com

Abstract:

EOS is a medical imaging system whose aim is to provide frontal and lateral radiography pictures. EOS imaging system is a novel technique that contains two parts; EOS that creates the whole body image in a standing position and two-dimensional form using low-dose, and Ster-EOS that converts the data to three-dimensional (3D) in standing position. This system consists of two X-ray tubes and two detectors that move up to down in a vertical chamber and takes patients pictures from Frontal and Lateral positions. EOS is a biplane X-ray imaging system manufactured by EOS Imaging. It uses slot-scanning technology to produce a high-quality image with

less irradiation than standard imaging techniques.

In this approach we explain the benefit and application of EOS in medicine.

• 1292

CABAGE AND PROTECTION AGAINST IONIZING RADIATION

Mina Babazadeh Farokhran [1,*]; Rogayeh Rezaeegiglo [1]

[1] *Young Researchers and Elite Club, Germi Branch, Islamic Azad University, Germi, Iran*

[*] *Corresponding author: Mina Babazadeh Farokhran, Young Researchers and Elite Club, Germi Branch, Islamic Azad University, Germi, Iran .E-mail:minafarahzan@gmail.com*

Abstract:

Although application of ionizing radiation is useful and sometimes unique in some fields, but their potential risks were discovered shortly after the discovery of radioactive materials in more than a century ago. Various methods have been used to reduce the risks or even cure them; one of these methods is application of natural foods. Brassica oleracea is one of delicious foods capable of protecting against ionizing radiation by a unique mechanism, ATM stimulation leads to DDR response without any damages to DNA. Oxidative stress in damaged tissue can result in improvement and ATM plays the role of an antioxidant acting as oxidation sensor and activate oxidation process. Finally, Brassica oleracea is an effective and useful material for protecting against undesirable radiation in radiotherapy patients.

• 1293

INVESTIGATION OF RESPECT TO PATIENTS' RIGHT IN RADIOLOGY DEPARTMENT OF EDUCATIONAL-TREATMENT HOSPITAL OF COUNTRIES

Sogand Abbasi Azizi [1,*]; Mohammad Rasoul Tohidnia [2]

[1] *Student of Radiology, Kermanshah University of medical science, Para clinic faculty, student research committee of Kermanshah University of Medical Science, Iran*

[2] *Instructor, scientific board member of Para clinic faculty, Kermanshah University of Medical Science, Iran*

[*] *Corresponding author: Sogand Abbasi Azizi, Student of Radiology, Kermanshah University of medical science, Para clinic faculty, student research committee of Kermanshah University of Medical Science, Iran. E-mail: kahkeshan1994@gmail.com*

Abstract:

Introduction: health care services must be provided fairly and based on respect to patients' right. Patients' rights are the responsibilities of a medical center toward the patient, and their observance is one of the main principles of clinical standards which results in patients' satisfaction and is among the major indicators of quality assessments of healthcare services. The aim of this study is to investigate the level of respect to patients' rights in radiology department of medical and educational hospitals of country.

Method: in this reviewing library research, all the studies on patients' right from 2011 to 2016 were examined by using keywords such as "patients' right", "respect to patients' right" and "awareness about patients' right" in Google scholar, SID, Iranmedex and Magiran databases.

Findings: patients' right bill was developed in 2002 based on 5 major axes in Iran and declared by health vice of ministry of health, treatment and medical education. 5 axes of this bill are: right to received desirable service, right to received information, right of free choice and decision of patient, privacy right of patient, confidentiality right and finally, the right to access to efficient system of complaints tracking. According to studies, meeting each of these axes in clinic an

Para clinic departments of educational and medical hospitals with average and standard deviation of 15.5 ± 42.18 and in radiology department by average and standard deviation of 6.4 ± 32.5 are evaluated at medium level. Also, among the investigated fields, in both radiology department and the rest of hospital sections, highest patient satisfaction were related to first axis with %17.4 "excellent" scores and %5.7 "good" score and least patient satisfaction in radiology section was associated with fifth axis with %33 and no "excellent" score. While the least satisfaction in the other hospital departments was for the third axis with %14.7 "good" score.

Conclusion: overall, the level of patients' satisfaction in terms of respect to patients' right in radiology department of educational and medical hospitals was medium and these standards are not completely met; therefore it is proposed to take necessary measures to resolve the problems in this regard.

Keywords:

Patients' Right Bill; Radiology Department; Satisfaction; Patients'right

• 1294

PATIENTS' AWARENESS ON THE RISKS OF IONIZING RADIATIONS APPLIED IN RADIOLOGICAL IMAGING PROCEDURES

Ali Chaparian [1,*]

[1] Associated Professor of Medical Physics, Technology of Radiology Department, Isfahan University of Medical Sciences, Isfahan, Iran

* Corresponding author: Ali Chaparian, Associated Professor of Medical Physics, Technology of Radiology Department, Isfahan University of Medical Sciences, Isfahan, Iran. E-mail:ali_chaparian@yahoo.com

Abstract:

Background/Objectives: Medical imaging procedures are used to diagnose a variety of diseases. X-ray examinations has potential risks for patients and radiographers working in radiology departments. Patients should be aware of the risks of ionizing radiation used in radiology tests to make appropriate decisions about the diagnosis and treatment of their disease. The goal of this study was to assess the awareness of the referring patients to imaging centers about the radiation risks associated to radiological and CT scans examinations.

Patients and Methods: A descriptive study was conducted on 251 referring patients to imaging centers of Yazd hospitals. A questionnaire containing 33 questions was designed and distributed among patients and they were asked to complete them. The questionnaire included questions on demographic information, knowledge about different methods of imaging and associated probable risks, and patient expectations. The ANOVA and t-tests and Spearman correlation coefficient were used to assess the association between dependent and independent variables.

Results: The overall mean knowledge score of patients was 18.54 ± 5.53 out of 33 questions, or 56.21% ± 16.78%, and the scores ranged from 11.5% to 81%. Significant relationship between age, gender and educational degree of the patients with their awareness was observed. While 95.6% of patients were expecting their physicians to explain them about the benefits and risks of each imaging procedures but only 6% of physicians explained this topic to them.

Conclusions: Patients' awareness can play an important role in reduction of unnecessary imaging tests. Despite a strong desire in patients for obtaining awareness, their knowledge in this topic is not acceptable. Therefore some policies should be applied to increase the patients' knowledge.

Keyword: Patients' Awareness; Medical Imaging; Radiation Risks

• 1295

MICRONUCLEUS-BASED BIOLOGICAL DOSIMETRY AS A METHOD OF DOSE MONITORING IN RADIATION INCIDENTS (REVIEW ARTICLE)

Tohid Abdi [1,*]

[1] BSc of Radiology, Ardabil University of Medical Sciences, Imam Khomeini Hospital, CT Scan Department

* Corresponding author: Tohid Abdi, BSc of Radiology, Ardabil University of Medical Sciences, Imam Khomeini Hospital, CT Scan Department. E-mail: Tohidabdi1@Yahoo.Com

Abstract:

Chromosomal abnormalities observed in peripheral blood lymphocytes such as dicentrics can be used for dose monitoring after exposure to radiation in radiation incidents. In micronucleus-based method which is one of the methods for investigating dicentrics after radiation incidents, the micronuclei induced by radiation are stopped in cytokinesis stage and then assayed. Many studies have indicated that the number of radiation-induced micronuclei is strongly correlated with the dose and quality of radiation. The radiation dose with the highest increase in micronucleus number has been reported to be 0/3 - 5 Gy.

Keywords: Dosimetry; Biological; Dicentrics; Micronucleus; Radiation Incidents

• 1296

EVALUATION OF KNEE OSTEOARTHRITIS BY RADIOLOGY TEST WITH A DIGITAL SYSTEM IN KHATAM AL ANBIYA (PEACE BE UPON HIM) HOSPITAL OF ZAHEDAN IN 1395

Meisam Kamali Mohammadzadeh [1,*]; Zeynab Yazdi Sotoodeh [2]; Fateme Nadimi

[1] BSc Student of Radiological Tec

[2] MSC of Medical Imaging, Department of Radiology, faculty member of paramedicine

* Corresponding author: Meisam Kamali Mohammadzadeh, BSc Student of Radiological Tec. E-mail: kmmeisam@yahoo.com

Purpose: The largest joint of body is knee joint, and its movements are in opening and bending form. This joint is more susceptible to damage than any other

joint in the body and this is due to the huge forces that the joint must tolerate them. The disability and pain of knee has many different causes which one of the most common and most famous of them is osteoarthritis. The treatment of this is invasive and non invasive which has high medical expenses for patients. Osteoarthritis can be detected by clinical symptoms, physical examination, patient history and radiographic signs. This study assess the osteoarthritis lessions in patients with symptoms of knee pain.

Materials and Methods: In this study which was done analytical-sectional, 30 patients were evaluated with osteoarthritis of knee, (12 males between 50.30 age and 18 males between 61.33 age) based on orthopedic criteria in Khatam Al Anbiya hospital of Zahedan. Clinical information of these patients were collected by questionnaire including age, sex, amount of pain at night, pain of nervousness and the effect of changes in pain. These patients were examined in radiography test by a digital system in view of full and semi profile of knee and were assessed with chi-square test.

Result: In this study, the most common radiologic finding in osteoarthritis patients was the joint space loss and then was marginal osteophytes, also evaluating the patients with VAS system, 18 patients were in the mild stage of disease, 8 patients were in the intermediate stage and 4 patients had severe osteoarthritis.

Results: The radiology test by digital system is cheap, accessible and non-invasive way for assessing of knee osteoarthritis which is able to detect this disease in the early stage. And can be useful in exact treatment of the disease. In this study, there is no significant difference between the patients who were in risk of knee osteoarthritis and the age of them.

• 1297

DESIGN AND SIMULATION IONIZATION CHAMBER DETECTOR FOR USE IN MEDICAL IMAGING SYSTEM

Mohammad Afshar [1,*]; Amin Gravand [2]

[1] *Graduate University of Advance*

[2] *Imam Hossein University*

* *Corresponding author: Mohammad Afshar, Graduate University of Advance. E-mail:m.afshar410@gmail.com*

Abstract:

Background and purpose: In general, the type of radiation used in nuclear medicine, is known. However, the incidence of infections, it may be necessary to identify the type of radiation. Ionization chamber detectors because of the simplicity, fast response and high reliability, is one of the most appropriate tools to measure the dose of radiation dosimetry in nuclear medicine are. The purpose of the study, design and simulation detect ionization chamber for detecting radiation is used in nuclear medicine.

Materials and methods: In this paper simulation software ionization chamber Garfield used the software program to calculate the electric field of the few compounds, electron transport characteristics and route ionization detector, formed investigated. The program to define the tool Medium Gas and Medium Magboltz gas detector was used. Simulations were compared with the work carried out in various articles and in Table 3.

Results: The ionization chamber geometry for cylindrical package containing nitrogen gas at atmospheric pressure to a volume of approximately 30 cm^3 is designed. Central electrode is made of aluminum and plastic walls conductor C552, Bakelite or accumulation of thick polystyrene situations where established electronic balance to be created. Ionization chamber saturation voltage of 100 V and an anode diameter of 100 micrometers and 200 nA is the output current detector.

Conclusion: Ionization chamber with cylindrical geometry, the faster and at lower current collecting efficiency unit load reaches saturation produces. In the high dose rate that high saturation current, using cylindrical geometry compared to the parallel plate chamber, thereby reducing the saturation current, and is more appropriate. Also making detection easier cylindrical geometry.

• 1298

CLINICAL APPLICATIONS OF DYNAMIC MR ANGIOGRAPHY (TIME RESOLVED MRA)

Vahid Shahmaei [1,*]; Amir Eftekhari [1]

[1] *Shahid Beheshti university of Medical Sciences, Tehran, Iran*

* *Corresponding author: Vahid Shahmaei, Shahid Beheshti university of Medical Sciences, Tehran, Iran. E-mail:vahidshahmaei.sbmu@gmail.com*

Abstract:

Conventional static MR angiography techniques

create high-spatial-resolution structural studies but fail to image physiological information inherent in the delivery of blood or contrast. MR scanner gradient enhancements now enable repetitive data capture over time in the attempt to depict vascular dynamics and physiology in a method similar to that routinely used with conventional catheter X-ray angiography. For 3D imaging with magnetic resonance angiography (MRA) of the challenging vasculature, both a High temporal and a high spatial resolution are of interest. One of the MR angiography technique that can provide these requirements is Time-Resolved MRA (TR-MRA). Time-resolved MR angiography is a versatile technique for vascular imaging throughout the body. The technique is particularly useful when the arterial arrival time is uncertain, the patient is freely breathing, or contrast dynamics are critical to a diagnosis.

This technique able to provide a number of performance targets, including the desirability to synchronize the acquisition to arterial phase of the contrast bolus passage and minimal enhancement of the venous system, inherently high signal to noise ratio (SNR), produce high quality volume angiogram that can be reformatted, and one of the major advantages is the requirement for substantially less contrast media in comparison to conventional contrast enhanced MRA (CE-MRA). Time-resolved MRA can provide critical time course data to characterize pathology, can eliminate venous contamination, and can be used with patients in whom bolus-chase MRA would fail due to motion and acquisition constraints. So, Time-Resolved 3D-CE MRA based on Cartesian K-space sampling can now performed using acceleration technique, view sharing, is a sub-second and special method for applications in normal and abnormal vasculature. The information of this technique is importance for: (a) attempting to classify tumor by their rate of uptake of contrast agent (b) The detection and follow-up of AVMs, including the arterial feeders and their venous drainage pattern (c) To protect the effectiveness of treatment after endovascular management (d) The demonstration of Dural arteriovenous fistuls, recognized as an early filling of a Dural sinus during the early arterial phase (e) Enable the visualization of high-flow arteriovenous shunts in case of vascular malformation and hyper vascularized tumors and some other applications that explain in following review article.

Now a days, comparison of the results showed that TR-MRA images and finding closely matched those obtain at digital subtract angiography (DSA).

The purpose of this article is to explain advantages of dynamic MRA (TR-MRA) and review the importance of this technique applications in clinic.

Keywords: Time-Resolved MRA; Dynamic MRA; Contrast

• 1299

TREATMENT EFFICIENCY AFTER EXPOSURE OF CHO CELLS TO 6 GY AT DIFFERENT POST IRRADIATIONS TIME WITH MEASURING OF APOPTOTIC CELLS

Farzad Salehpour [1,*]; Parinaz Mehnati [2]

[1] *Tabriz University of Medical Sciences*

[2] *Department of Medical Physics, School of Medicine, Tabriz University of Medical*

[*] *Corresponding author: Farzad Salehpour, Tabriz University of Medical Sciences .E-mail:farzadsalehpour1988@gmail.com*

Abstract:

Objective: When cells exposed to radiation some proteins which are important to cell survival were damaged. Unrepaired cells response to ionizing radiation at least will be cell death. Apoptosis is a high frequent cell death after exposure to radiation. The amount of apoptosis induced by radiatotherapy in cancer cells could be a marker of successful treatment. In the present study, frequency of apoptotic cells in different post irradiation time was investigated.

Materials and Methods: Chinese hamster ovary (CHO) cell line was cultured. CHO cells divided to control and test groups. Test group exposed to 6 Gy of 60Co γ-rays. The analysis of cell apoptosis was carried out at 6, 12, and 18 hours post irradiation by Flow Cytometry assay.

Results: Percentage of apoptotic cells were 2.83 ± 1.38% at 6 hour post irradiation. Increasing of time to 12 hour induced to 9.74 ± 0.53% and 1.77 ± 0.30% at 18 hour post irradiation.

Conclusion: Apoptotic cells increased following to 6 Gy at all post irradiations time. Data showed that high frequency of apoptosis occurred at 12 hour. This study suggests that awareness about the optimum time of cell apoptosis could to assistance to useful treatment planning in radiation therapy.

• 1300

MONTE CARLO CALCULATION OF PHOTONEUTRONS SOURCE IN THE ELEKTA SL75/25 LINEAR ACCELERATOR

Asra Sadat Talebi [1,*]; Payman Hejazi [1]

[1] Semnan University of Medical Sciences

* Corresponding author: Asra Sadat Talebi, Semnan University of Medical Sciences. E-mail:asra.talebi@yahoo.com

Abstract:

Background: However, medical linear accelerators (Linac) with high energy photon beams (E > 10 MV) have clinically advantages including, low skin dose, low damage to soft tissue, etc. But, unwanted particles such as photoneutrons are produced. This particle arises from photonuclear interactions of high energy photon beams with high-Z materials which are located in the beam path. Photoneutrons have a high linear energy transfer and radiobiological effectiveness. Therefore, they are the most significant particle in the dosimetry of treatments and deliver an undesirable dose to patients.

Objective: Due to high radiation weighting factor for photoneutrons, the photoneutrons contribution is significant in the patient dose and we should asses this unwanted dose in the total dose to patients. The aim of this study is the determination of the components contribution in photoneutron production from Elekta SL75/25 Linac.

Methods: The actual geometry of Linac was simulated in great detail by using MCNPX MC code version 2.6.0.then, the contribution of components of an Elekta SL75/25 Linac operating in 18MV photon beam is calculated in 15 × 15 cm^2 field size by MPN card.

Results: Based on our results, the contribution of Linac components in photoneutron production was target 17%, primary collimator 50%, secondary collimators 31%, flattening filter 0.7% and the remaining components (shielding, back scattering plate, etc.)1.3%.

Conclusion: Most of the photoneutrons are produced in the target and primary collimators (67%). Flattening filter was made from steel. So, dose not contribute to the photoneutron production. The other components contribute 33% of the total production. It is expected that the results of this study will be of interest to the Linac manufacturers.

Keywords: Photoneutrons; Linac; MCNP

• 1301

ESTIMATION THE RADIATION RISKS TO PATIENTS FROM DIAGNOSTIC RADIOLOGY

Maryam Pourkaveh [1]; Safoora Nikzad [2,*]

[1] Department of Radiology,Faculty of ParaMedicine,Hamadan University of Medical Sciences

[2] Department of Medical Physics, Faculty of Medicine, Hamadan University of Med

* Corresponding author: Safoora , Department of Medical Physics, Faculty of Medicine, Hamadan University of Med. E-mail:n.nikzad@umsha.ac.ir

Abstract:

Objective: The aim of this study was to estimate the collective dose and calculate the Cancer risk probability due to the radiological procedures in Hamadan radiology centers by the methods proposed in ICRP103. In this regard the entrance surface dose (ESD) as well as effective dose (ED) of patients calculated and compared whit the national and international dose levels.

Material and methods: the examination applied on 473 Patients undergoing different radiological examinations (chest, Abdomen, Pelvis, Lumbar, Skull, Cervical and Thoracic) in four radiological centers of Hamadan, Iran. The ESD and ED of Patients measured and compared with the reported values in other studies and international standard levels. The approximate number of patients for every examination in each radiological center recorded and used to calculate the cumulative dose of population in Hamadan, Iran. The Cancer risk determined by two different methods proposed in ICRP103.

Results: Mean values of ESD for Chest, Abdomen, Pelvic, Lumbar, Skull, Cervical and Thoracic were 0.43 ± 0.09, 2.51 ± 0.19, 2.47 ± 0.02, 3.21 ± 0.17, 2.15 ± 0.11, 1.35 ± 0.15, 2.51 ± 0.19 respectively and the mean values of ED were 0.05, 0.33, 0.25, 0.42, 0.02, 0.05 and 0.24 respectively for these organs. The cancer risk probability as a function of cumulative dose was 0.20, 1.21, 0.08, 1.32, 0.01, 0.01 and 0.04 for the interested organs respectively. The risk of cancer as a function of age and sex for male patients were 0.86, 1.47, 0.59, 0.02, 0.16, 1.96 and 0.76 for bladder, colon, liver, thyroid, esophagus, lung and stomach. These values were 0.34 (or 2.12), 0.73(or 4.47), 0.98, 0.43, 0.72, 0.19, 0.25, 0.26 and 1.20 for breast, lung, bladder, ovary, colon, liver, thyroid, esophagus and stomach.

Conclusion: There were no significant differences between the calculated ESD and ED in this study

with the same values reported in other Iranian and foreign studies ($P > 0.05$). In comparison whit the IAEA standards, except for chest examination, the other derived doses were under the IAEA reference levels. The risk of cancer due to the diagnostic radiology is lower in Hamadan than Isfahan which is due to the lesser number of patients in Hamadan using radiology examinations. And there were agreement between the results of this study by the HPA reported values.

Keywords: Diagnostic Radiology; Patient Dose; Entrance Surface Dose; Effective Dose; Cancer Risk Estimation

• 1302

DOSES COMPARISON BETWEEN TWO SINGLE-SLICE AND 16-SLICE DEVICES IN CT SCAN OF THE CHEST WITH THE SPIRAL METHOD

Vida Sargazi [1,*]; Zeynab Yazdi Sotoodeh [1]; Jalal Ordoni

[1] *Ms*

[2] *Zahedan University of Medical Sciences*

[*] *Corresponding author: Vida Sargazi, Ms. E-mail: vidasargazi8@gmail.com*

Abstract:

Introduction: CT tests has a significant portion of the patient's radiation dose in radiographic examinations. The aim of this study is to check the average dose received by patients in tests of the CT chest.

Materials and Methods: In this study, two single-slice and multi-slice (16 slices) devices were used. Height, weight and gender of patients were recorded. Values of equivalent dose for patients with DLP, CTDI calculate in both CT devices. The results calculated by the SPSS software to analyze CT chest in both groups of patients by two single-slice and 16-slice devices were analyzed.

Results: In this study, patients has a mean BMI of 25.1 and 55% of patients were female. Effective dose 16-slice device was 3.8 mSv and for the single-slice device was 3.2 mSv and this difference between the doses of single-slice and Multi-slice devices was statistically not significant.

Conclusion: Our results showed that patient doses in this study in comparison to the amounts reported by similar studies with other countries was higher. Thus, exposure optimization techniques and the most common CT tests recommended.

• 1303

ARTERIAL SPIN LABELING MRI: ROLE IN ALZHEIMER AND OTHER NEURODEGENERATIVE DISEASE

Javad Sheikhi Koohsar [1,*]; Navid Sarmast Alizadeh [1]

[1] *Shahid Beheshti Univesrsity of Medical Sciences, Tehran, Iran*

[*] *Corresponding author: Javad Sheikhi koohsar, Shahid Beheshti Univesrsity of Medical Sciences, Tehran, Iran. ,E-mail:javad_sheikhi39@yahoo.com*

Abstract:

Purpose of review: The search for biomarkers that detect and track disease progression in early Alzheimer's disease has been a major pursuit for two decades. Functional measures reflecting alterations of synaptic activity associated with neuronal dysfunction have displayed promise for following disease course in early stages. Although fluorodeoxyglucose positron emission tomography (FDG-PET) and blood oxygen level-dependent functional MRI (BOLD fMRI) have been studied extensively for this purpose, this review will discuss the emergence and potential role of arterial spin labeling (ASL) MRI, which measures cerebral blood flow (CBF), in neurodegeneration.

• 1304

PREVENTION OF GAMMA RADIATION-INDUCED DNA DAMAGE BY SERINE-MAGNESIUM SULFATE MIXTURE IN HUMAN LYMPHOCYTES

Mona Bahrami [1,*]

[1] *Student*

[*] *Corresponding author: Mona Bahrami, Student. E-mail: mona.bahrami1393@gmail.com*

Abstract:

Purpose: To propose a new, non-toxic, more potent, and more efficient radioprotective agent by a comparative study with N-acetylcysteine (NAC) and cysteine (the metabolite of NAC), the wellknown radioprotective agents, in prevention of gamma (γ) radiation-induced DNA damage in human isolated lymphocytes in vitro. Materials and methods: 7-ml citrated blood samples from 22 healthy human subjects were used in the present study. All samples were divided to 1-ml aliquots.

The first aliquot was considered as control. The second part exposed to 2 Gy γ-radiation at a dose rate of 102.7 cGy/min. The third to seventh parts separately exposed to 600 μM final concentrations of serine, magnesium sulfate, serine-magnesium sulfate, NAC, and cysteine respectively followed by exposure to 2 Gy γ-radiation. Lymphocytes of samples were separated by Lymphosep® medium. The MTT and comet assays were used to evaluate cell viability and DNA damage in isolated lymphocytes respectively. Results: The results showed that serine-magnesium sulfate mixture could significantly increase lymphocyte viability and reduce DNA damage in comparison to serine, magnesium sulfate, NAC, and cysteine respectively. Conclusion: The present work proposes serine-magnesium sulfate mixture as a new, non-toxic, potent, and efficient radioprotective agent.

• 1305

ASSESSMENT OF RADIOGRAPHERS JOB SKILLS WORKING IN EDUCATIONAL CENTERS OF KERMANSHAH UNIVERSITY OF MEDICAL SCIENCES.

Maziar Jalalvandi [1,*], Mohammad Rasool Tohidnia [2]; Rasool Azmoonfar

[1] *Tehran University of Medical Sciences*

[2] *Kermanshah University of Medical Sciences*

[*] *Corresponding author: Maziar Jalalvandi, Tehran University of Medical Sciences. E-mail:mjalalvandi@ymail.com*

Abstract:

Introduction: Diagnostic Radiology is one of the ways that base on it can reach to useful information about the anatomy and physiology of the patient's body, followed by a medical diagnosis to be made. Create a useful radiographic image requires radiographers specialized knowledge of Sciences of radiology. This study aimed was conducted to investigate the occupational skills of radiographers working in educational centers, Kermanshah University of Medical Sciences in 2014.

Materials and Methods: In this descriptive - analytical study, the census method is used to evaluate the job skills of 71 participant radiographer. Required information were collected by using the researcher check list of made valid and reliable that was designed base on the Likert point of scale 5 and design was based on specialties of radiology. To analyze the data using version 21 of SPSS, independent T test, and non-parametric tests were at a significance level 0 / 05.

Results: The mean score of job skills Radiologists was 126, 16/67, respectively. Between age and gender of radiographers with job skills score was not found a significant relationship (P > 0/05).But there was a significant relationship between the level of education, work experience and how to recruits with job skills questionnaire scores (P < 0.05).

Conclusion: According to the findings of the research, photographers' job skills were assessed as favorable relatively. Continually holding training courses while on duty and continuous assessment of job skills can be effective in improving the performance levels of radiographers.

Keywords: Radiographer; Job Skills; Radiographic; Evaluation; Diagnostic Radiology

• 1306

A COMPARISON OF THE PREVALENCE OF THE DARKROOM DISEASES SYNDROME BETWEEN THE RADIOGRAPHERS AND SPECIAL CARE NURSES IN THE SELECTED HOSPITALS OF UNIVERSITY OF MEDICAL SCIENCES IN KERMANSHAH, 2014

Maziar Jalalvandi [1,*]; Mahmud Fakhri [1]; Peyman Amirian [1]

[1] *Tehran University of Medical Sciences*

[*] *Corresponding author: Maziar Jalalvandi, Tehran University of Medical Sciences E-mail:mjalalvandi@ymail.com*

Abstract:

Background: Today, using the chemical materials in X-ray films processing has caused some Occupational concerns associated with the darkroom disease all around the world. The darkroom disease is considered as complications triggered by exposure to chemicals which are used for the processing of the X-ray films by the radiographers. So for this purpose, the present research aims to compare the prevalence of the darkroom diseases syndrome between the radiographers and special care nurses in the selected hospitals of Kermanshah University of Medical Sciences, in 2014.

Methods:In this case-control study, related data with the darkroom diseases syndrome of 100 radiographers and nurses were collected by using simple

sampling and the questionnaire. 50 participants were selected from both the case group and the control group. Then collected data were analyzed by using the SPSS statistical software version 21 and the Chi-square test at a significance level of 0/05.

Results: Most of the research units (% 71) were female. The radiographers age mean was 34/4 ± 9/4 and nurses was 29/9 ± 5/8.There was found a significant relationship between the headache (P = 0/04), eye irritation (P = 0/02) and eye pain (P = 0/01) and the type of occupation.

Conclusion: In this study, the prevalence of the eye irritation and eye pain were reported higher among the radiographers as compared with the nurses. So the Solutions of personnel safety and awareness improvement to the darkroom disease should be put on the agenda.

Keywords: Radiographers; Nurses; Syndrome; Darkroom Disease; Headache

• 1307

EVALUATION OF DOSE RATE AND DEPOSITED ENERGY IN HADRONTHERAPY BY USING MONTE CARLO METHOD

Sahel Ganji [1,*]; Elahe Ghorbani [1]; Ehsan Salimi [2]

[1] *Department of Medical Radiation Engineering, Science and Research Branch, Islami*

[2] *Institute for Research in Fund*

[*] *Corresponding author: Sahel Ganji, Department of Medical Radiation Engineering, Science and Research Branch, Islami. E-mail:ganjisahel@yahoo.com*

Abstract:

Hadrontherapy is the medical utilization of charged particles (such as proton, pi meson, ion) to destroy tumor cells. The unique physical and radiobiological properties of these particles leads to deposition of maximum energy in the target while non-cancerous tissues spared from high dose radiation. This characteristic of radiation (Bragg peak) allows to define irradiated region with a very precise dose delivery.

In this study, the dose rate caused by the source of proton, pion and ions in different ranges of energy deposited in a tissue equivalent phantom is investigated. The dose distribution and transported energy by using Monte Carlo method is studied and isodose curves, PDD curves and lateral dose profiles with the data which is obtained from the simulation is calculated as well.

• 1308

THE EFFECT OF FREEZED AND ALCOHOL FLOATING IN COMPARATIVE FRESH SPECIMEN OF TROUT FISHES ON MAGNETIC RESONANCE IMAGING SIGNALS

Hamid Mohyeddin [1]; Movahed Khoei [2,*]

[1] *Professor, Department of Radiology, Faculty of Veterinary Medicine Islamic Azad University of Garmsar*

[2] *General PhD Student Faculty of Veterinary Medicine, Islamic Azad University of Garmsar*

[*] *Corresponding author: Movahed Khoei, General PhD Student Faculty of Veterinary Medicine, Islamic Azad University of Garmsar. E-mail: movet_elka@yahoo.com*

Abstract:

Introduction: analysis of fresh specimen in research studies is ideal-however it is often necessary to transport and evaluation specimen multiple factors can influence on transportation for MRI purpose as result finding some material and way those effect at least on MRI-signals seem to require the aim of this study is evaluation of the effect of freezing, alcohol storage on the muscle, eyes, brain and skeletal system of the trout fish.

Materials and methods: a fresh trout fishes were collected from fish market and transferred to MRI center as am alive specimens all of fishes were euthanize and images acquisition were performed in the knee coil and 1.5 Tesla Philips unit.

After scanning 3 fishes were freezed in -21C for 72 hours and another 3 fishes were floated on the alcohol 70 degree for 3 days. Images acquisition were performed after these process and T1, T2 weighted were taken in sagittal , transverse and coronal plans. A two way repeated measures analysis of variance (AVOVA) was performed to determine the effects of freezing and alcohol storage on T1 and T2 valves.

Results: the T2 values of on fresh trout muscles were significantly longer than T2 values measured after freezing also alcohol on the T2 values in comparison with fresh specimen.

Discussion: freezing of trout lead to small but significant reduction in T2 values but alcohol floating has not any significant effect on T2 values in compare with fresh specimen.

Keywords: MRI; T1; T2; Fish; Trout; Alcohol; Freezing

• 1309

EVALUATION OF RADIATION FEAR, IN RADIOLOGY TECHNICIANS IN TEACHING HOSPITALS OF HAMEDAN

Siamak Sabzevari [1,*]; Karim Ghazikhanloo Sani [2]

[1] Farshchian Sina Hospital
[2] Hamedan University of Medical Science

* Corresponding author: Siamak Sabzevari, Farshchian Sina Hospital. E-mail:s-sabzevari@umsha.ac.ir

Abstract:

Introduction: It is possible that, despite fears of radiation in radiology technicians, as well as other employees from different hospital wards have an impact on job satisfaction and performance. So that, perhaps due to fear of radiation, Radiation workers are not able to get extra shifts and get portable graphics more than the required number for any personel. Also, the degree of motivation and willingness can be effective to work in the radiology department of the graduates. Given that radiology technicians are constantly exposed to radiation and the resulting fear and the fear it will affect their performance. The aim of this study is to measure the correct amount of fear of radiation in radiology technicians, will provide solutions to reduce this fear.

Procedure: This study is a cross-sectional descriptive study. Training in radiology personnel of Hamedan hospitals, was conducted in the fall of 1394 by presenters. A total of 165 questionnaires were delivered to the authorities radiology departments. The fear of radiation also staffs were scored as follows: Fear low score (14 - 42) and great fear score (42 - 70) and the average score was 42.

Results: The results of this study, 81.6% of cases had little fear of radiation. Also, a small number of personnel in the sector, talk about radiation damage, this could suggest that there is little fear in people. And most people were very important to observe the protective. Which reflects the awareness of personnel. As well as personnel with experience and young age with a history and age of slightly more than staff feared. It shows the difference between generations.

Conclusion: According to the study it appears that the level of fear of radiation in medical radiology technicians inteaching hospitals of Hamedan , is low .And there is no significant relationship between the amount of fear personnel with other variables (age, gender, education, employment history, marital status) .Therefore, the argument was that it is necessary to further research in this area is to be provided in future strategies to reduce the amount of fear.

• 1310

BACKGROUND EQUIVALENT RADIATION TIME (BERT)

Morteza Najafi Vand [1,*]; Ghazaleh Firoozy Tanha [2]; Hojjat Rastegar [2]; Ismayil Pesianian [2]

[1] Tabriz
[2] Paramedical faculty of Tabriz University of Medical Sciences

* Corresponding author: Morteza Najafi Vand, Tabriz. E-mail: morteza2012njf@rocketmail.com

Abstract:

Background: One of the main concerns of the radiology technicians in the radiology rooms is how to explain to the patient that how much dose he had received so that he would not be stressed. As many ordinary people are not familiar with terminology of the field, using technical terms like rem or rad, can be stressful for the patient causing a reduction in his/her willing to cooperate. We suggest using background equivalent radiation time (BERT). This paper aims explain absorbed dose simply, to reduce stress of patients and to increase knowledge of technicians.

Methods: Authors found 20 related papers by searching in databases of SID, Magiran, google scholar and Scupos and used 6 of them and a book to find the natural radiation rate in some cities of Iran and dose in X-ray examinations and by using the Microsoft office excel 2016, converted the absorbed dose in exams to the amount of time spend in these cities.

Results: Akbar Eslami and colleagues, reported the natural dose rate in Tabriz, Zanjan, Isfahan, Meshkin-shahr and Mashhad 143, 130.3, 152.3, 365 and 97.33 respectively, Samadi and colleagues reported the natural dose rate in Hamedan 129, Mohammad Taghi Bahreini reported the natural dose rate in Sanandaj as 97.75 and Ghasemi nejad and colleagues reported the natural dose rate in Ramsar as 29680.35. All of the reporters had used Survey Meter RDS-110 for their study.

Conclusion: By using the mentioned studies, software and reports about absorbed dose in X-Ray

examinations, absorbed dose in different X-ray examinations and natural doses were equalized. For example, a routine chest X-ray is equal to 137 hours walking in Tabriz, 36 minutes in Ramsar or 205 hours in Mashhad or an Antroposterior pelvis is equal to 6.7 months in Tabriz, 1day in Ramsar or 10 months in Mashhad.

Keywords: BERT; Background Radiation in Iran; Doses in X-Ray Exams

• 1311

RADIOSENSITIZATION POTENTIAL OF GOLD NANOPARTICLES IN PROTON THERAPY COMPARED WITH X-RAY THERAPY.

Hasan Norouzi [1,*]; Karim Khoshgard [2]; Sohaila Yazdani [1]

[1] *Kermanshah University Medical*

[2] *KUMS*

[*] *Corresponding author: Hasan Norouzi, Kermanshah University Medical. E-mail:norouzi.mp@gmail.com*

Abstract:

Introduction: Many study have shown the effectiveness of dose enhancement with gold nanoparticles (GNPs), especially in low-energy X-rays irradiations. Recently, proton therapy has been attracting attention in treatment of tumours. The advantage of PBRT is releasing the high dose of radiation to deeper regions with a controllable Bragg peak position. In this article, we reviewed the radiosensitization potential of GNPs in PBRT compared to conventional photon radiotherapy.

Material: This review prepared by searching the latest relevant papers with appropriate keywords such as gold nanoparticles and proton therapy in PubMed and Scopus databases.

Results: There are many studies have reported the dose enhancement ability of GNPs in proton radiotherapy when they are internalized into tumoral cells. Several researches have shown the GNPs dose enhancement in-vitro and in-vivo for PBRT as an increasing in cancer cell killing. Some studies have also compared the deposited dose by secondary electrons generated from GNPs between clinical spread out Bragg peak proton, kV and MV photon beams irradiations; secondary electrons produced by kV photons have a longest range up to 20 times and dose enhancement factor using proton beams irradiations can be up to 14 times that is independent of proton energy. However, the dose enhancement factor in photon beam irradiations highly depend on the photon energy. The dose enhancement mechanism with GNPs in proton beam irradiations differs comparing to photon irradiations.

Conclusion: Distribution of energy deposition of proton beams in body is the major advantage of proton therapy over conventional photon therapy. Although radiosensitization enhancement factor is high for KV photon beam irradiations due to high probability of photoelectric interaction with GNPs, but proton therapy accompany with these nanoparticles also have showed great potential. Based on the former studies, GNPs in proton therapy can be used as the radiosensitizing agents in clinical applications for increasing the treatment efficiency.

Keywords: Gold Nanoparticles; Radiosensitization; Proton Therapy

• 1312

GOLD NANOPARTICLES RADIOSENSITIZATION EFFECT IN RADIATION THERAPY OF CANCER

Negar Zamani [1,*]

[1] *Medical University*

[*] *Corresponding author: Negar Zamani, Medical University. E-mail:negarzamani_edu@yahoo.com*

Abstract:

Purpose: The purpose of the current paper was to assess the current status of gold nanoparticles (GNP) application in radiation therapy. The studies on GNP and its applications in radiotherapy beams were reviewed and the advantag es and controversies were discussed.

In the present article the results of the available reports and articles were analyzed and compared and the final status of the GNP-RT was discussed.

Introduction: Gold is an excellent absorber of x-ray. If tumours could be loaded with gold, this would lead to a higher dose to the cancerous tissue compared with the dose received by normal tissue during a radiotherapy treatment.

Material and methods: in the first study done by device chitrani and et al Gold nanoparticles of different sizes were synthesized using the citrate reduction method HeLa cells were cultured in Dulbecco's modified Eagle's medium (DMEM) supplemented with 10% FBS. The two lowest energies

were obtained from a Gulmay D3225 orthovoltage unit at dose rates of 4.7 Gy/min at 105 kVp and 2.3 Gy/ min at 220 kVp. Individual dosimetry calculations were performed for the 105 kVp, 220 kVp and 6 MVp irradiations using clinical calculation methods and were confirmed using Gafchromic film (EBT).

In the second study with Niladri Chattopadhyay and et al., Growth Factor Receptor-2 (HER-2)- targeted AuNPs (Au-T) were synthesized Normal tissue toxicity was determined by hematology or biochemistry parameters. The combination of Au-P or Au-T with X-ray exposure increased the formation of c-H2AX foci by 1.7 (P = 0.054) and 3.3 (P = 0.024) fold in comparison to X-radiation alone, respectively.

In third study with karim khoshgard and etal, GNPs with an average diameter of 52 nm were synthesized and conjugated to folic acid molecules. Pegylated GNPs with an average diameter of 47 nm were also synthesized and used as non-conjugated folate GNPs. Cytotoxicity assay of the synthesized folate-conjugated and pegylated GNPs was performed using different levels of nanoparticle concentration incubated with HeLa cells for 24 hours. The radiosensitizing effect of both the conjugated and pegylated GNPs on the cells at a concentration of 50 μM was compared using MTT as well as clonogenic assays after exposing them to 2 Gy ionizing radiation produced by an orthovoltage x-ray machine at four different kVps and γ-rays of a Co-60 unit.

Results: According to khoshgard, niladri and chitrani et al. , particles with these diameters would have very low uptake into cells; they predicted that the optimum diameter for uptake would be about 50 nm (24). Since it is anticipated that radiosensitization effects can be optimized by increasing the uptake of gold nanoparticles into cells.

The combination of Au-P or Au-T with X-ray exposure increased the formation of c-H2AX foci by 1.7 (P = 0.054) and 3.3 (P = 0.024) fold in comparison to X-radiation alone, respectively. The clonogenic survival of cells exposed to Au-T and X-rays was significantly lower from that of cells exposed to X-radiation alone.

Conclusion: The results of all aforementioned studies are agreed in that GNPs can enhance the dose deposition phenomenon in GNP loaded tumors. Radiotherapy dose enhancement with gold nanoparticles appears to be a promising approach for improved cancer treatment.

• 1313

QUANTUM DOT-BASED IMMUNOFLORESCENT IMAGING AND ANALAYSIS OF COLLAGEN IV AND TOP2A AND EFGR AND IDENTIFICATION OF THEIR PROGNOSTIC VALUE IN TRIPLE-NEGATIVE BREAST CANCER

Negar Zamani [1,*]

[1] *Medical University*

[*] *Corresponding author: Negar Zamani, Medical University. E-mail:negarzamani_edu@yahoo.com*

Abstract:

Introduction: Topoisomerase 2 alpha (TOP2A) is a key enzyme in DNA replication and a target of various cytotoxic agents including anthracyclines. Collagens are major extracellular matrix (ECM) constituents that are effective barriers against tumor cell metastasis. Collagen IV is a major basement membrane component, forming a scaffold for ECM constituents. The epidermal growth factor receptor (EGFR) is a promising therapeutic target in cancer.

Purpose: Breast cancer is the leading cause of cancer death among females worldwide.Triple-negative breast cancer (TNBC) is a unique breast cancer subtype with high heterogeneity and poor prognosis. (TNBC), defined by the lack of estrogen receptor (ER), progesterone receptor (PR).

It is urgent to develop a new investigative system that integrates the key constituents in the tumor microenvironment with the pivotal molecules in cancer cells. Quantum dot (QD)-based nanotechnology has shown great potential for investigating cancer cells and the tumor microenvironment.

Material and methods: TOP2A expression in 145 TNBC specimens was detected using IHC and QD-IIQAS, and a comparative analysis of the two methods was conducted, including an exploration of the relationship between TOP2A expression and major clinical pathological parameters in TNBC. The prognostic value of TOP2A in TNBC was assessed.

Then We describe a computer-aided algorithm developed using quantum dot (QD)-based multiplex molecular imaging of TNBC tissues. We performed in situ simultaneous imaging and quantitative detection of collagen IV and investigated the prognostic value of the collagen IV ratio in TNBC.

EGFR expression in 65 breast cancer specimens was detected by immunohistochemistry and quantum dot-immunohistochemistry, and comparisons were

made between the two methods. EGFR expression in tissue microarrays of 240 breast cancer patients was then detected by quantum dot-immunohistochemistry and spectral analysis. The prognostic value of EGFR immunofluorescence area (EGFR area) for five-year recurrence-free survival was investigated.

Results : A similar antigen localization, a high correlation of staining rates (r = 0.79), and a high agreement of measurements (κ = 0.763) of TOP2A expression in TNBC were found by QD-IIQAS and conventional IHC (cutoff: 45.0 and 0.45, respectively). TOP2A was signifiantly higher in larger tumors (P = 0.002), higher grade tumors (P = 0.005), and lymph node positive patients (P, 0.001). The 5-year disease-free survival (5-DFS) of the high and low TOP2A subgroups was signifiantly different for both QD-IIQAS and IHC (P, 0.001, log-rank test for both). TOP2A expression was an independent predictor of survival in TNBC (P = 0.001).

In all patients, quantitative determination showed a statistically significant negative correlation between EGFR and collagen IV. The 5-year disease-free survival (5-DFS) of the high and low EGFR/collagen IV ratio subgroups was significantly different.

High agreement of measurement (κ = 0.848) of EGFR expression in breast cancer were found by quantum dot-immunohistochemistry and immunohistochemistry. The EGFR area showed significant differences by tumor grade and hormone receptor status (all P < 0.05)

Conclusion: In conclusion, despite the above mentioned limitations, our study indicated that QD-based immunoflorescent imaging provided a new candidate method for analysis of collagen IV and TOP2A and EFGR identification of their prognostic value in in triple-negative breast cancer.

• 1314

REVIEW OF COMPLIANCE PHYSICAL DESIGN IN RADIOLOGY DEPARTMENT IN HOSPITALS OF HAMADAN UNIVERSITY OF MEDICAL SCIENCES, WITH BUILDING STANDARDS

Soraya Azizkhani [1,*], Homeyra Azizkhani [1]

[1] *Mahdiyeh Medical Center*

[*] *Corresponding author: Soraya Azizkhani, Mahdiyeh Medical Center E-mail:s.azizkhani68@gmail.com*

Abstract:

Introduction: Identification standards and determine the distance to standardize their facilities with centers Necessity. The aim of this study was to evaluate the diagnostic radiology departments of hospitals of Hamadan University of Medical Sciences and compare it with standards established for the parts of the reputable organizations, National and international.

Procedure: This is a descriptive study and cross sectional. Construction standards, in radiology departments of hospitals, have been studied. Form that includes 107 thread is used. In which the standard structure values in the world and Iran were prepared separately for Each center was completed and were studied.

Results: In general, the standards in the construction oF radiology departments IS 85/64%.

Conclusion: The results of this study indicate that the studied sectors Relatively well-located. It is only necessary for those in wich They have their greatest weakness, actions taken.

• 1315

REVIEW OF DIAGNOSTIC REFERENCE LEVELS IN ADULTS CT SCAN EXAMINATIONS

Ahamad Mohammadbeigi [1,*]; Karim Khoshgard [2]; Masoud Rezaie [1]; Razieh Zaghiyan [1]

[1] *MSc Student in Medical Physics, Student Research Committee, Faculty of Medicine, Kermanshah University of Medical Sciences, Kermanshah, Iran*

[2] *Assistant Professor, Department of Medical Physics, Faculty of Medicine, Kermanshah University of Medical Sciences, Kermanshah, Iran*

[*] *Corresponding author: Ahamad Mohammadbeigi, Department of Medical Physics, Faculty of Medicine, Kermanshah University of Medical Sciences, Kermanshah, Iran. E-mail: Frdmbg@gmail.com*

Abstract:

One of the aspects of most important radiological protection principle, ALARA, is the dose limits that determines the annual permissible dose in the general population and radiation workers. However, determining the dose limits of patients is not accessible and the patients can have whatever medical exposure levels during one year. This has created some challenges for patient's absorbed dose due to medical examinations. ICRP in its report No. 76 (1996) has introduced the term diagnostic reference levels (DRLs) as an alternative to dose limits for optimizing the radiation protection of the patients in medical imaging modalities in which ionizing radiation is used. Therefore, it is necessary to determine the

diagnostic reference levels in different medical imaging centers (of different cities and or countries).

The aim of this study was to review the DRLs for CT examinations of adults head, chest, abdomen-pelvis from 2010 to 2016 in literature. We also reviewed the different dosimetric methods of DRLs and introduced an initial electronic and comprehensive approach for permanently evaluation of the DRLs in Iran.

The literatures were searched in PubMed, Web of Science, Google scholar, Science direct, SID databases with the relevant keywords including: Diagnostic Reference Levels, CT scan, Adult, DLP. A number of 36 relevant papers were found and studied.

Before 2001, dose measurements of CT examinations have been done using ionization chamber (Pencil chamber); however, all CT scanner manufactures were obliged to display the absorbed dose for each examination on the scanner's console after this year. And now, pencil chamber is used for calibration of CT scanners before establish the DRLs. DRLs values have been decreased during the last 7 years. DRLs values for a specific examination may vary by a factor of three in different centers. This difference could be due to differences in some factors including beam filtration, isocenter distance, beam collimation, X-ray tube efficiency, detector efficiency and array, data acquisition system, and another factors between different models and companies. The differences in DRLs in centers that use the same scanners are due to different selected parameters such as: tube potential (kVp), mAs, scan length, slice collimation, slice thickness, pitch factor, use of automatic exposure control (AEC), use of dose reduction software, and the scan mode (helical or axial). However, one cannot be able to choose the patient size as a parameter in the scanner's console, it has an important effect on the DRLs.

There is no national system for measuring DRLs in Iran. We proposed and introduced a comprehensive electronic system for continuous monitoring and comparing the DRLs for the first time in Iran. At the first step in this system, a curve of DRL values is obtained versus body mass index values (BMI) for each examination after calibration of the scanner. Then, data of examinations at each center such as the patient conditions, scanner and scanning protocol are entered automatically or manually into an online system. Finally, all information is analyzed by the software.

Using this system in addition to continuously and very quickly determining and comparing the local and national DRLs, and for research purposes, we can improve the radiation protection of the patients as well as having an appropriate supervision on the performance of radiographers and machines.

Keywords: Diagnostic Reference Levels; CT Scan; Adults

• 1316

STUDY OF PATIENT DOSE DURING INTRAVENOUS UROGRAPHY IN TABRIZ: ESTIMATED BY MONTE CARLO SIMULATION METHOD

Parinaz Mehnati [1]; Samad Ghasemi [2,*]; Morteza Gojazade [3]; Abdolhasan Kazemi [3]

[1] *Ph.D., Associate Professor, Medical radiation sciences research group, Department of Medical Physics, School of Medicine, Tabriz University of Medical Sciences, Tabriz, Iran*

[2] *M.S. student, Department of Medical Physics, School of Medicine Tabriz University of Medical Sciences, Tabriz, Iran*

[3] *Tabriz University of Medical Sciences, Tabriz, Iran*

** Corresponding author: Samad Ghasemi, M.S. student, Department of Medical Physics, School of Medicine Tabriz University of Medical Sciences, Tabriz, Iran. E-mail:ghasemisamad11@gmail.com*

Abstract:

Background/Objectives: Plain abdomen imaging (KUB) for primary study and the intravenous urography (IVU) are the gold standard methods for determining the anatomical abnormalities of the urinary tract and kidneys. In this study the entrance surface air kerma (ESAK), absorbed organ dose and cancer risks of 100 patients from IVU imaging procedures were measured.

Materials and Methods: A total of 100 patients underwent IVU procedure in general and private hospitals. The patients' demographics was recorded. The physical parameters of X-ray were measured. Dose of abdomen included ESAK, skin entrance dose, absorbed organ dose, cancer incident and cancer morality risks of 100 patients were estimated by Monte Carlo simulation method, CALDose-X software (Version 3.4).

Results: From September 2015 through to September 2016 (one year) 100 patients had kidney test by the mean body mass index (BMI) was 26.55±1.61 kg/m^2. Frequency of male to female was 52 to 48 %. Mean age of patient was 53 years old. Exposure factors such as kVp was from 60 to 95 V, mA was from 280 to 400 MA, time exposure was from 60 to 90 mS, mAs was from 16 to 36 mAs, FFD was from 90

to 110 cm. The ESAK doses was 3.69 ± 2.5 mGy , the mean skin entrance dose was 3.76 ± 2.59 mGy, the mean Weighted whole body dose was 0.51±0.39 mGy, the mean risk of cancer incidence was 3.52 ± 2.92 mGy, the mean risk of cancer mortality was 1.75 ± 1.37 mGy.

Conclusion: These results showed that three main factors contributed to the patients doses at IVU examinations: the number of images, exposure factors used by radiographers and patient BMI. Furthermore, patient radiation dose would be reduced if optimal exposure conditions are used based upon BMI values of patients.

• 1317

THE STUDY FACTORS CONTRIBUTING TO THE KNOWLEDGE OF RADIOLOGY DEPARTMENTS STAFFS OF TEACHING HOSPITALS REGARDING THE APPLICATIONS OF HOSPITAL INFORMATION SYSTEM OF KERMANSHAH CITY IN 2015

Majid Kasnani [1]; Masoud Rezaei [1,*]; Ahmad Mohammadbeigi [1]

[1] *MSc Student in Medical Physics, Student Research Committee, Faculty of Medicine, Kermanshah University of Medical Sciences, Kermanshah, Iran*

[*] *Corresponding author: Masoud Rezaei, Department of Medical Physics, Faculty of Medicine, Kermanshah University of Medical Sciences, Kermanshah, Iran. E-mail: Masood.rezaei69@gmail.com.com*

Abstract:

Background/Objectives: Studies of hospital information systems have been shown to reduce costs and boost the quality of care. In present study, prevalence and factors relating to the knowledge of radiology sections staffs of teaching and treating hospitals of Kermanshah medical sciences university about applications of hospital information system is been investigated.

Materials and Methods: Descriptive analytic studies on the 6 hospitals affiliated to the Kermanshah Medical Sciences University at the city of Kermanshah in the year 2015 were conducted. To assess the knowledge and its effective factors we used a questionnaire including two sections; demographic and 40 questions relating to the knowledge. Data analysis was performed using STATA software package version 12 and to assess the impact of the variables under study on employee's knowledge we used linear regression.

Results: In this study, 76 females and 50 males were studied. Most of the staff at these 6 hospitals has associate degree (47.6%) and mean level of knowledge of those passed the course HIS was higher (26.65) than those that did not passed the course (22.93). The highest scores were observed in those with masters degree (30.8). Also training HIS and having degrees such as bachelor, masters, or higher than masters, and DR imaging system showed a significant relationship with the staff score knowledge ($P < 0.05$).

Conclusion: Given that using hospital information systems will reduce costs and increase the quality of care for patients, holding periods of training with the experts to increase the radiology sections staff knowledge level needs the special attention of authorities.

Keywords: Hospital Information System; Radiology Department, Knowledge; Kermanshah Medical Sciences University

• 1318

PET/MR- A GROWING HYBRID IMAGING TECHNIQUE

Samaneh Barzegar [1,*]; Navid Sarmast Alizadeh [1]

[1] *MSc. of Medical Imaging Technology (MRI), School of Allied Medical sciences, Shahid Beheshti University of medical science, Tehran, Iran*

[*] *Corresponding author: Samaneh Barzegar, MSc. of Medical Imaging Technology (MRI), School of Allied Medical sciences, Shahid Beheshti University of medical science, Tehran, Iran. E-mail:barzegarsa@yahoo.com*

Abstract:

Background: Multimodality imaging has become a subject of interest of researchers and it has recently developed with potential to revolutionize in medical imaging. PET/MR is a hybrid scanner that combines of two modalities into a single scan.

Objectives: This review briefly discusses positron emission tomography/magnetic resonance imaging (PET/MR) concept, challenges related to PET/MR imaging and it summarizes the clinical application of PET/MR scan.

Methods: we conducted a literature search on online databases (i.e. PubMed, ScienceDirect, Springer and Ovid) and a public search engine (i.e. Google Scholar). Studies were limited to original applications written in English and published between 2010 - 2016.

Results: PET/computed tomography (PET/CT) has certain notable limitations, including inability to perform simultaneous data acquisition and the significant radiation dose to the patient contributed by CT. MRI compared to CT offers better soft tissue contrast as well as functional imaging capabilities. PET/MR scan provides anatomical-metabolic image information that it helps to have a faster and more accurate assessment of disease. There are some challenges toward the design and implementation of combined PET/MR scanners (e.g. possible interference between these modalities, attenuation correction of pet images) that some approaches have been adapted to resolving these issues. This review focuses on clinical applications of PER/MR in neurologic, oncologic, cardiac and pediatric setting.

Conclusion: PET/MR is a modality with many potential advantages over PET/CT and it's a valuable adjunct to modern healthcare. Simultaneous PET/MR has turned out to have all advantages of MRI and PET in one examination. However, further work is necessary to evaluate this new technology in both research and clinical arena.

Keywords: PET/MR; Hybrid Scanner; PET/CT, Functional Imaging; Attenuation Correction

• 1319

DEXTRAN-COATED IRON OXIDE NANOPARTICLES ENHANCE RADIATION KILLING EFFECT ON MCF-7 CANCER CELL LINE

Masoud Rezaei [1]; Ahmad Mohammadbeigi [1]; Karim Khoshgard [2,*]

[1] *MSc Student in Medical Physics, Student Research Committee, Kermanshah University of Medical Sciences, Kermanshah, Iran*

[2] *Assistant Professor, Department of Medical Physics, Kermanshah University of Medical Sciences, Kermanshah, Iran*

[*] *Corresponding Author Karim Khoshgard, Department of Medical physics, Faculty of Medicine, Kermanshah University of Medical Sciences, Kermanshah, Iran. E-mail: Karim khoshgard@gmail.com*

Abstract:

background/Objectives: Nowadays cancer is one of the most important causes of morbidity and mortality in the world. In radiotherapy, the ideal aim is delivering a lethal dose of radiation to the tumor cells so that healthy tissue around the tumor, have the least amount of exposure at the same time. One way to increase the dose only in the tumor cells is using high atomic number nanoparticles as radiosensitizers in these cells. Metal nanoparticles (NPs) were recently proposed as radiosensitizers in cancer radiation therapy.

Material and methods: Dextran-coated iron oxide nanoparticles at different concentrations (10, 40 and 80 μg/ml) were incubated with the MCF-7 cells for 24 hours, and afterward to evaluating the radiosensitivity, they irradiated with different doses (0, 2, 4, 6 and 8 Gy) of 6 and 12 MeV electron beams energy. In this study the survival fraction of cells was evaluated by MTT assay.

Results: Toxicity results showed that iron oxide nanoparticles at tested concentrations don't have any significantly cytotoxicity effect ($P > 0.05$), but the survival fraction in the group receiving radiation in the absence and presence of iron oxide nanoparticles showed significant differences, so that the average of dose enhancement factor in 10, 40 and 80 μg/ml for 6 MeV was obtained 1.26 ± 0.04, 1.28 ± 0.05 and 1.3 ± 0.07 and for 12 MeV energy this factor was 1.3 ± 0.06, 1.32 ± 0.03 and 1.34 ± 0.07 respectively.

Conclusions: By using iron oxide nanoparticles coated with dextran, we can increase absorbed dose substantially, resulting in more ever cell killing in MCF-7 cancer cells. Thus these nanoparticles can improve the efficiency of radiotherapy.

• 1320

ELECTRONIC NOISE

Pariya Azarnia [1,*]

[1] *Radiology*

[*] *Corresponding author: Pariya Azarnia, Radiology. E-mail: Pariaazarnia@yahoo.com*

Abstract:

British scientists have invented a machine, the Breathotron, which can "smell" cancer. The Breathotron detects chemical changes in a patient's breath.

The expression "electronic sensing" refers to the capability of reproducing human senses using sensor arrays and pattern recognition systems.

Scientists have been exploring new ways to smell signs of cancer by analyzing what is in patients' breath.

Lung cancer is one of the malignancies causing deaths worldwide. The yet to be developed non-invasive diagnostic techniques, are a challenge for early detection of cancer before it progresses to its later stages.

Electronic Nose' device can smell, detect cancer in urine (detect prostate cancer) A urine test that could produce more accurate results can save men from undergoing prostate biopsy due to current indicators like diagnosed prostatomegaly, or enlarged prostate, and unusually high PSA levels.

• 1321

DOUBLE INVERSION RECOVERY SEQUENCE IN DETECTION OF MS PLQUES

Ali Kiani Nazarlou [1,*]

[1] *Emam Reza Hospital*

[*] *Corresponding author: Ali Kiani Nazarlou, Emam Reza Hospital. E-mail:alikiani.n@gmail.com*

Abstract:

Aim: Evaluate of Double inversion recovery in detection of MS plaques Imaging was performed on 1.5 Tesla, siemens Avanto MR system, at fifty patient with 3D-double inversion recovery in sagittal section. Plaques more detection in double inversion recovery comparison with the other sequences as FLAIR.

• 1322

RADIATION DOSE-RATE CAN AFFECT THE RADIOSENSITIZATION OF DEXTERAN COATED IRON OXIDE NANOPARTICLES IN CANCEROUS CELLS

Karim Khoshgard [1,*]; Parvaneh Kiani [2]; Abbas Haghparast [3]

[1] *KUMS*

[2] *M.Sc in Medical Physics, Student Research Committee, Faculty of Medicine, Kerman*

3 Kermanshah University of Medical Sciences

[*] *Corresponding author: Karim Khoshgard, KUMS. E-mail:khoshgardk@gmail.com*

Abstract:

Background/Objectives: Radiotherapy aims to deliver lethal dose to cancerous tissue while preserve adjacent normal tissues. Radiation absorbed dose of the tumoral cells can increase when high atomic nanoparticles are present during irradiation. Also the dose-rate is an important aspect that determines the biological results of a given dose. This in-vitro study investigates the dose-rate effect on the induced radiosensitivity by dexteran coated iron oxide in cancer cells.

Materials and methods: HeLa and MCF-7 cells were cultured in-vitro and incubated with different concentrations of dexteran coated iron oxide nanoparticles; then they irradiated with 6 MV photons at dose rates of 43, 185 and 370 cGy/min. The MTT test was used to obtain the cells survivals after 48 h of irradiations.

Results: Incubating the cells with the nanoparticles at concentrations of 10, 40 and 80 μg/mL showed no significant cytotoxicity effect. Dextran-coated iron oxide nanoparticles showed more radiosensitivity effect by increasing the dose rate and nanoparticles concentration. Radiosensitization enhancement factors of MCF-7 and HeLa cells at dose-rate of 370 cGy/min and nanoparticles' concentration of 80 μg/mL were 1.21 ± 0.06 and 1.19 ± 0.04, respectively.

Conclusion: Increasing the dose rate of 6MV photons irradiation in MCF-7 and HeLa cells, increases the radiosensitization induced by the dextran-coated iron nanoparticles in these cells.

Keywords: Radiotherapy; Radiosensitization; Dose Rate; Iron Oxide Nanoparticles; Dextran

• 1323

THE BLOOD CELL COUNTS CHANGE DURING LOCAL RADIOTHERAPY AND ITS ASSOCIATION WITH ABO BLOOD GROUP

Farideh Elahimanesh [1,*]; Sajad Borzoui [2]

[1] *Kurdistan University of Medical Sciences*

[2] *faculty University*

[*] *Corresponding author: Farideh Elahimanesh, Kurdistan University of Medical Sciences. E-mail:f.elahimanesh@gmail.com*

Abstract:

The uses of radiotherapy for cancer treatment were increased over recent decades. The blood Perfusion at tumor site could be an important factor because of oxygen effect on cells radiosensitivity. The aim of this study was the assessment of blood cell counts changes during radiotherapy and whether these changes are associated with ABO blood group.

Sixty three breast cancer patient which underwent radiotherapy without concomitant chemotherapy were selected and 2 mL peripheral blood were taken and blood parameters were analyzed at four stage, one before and three stage every week during radiotherapy process. The collected data were analyzed by repeated measurement and one way ANOVA using SPSS 21 software.

The results showed that the changes in platelets, Lymphocytes, polymorphonuclear and white blood cells counts during local radiotherapy exposure are statistically significant but the changes is not associated whit ABO blood group. The changes in other studied parameter were not significant.

These results did not confirm the association between ABO blood group and blood cell counts in breast cancer patients but for better clarification of different behavior of changes of cell counts during radiotherapy, it address the need for more studies with larger sample size

• 1324

CONVENTIONAL RADIOLOGY QUALITY CONTROL DEVICES IN SELECTED HOSPITALS IN KURDISTAN, IRAN

Mozaffar Mahmoodi [1,*]; Farideh Elahimanesh [1]; Farzaneh Allaveisi [1]

[1] *Kurdistan University of Medical Sciences*

** Corresponding author: Mozaffar Mahmoodi, Kurdistan University of Medical Sciences. E-mail:mzffrmahmoodi@gmail.com*

Abstract:

Introduction: The most significant exposures that the public domain receives from the man-made radiation sources can be attributed to the diagnostic radiology. One of the most important factors that reduce the absorbed dose and insures the proper function of the devices is quality control (QC). The quality control programs are commonly performed to produce the high quality radiographic images at the lowest possible absorbed dose. In this study, the quality control of the selected radiological devices of the Kurdistan province was conducted to test whether the devices works in the optimum and standard condition.

Material and Methods: 10 conventional radiological devices were studies based on recommendation No 74 of the institute of physics and engineering in medicine (IPEM). Then, 10 QC standard tests were performed including accuracy and reproducibility of the voltage and time, tube output linearity, half value filtration, tube output reproducibility, collimator light intensity, and optic and light coincidence. Finally, the statistical analysis of data was performed to obtain the measurement error percentages of each parameter.

Results: According to recommendations of AAPM (2002) and ICRP 103, in this study, most considered parameters were within the reference range. However, the error percentages of the total filtration, optic and light coincidence, and voltage accuracy of the several devices were higher than the acceptable range and need to rearrange. Additionally, there are the threshold error values in heavy workload and old devices.

Conclusion: In summary, the necessary modifications, adjustments, or repairs must be followed by authorized companies for those radiological devices failed to pass the QC tests. Nevertheless, in spite of the heavy workload as well as agedness of the radiography equipments in our study, the results showed that most cases satisfy the standard requirements. Considering the economical aspect of the preparation of the imaging facilities, performing the regular QC programs can reduce the patient dose, maintenance cost, and occupational exposure. In addition, it leads to increase the image quality and lifetime of the devices.

Keywords: Radiation Protection; Quality Control; Diagnostic X-ray; Radiological Device; Kurdistan

• 1325

EVALUATION OF THE EFFECTING FACTORS ON MAMMOGRAPHY SCREENING TENDENCY BASED ON THE THEORY OF PLANNED BEHAVIOUR IN WOMENS OVER 40 YAERS IN HAMADAN CITY

Hassan Gheshlaghi [1,*]; Karim Ghazikhanloo Sani [1]

[1] *Hamedan University of Medical Science*

** Corresponding author: Hassan Gheshlaghi, Hamedan University of Medical Science. E-mail:hassan.gheshlaghi@yahoo.com*

Abstract:

Introduction: Positive beliefs about breast cancer screening programs plays a main role on participation in breast cancer screening programs. Based on the the theory of planned behavior, if a person seems yours on risk and knows that the way to reducing the risk or severity of illness, will participated in screening programs, this study aims to evaluate the effecting factors on mammography screening tendency based on the theory of planned behavior in women's over 40 years in Hamadan City.

Materials and Methods: This cross esctional study was conducted in educational hospitals of Hama-

dan City in 2015 - 2016. 124 women with breast pain was participated in this study. The questionnaire consisted of 44 questions in three section (demographic properties, awarenerss of breast cancer and the theory of planned behaviour. The results were analysed using the descriptive statistics and chi-sqaure, t- test and analysis of variance statisticsl tests.

Results: the gathered data showed that the educated people are more aware than breast cancer and screening programs (P = 0.01). Attitudes toward mammography screening is related tyo the Experience and not related to the level ofeducation (P = 0.18). The educated people are more motivated to screening programs (P = 0.01). The understand had no relation to the level of education in this study (P = 0.42).

Conclusion: the results showed that the education to womens about screening programs must be considered.

• 1326

USING OF MAMMOGRAPHY AND ULTRASOUND IN BREAST CANCER DETECTION

Sara Narimani [*]; Fatemeh Tabatabayi [1]; Somayyeh Faramarzi [2]; Sanaz Zharfi [2]

[1] *Tabriz University of Medical Sciences*

[2] *Tabriz Paramedical College*

[*] *Corresponding author: Sara Narimani, E-mail:Sara.narimani95@gmail.com*

Abstract:

Introduction: Breast cancer is the most common malignant disease occurring in women worldwide. It is generally accepted that early detection of breast cancer increases the probability of cure and mammography is the current clinical standard for breast cancer screening. Currently mammography and ultrasound are the basic imaging techniques for the detection and localization of breast cancer. Ultrasound is an imaging method that uses sound waves. In this article we tried to compare mammography and ultrasound for detecting of breast cancer.

Materials and methods: We reviewed published literature to identify multimodality breast cancer screening studies reporting the sensitivity of mammography and ultrasound. We searched Pubmed, Web of since and SID database in papers published between 2010 and 2016 by using keywords “ultrasound”, “mammography” and “breast cancer”.

Results: Studies show that ultrasound had a high sensitivity for detecting breast cancers missed on mammography, while mammography used more to find carcinoma in situ tumors that are micro calcification. We found no studies on mammography plus ultrasound to screen average risk women. Studies of high- risk women showed that screening with both tests found more breast cancers than mammography alone.

Conclusion: Evidence from published trials of multimodality breast cancer screening showed that sensitivity of ultrasound adjunct mammography is significantly higher than of mammography alone. but it is unclear if the use of screening breast ultrasound as an adjunct to mammography will reduce breast cancer- related mortality among high-risk women.

Keywords: Breast Cancer; Ultrasound; Mammography

• 1327

THE MODULATING EFFECT OF ROYAL JELLY CONSUMPTION AGAINST RADIATION-INDUCED APOPTOSIS IN HUMAN PERIPHERAL BLOOD LEUKOCYTES

Navid Rafat [1,*]; Ali Shabestani Monfared; Maryam Shahidi; Tayyeb Allahverdi Pourfallah

[1] *Babol University of Medical Sciences, Mazandaran, Iran*

[*] *Corresponding author: Navid Rafat, Babol University of Medical Sciences, Mazandaran, Iran. E-mail:Navidrafat@yahoo.com*

Abstract:

The present work was designed to assess the radioprotective effect of royal jelly (RJ) against radiation induced apoptosis in human peripheral blood leukocytes. In this study, peripheral blood samples were obtained on days 0, 4, 7, and 14 of the study from six healthy male volunteers taking a 1000 mg RJ capsule orally per day for 14 consecutive days. On each sampling day, all collected whole blood samples were divided into control and irradiated groups which were then exposed to the selected dose of 4 Gy X-ray. Percentage of apoptotic cells (Ap %) was evaluated for all samples immediately after irradiation (Ap0) and also after a 24 hours postirradiation incubation at 37°C in 5% CO2 (Ap24) by the use of neutral comet assay. Concerning Ap0, collected data demonstrated that the percentage of apoptotic cells in both control and irradiated groups did

not significantly change during the study period. However, with respect to Ap24, the percentage of apoptotic cells in irradiated groups gradually reduced during the experiment, according to which a significant decrease was found after 14 days RJ consumption (P = 0.002). In conclusion, the present study revealed the protective role of 14 days RJ consumption against radiation induced apoptosis in human peripheral blood leukocytes.

• 1328

EVALUATION THE LEVEL OF FEAR ABOUT RADIATION AMONG RADIOLOGY STAFF IN HOSPITALS RELATED TO MEDICAL SCIENCE OF HAMADAN UNIVERSITY IN THE YEAR 2014

Majid Alizadeh [1,*]; Karim Ghazikhanloo Sani [1]

[1] *Hamadan University of Medicalsciences, Hamedan, Iran*

[*] *Corresponding author: Majid Alizadeh, Hamadan University of Medicalsciences, Hamedan, Iran. E-mail:alizadeh_majid@ymail.com*

Abstract:

Background: The biological effects caused by radiation on radiation workers divided into two parts, deterministic effects and stochastic effects. Due to the effects of radiation on health, radiology staffs may be afraid of radiation. Personnel with little work experience and young age in compare with older personnel had the more level of fear. The fear among radiology personnel like other employees in various departments can be having an impact on job satisfaction and performance of them.

Materials and Methods: This study is a descriptive-sectional research that was done among radiology staff in hospitals related to medical science of Hamadan University in the year 2014. A numbers of 84 questionnaires were distributed among the radiology personnel of mentioned Hospital. Of these numbers, 49 questionnaires were completed. This questionnaire consisting of 14 questions which included five options (from very high to very low) that was ordered from 1 to 5 respectively

Results: The P value for all variables more than 0.05 (P value > 0.05) and the results showed that significant relationship was not among education, age, gender, marital status and work experience with fear of radiation.

Conclusion: The level of fear about radiation among radiology staff in hospitals related to medical science of Hamadan University has been shown that the total mean for very low responses is 15.73%, and significant relationship is not between fear and other variables for example education, age, gender, marital status and work experience (P value > 0.05).

Keywords: Radiology; Radiation; Fear

• 1329

EVALUATION OF THE REPETITION RATES, CAUSES AND ITS RELATION WITH PATIENT AGE AND TESTING AREAS IN RADIOLOGY CENTERS OF HAMADAN HOSPITALS

Majid Alizadeh [1,*]; Karim Ghazikhanloo Sani [1]; Samira Heydari

[1] *Hamadan University of Medical Sciences, Hamedan, Iran*

[*] *Corresponding author: Majid Alizadeh, Hamadan University of Medical Sciences, Hamedan, Iran. E-mail:alizadeh_majid@ymail.com*

Abstract:

Background: Repeating X-ray radiographs, as a common problem in radiology units, represent additional, non-billable costs due to increased film and chemistry use as well as increased personneland patient time and patient dose.

Materials and Methods: This research is a cross-sectional study which is done in a period of three months at Beesat and Farshchian hospitals in Hamadan, Iran to evaluate the relation betweencauses of the repetition and testing area and patient age with repetition rates in the radiology departments. In this study, discarded radiographs were collected weekly and a questionnaire including questions such as: repetition causes and testing area were handed to practitioners who were responsible for performing the test according to their personnel Code. The data were analyzed statistically by SPSS (version20) using Chi-square test, Spearman correlation coefficient and two-sample test of proportions.

Results: In this study during the three- month, 34,395 films were collected and studies from the two hospital. Most repetitions were related to thoracic (18.2%) in Beesat hospital compared thoracic spine (7.5%) and skull (7.5%) in Farshchian. The main reason for repetitions was inappropriate exposure conditions (39.3%). The highest repetition rates were in two group's age patients under 10 years (6.1%) and over 60 years (8.7%).

Conclusion: It seems that the high frequency of the repeat due to radiation conditions can be decreased by the installation of exposure tables and equipping the department to digital devices.

Keywords: Radiology; Radiographic Image Enhancement; X-Ray Film

• 1330

ASSESSMENT OF THE KNOWLEDGE AND ATTITUDES OF THE RADIOLOGY TECHNOLOGISTS OF BESAT HOSPITAL IN HAMEDAN ABOUT RADIATION PROTECTION

Majid Alizadeh [1,*]; Karim Ghazikhanloo Sani [1]; Maryam Pourkaveh [2]

[1] *Hamadan University of medicalSciences, Hamedan, Iran*

[2] *Department of Radiology, Faculty of ParaMedicine, Hamadan University of Medical sc Sciences*

[*] *Corresponding author: Majid Alizadeh, Hamadan University of medicalSciences, Hamedan, Iran. E-mail:alizadeh_majid@ymail.com*

Abstract:

Background/Objectives: Any diagnostic radiology process by using of X-ray requires the knowledge of radiation workers about biological effects of ionization rays, in the other hand having the radiation protection equipment is the most important requirements in radiology departments, to radiology technologists have proper performance according to their knowledge in radiation protection. due to the of important role of radiation workers in radiationprotection of patient, the aim of this study isassessment of knowledge and attitudes of the radiology technologists of Besat radiology center,in the field of the new guidelines on radiation protection.

Patients and Methods: A cross - sectional study wasperformedby using of the 24 questions questionnaire that was distributed amongthe 30 radiation workers employed at theBesathospital radiology center. The questionnaire was contained demographic information and questions about the knowledge and attitudes of radiation workersin the case of radiation protection.completed questionnaires data were analyzed by using of the SPSS software and non-parametric Mann-Whitney test.

Results: The Participation rate of radiation workers was %83.3. The mean and standard deviation of score related tothe knowledge and attitudes of radiation workers in the field of radiation protection was 31.9 ± 5.9.between age, qualification , working experience, level of knowledge and attitudes of radiation workers, there was no significant relationship.

Conclusions: According to the low level of knowledgeand attitudes of studied technologist in this research,the importance of radiation protection of patients and also important role of radiology technologists in this field, need for training classes in the field of radiobiology and radiation protection and acquaint them with different methods for radiation protection is felt.

Keywords: Radiation Protection; Radiology Technologist; Ionization Radiation; Hamedan

• 1331

EVALUATION OF QUANTITY AND QUALITY OF RADIATION PROTECTION IN CENTER OF HEGMATANEH GAMMA SCAN NUCLEAR MEDICINE IN HAMADAN

Majid Alizadeh [1,*]; Karim Ghazikhanloo Sani [1]

[1] *Hamedan University of Medical Science, Hamedan, Iran*

[*] *Corresponding author: Majid Alizadeh, Hamedan University of Medical Science, Hamedan, Iran. E-mail:alizadeh_majid@ymail.com*

Abstract:

Background: Rapid growth of radionuclide is increasing day by day. The increasing use of radionuclides has led to less sensitive radiation protection. One of the requirements of nuclear medicine is carefully doing the dosimetry. Iodine is used as radiopharmaceutical in treatment that staff and patient's absorption dose is further more than diagnostic procedures. The aim of this study was to evaluate the safety principles in the Hegmataneh Gamma scan nuclear medicine center in Hamadan.

Materials and Methods: Dose rate measurement in different parts center within 30 consecutive days, at the end of each shift was noted and the mean of dose rates in different rooms were measured and noted.

Results: The results have shown that the maximum and minimum dose rates of any work shift were 1.67 Sv/h and 0.13 Sv/h which are related to hot lab and control rooms, respectively.

Conclusion: The measurements show that the principles of radiation protection at Hegmataneh Gamma Scan center are confirmed in terms of quality and quantity and that is in conformity with International Committee Radiation Protection (ICRP).

Keywords: Nuclear Medicine; Radiation Protection, Dose Rate

• 1332

STEREOSCOPIC DIGITAL MAMMOGRAPHY COMPARED WITH MAMMOGRAPHY IN BREAST CANCER DETECTION

Somayyeh Faramarzi [1,*]; Fatemeh Tabatabayi [2]

[1] Tabriz Paramedical College, Tabriz, Iran
[2] Tabriz University of Medical Sciences, Tabriz, Iran

* Corresponding author: Somayyeh Faramarzi, Tabriz Paramedical College, Tabriz, Iran. E-mail:somi.faramarzi@yahoo.com

Abstract:

Background: Mammography is one of the most difficult radiographic exams to that has important limitations including superposition of normal tissue that can obscure a mass, chance alignment of normal tissue to mimic a true lesion, and the inability to derive volumetric information. Stereoscopic imaging or 3D (three - dimensional) imaging is any technique capable of recording three-dimensional visual information or creating the illusion of depth in an image. Our aim was to evaluate the potential benefit of using stereoscopic digital mammography as an adjunct to standard film mammography to improve the detection and diagnosis of cancer.

Methods: We reviewed published articles in new modalities of breast cancer imaging, reporting that stereomammography and Mammography are among the more promising new modalities for breast imaging. We conducted a review study with the search on google scholar and RSNA radiology in papers published between 2010 to 2016 using keywords stereomammography, Mammography, breast cancer.

Results: Compared with Digital mammography (DM), stereoscopic digital mammography showed significantly higher specificity and accuracy for detection of cancer. Sensitivity for detection of cancer was not significantly different for stereoscopic digital mammography. The recall rate for stereoscopic digital mammography was 9.6% and that for DM was 12.9% and an exciting finding was that new, additional lesions, mostly masses, were detected in the stereo mammogram but were not visible in the film study, in 30% of the cases.

Conclusion: Compared with mammography, stereoscopic digital mammography significantly improved specificity for detection of cancer, and as an adjunct to film, was shown to significantly improve diagnostic accuracy. While maintaining comparable sensitivity. The recall rate was significantly reduced with stereoscopic digital mammography compared with DM. So with all of these findings we can conclude that stereoscopic mammography is a suitable choice in breast cancer detection.

Keywords: Stereomammography; Mammography; Breast Cancer

• 1333

DIGITAL BREAST TOMOSYNTHESIS COMPARED WITH DIGITAL MAMMOGRAPHY

Somayyeh Faramarzi [1,*]; Sara Narimani; Fatemeh Tabatabayi [2]

[1] Tabriz Paramedical College, Tabriz, Iran
[2] Tabriz University Of Medical Sciences, Tabriz, Iran

* Corresponding author: Somayyeh Faramarzi, Tabriz Paramedical College, Tabriz, Iran. E-mail:somi.faramarzi@yahoo.com

Abstract:

Background: Breast cancer is the most common cancer and second cause of death due to cancer in women. Mammography is considered the most effective tool for early breast tumor detection. Digital mammography allows the radiologist to alter the orientation, magnification, brightness and contrast to produce images of the breast that can be seen on a computer screen and Digital breast tomosynthesis is an imaging technique in which multiple X-rays of one object are taken from a discrete number angles. Our aim was to evaluate the diagnostic performance of digital breast tomosynthesis (DBT) and digital mammography (DM) for benign and malignant lesions in breasts.

Methods: In order to collect evidence of the effectiveness of tomosynthesis and digital mammography, a systematic review of diagnostic accuracy studies from 2013 to 2016 was conducted. The most relevant databases included google scholar, Electronic Presentation Online System (EPOS), Springer link. The keywords included digital mammography, digital tomoseynthesis and breast cancer. After identifying the appropriate studies, the meta-analysis was used for extracted data pooling.

Results: Tomosynthesis significantly improved diagnostic accuracy for benign and noncalcified lesions, rounded lesions, areas of stellate distortions and simulating malignancy compared with mammographic views also reducing the number of needle biopsies. The expected number of false positive

breast cancer cases is higher for BT compared to DM. The largest difference of false-positive cases between the two methods is observed in dense breasts. Thus, the implementation of DBT in screening may give more false-positive cases than DM mostly for women with dense breasts.

Conclusions: This study shows that breast cancer detection can be improved with DBT, but the result needs to be confirmed in large population-based studies. Also with increased experience and with access to prior BT exams, the false-positive rate can probably be reduced. The cost-benefit aspects of screening with BT compared with DM also need to be assessed.

Keywords: Digital Mammography; Digital Tomoseynthesis; Breast Cancer

• 1334

CT SCAN CANCER RISKS

Amir Hossein Dakhili [1,*]

[1] *Tabriz University of Medical Science*

[*] *Corresponding author: Amir Hossein Dakhili, Tabriz University of Medical Science. E-mail:Amirdk2@gmail.com*

Abstract:

Background: Despite the great medical benefits of computed tomography (CT) scan, this technology brings with it ionizing radiation threat. Recently the use of CT scan has been increased, now in the United States (U.S) over 70 million scans (about one scan for every four people) annually perform. CT scan is linked to the risk of developing future cancers. The aim of this review study was identifying the cancer risk from CT examinations.

Materials and methods: For this study, prestigious articles regarding CT scan exposure from British Medical Journal (BMJ), Dr Pearce studies and national cancer institute (NCI) studies have been used. In the first study, the researchers followed approximately 680000 individuals who had at least one CT scan from birth in the 1980s into young adulthood. Dr Pearce study identified the cancer risks from CT exposure in 180000 patients who had undergone about 280000 CT scans in the UK between 1985 and 2002. NCI researchers followed over 70 million CT scans perform annually in the U.S.

Results: CT scan cancer risk is higher for female children younger than 1 year (1 in 100). The first study, compared the cancer risk for irradiated individuals with unexposed individuals, which were: 35% higher in the first four years following exposure, even 15 or more years after exposure cancer risks remained stubbornly elevated by 24%. For pearce study the reported 10-year risk from CT scan for leukemia became 1-in-7500, and for brain tumor became 1-in-1000 patients. The NCI researchers estimate that CT scans could account for roughly 29000 future cancer cases each year in the U.S. And about 44% of CT scans done in the U.S each year are medically unnecessary.

Conclusion: Since ionizing radiation induces breaks in DNA that can lead to cancer, it infers that CT scan increases cancer risk which depends on different criteria like age and absorbed dose. The risk is higher for children especially female ones. As an advice, CT scan should not be requested without a justifiable reason (especially for children), otherwise CT scan-induced cancers will grow rapidly.

Keywords: CT Scan; Cancer Risk; Ionizing Radiation; Absorbed Dose; Age

• 1335

AN INVESTIGATION OF COUCH EFFECT ON THE ATTENUATION OF MEGAVOLTAGE RADIOTHERAPY AND VARIATION OF ABSORBED DOSE IN THE BUILD-UP REGION

Ali Tarighatnia [1,*]; Tahereh Sedaghatian

[1] *SSO*

[*] *Corresponding author: Ali Tarighatnia, SSO. E-mail:tarighat56@yahoo.com*

Abstract:

Introduction: In order to less beam attenuation, the fiber carbon is the most commonly used material in treatment couch which could be replace build-up region, reduces skin-sparing effect and causes target volume under dosage. In this study, we aimed to evaluate beam attenuation and variation of build-up region in 550 TxT radiotherapy couch.

Materials and Methods: Cylindrical PMMA Farmer chamber and DOSE-1 electrometer was set in isocenter of gantry and on the phantom respectively. So, the gantry rotated 10° and attenuation was assessed.

To measure the build-up region, we used Markus chamber, Solid water phantom and DOSE-1 electrometer. Furthermore, Solid water phantom was

set on isocenter of gantry and placed Markus chamber in it, then we quantified build-up region at 0° and 180° gantry angels and compared the obtained values.

Results: Notable attenuation and build-up region variation were observed in 550 T × T treatment table. The maximum rate of attenuation was 5.95% for 6 MV photon beam, at 5 × 5 cm^2 field size and 130° gantry angle, while the maximum variation was 7 mm for 6 MV photon beam at 10 ×10 cm2 field size.

Conclusion: Fiber carbon had beam attenuation and variation at the build-up region. Therefore, application of fiber carbon is recommended for planning radiotherapy to prevent skin side effects and lower the risk of cancer recurrence.

Keywords: Beam attenuation, Carbon fiber, Couch insert, Surface dose.

• 1336

COMPARISON OF DIGITAL MAMMOGRAPHY AND DIGITAL BREAST TOMOSYNTHESIS IN SENSITIVITY AND SPECIFICITY

Davood Khezerloo [1]; Mohammad Tavakkoli [2,*]

[1] *Assistant Professor, Tabriz University of Medical Science, Faculty of Paramedical science -Department of Radiology-IRAN*

[2] *Radiologic technologist, BSc, paramedical school, Tabriz University of medical science, member of USERN*

[*] *Corresponding author: Mohammad Tavakkoli, Radiologic technologist, BSc, paramedical school, Tabriz University of medical science, member of USERN .E-mail:Mhmmdtvkkl@gmail.com*

Abstract:

Background: Breast cancer is the most common malignancy in women and its early detection has an important role in successful treatment. It has been shown that early detection can abate strongly breast cancer morbidity and mortality. There are two common modalities in breast screening, digital breast tomosynthesis (DBT) and digital mammography (DM). DBT is a new and emerging x-ray imaging modality, in which 3D reconstructed images acquired from multiple low-dose 2D projections in different angles of object. By this 3D method, DBT can clearly differentiate the superimposed interfaces. This article is an overview about sensitivity and specificity of DBT with DM in breast cancer screening.

Materials and methods: In this study the "DM" and "DBT" related studies with were researched. Eventually, 300 articles were found in databases such as Google scholar, PubMed, EMBASE, Microsoft Academic, JAMA, and Springer. Finally were limited and selected only 10 important articles that sensitivity and specificity studies.

Results: Sensitivity of cancer detection rates in 1000 exam increased from 4.0 for DM alone to 5.4 - 6.6 with DM+DBT and recall rates declined for DM + DBT in all studies. In another study, the pooled sensitivity for DBT and DM were 90% and 89%, and specificity of two modalities was 79% and 72%, respectively. For supplemental screening, for DBT added with mammography, the sensitivity was lower in (88.2 %) than MRI added mammography (97.8 %), but it was higher than mammography alone (78.3 %). Another study showed that the sensitivity for DM and DBT was 72.4% and 100%, respectively, while the specificity was 46.4% and 75%, respectively.

Conclusion: The important advantage of DBT in studies was associated with a decrease in recall rate and an increase in cancer detection rate. However, DBT had higher diagnostic performance than mammography. Digital breast tomosynthesis (DBT) has a higher sensitivity and specificity in breast diagnosis than digital mammography. Further studies should be focused to evaluate and assess the clinical outcomes.

Keyword: Digital Mammography (DM); Digital Breast Tomosynthesis (DBT); Sensitivity; Specificity

• 1337

ANALYZING CAUSES OF REPEATING IN DIGITAL RADIOGRAPHY

Ghazaleh Firoozy Tanha [1,*]; Morteza Najafi Vand [2]

[1] *Paramedical Faculty of Tabriz*

[2] *Tabriz*

[*] *Corresponding author: Ghazaleh Firoozy Tanha, Paramedical Faculty of Tabriz. E-mail:ghazal7762@gmail.com*

Abstract:

Background: Determination of the reasons of repeating in digital radiography has become an important issue and a cardinal problem in radiography wards because of depreciation of system, reduction of the average life of system and increase in patient's absorbed dose. Changing the analog radiography to digital is done in most of the countries and we expect reduction in repeat rate because of this upgrade. So, some quantitative studies had been done in this field around the world. Finding

reasons of repetition can help to solve the problem and improve the performance of radiology wards.

Methods: Authors had found 12 papers by searching keywords Repeat analysis, digital radiography and repeat rate in databases of scopus, SID, pubmed and google scholar. After studying and corresponding them to the subject, used 7 of them as reference. These papers had data collected from hospitals of southern Taiwan, Norway and some private centers.

Results: In study of Florian Fintelmann which was done in 16 months, 13.3% of all radiographies were repeated mostly because of position error (84.4%). In study of A. Steffen and colleagues which is done in 13 centers in Germany and Europe, the reason of 80% of repetition was positioning error. Behroozi and colleagues reported the same as A. Steffen (47.7%) as the main reason of repetition in panoramic radiography. J. Nol and colleagues had reported 3.2% as Bjorn Hofmann and colleagues reported 51.3% of repetitions were because of the position error. Wen-Shey Tzeng and colleagues reported the main reason of repetition as position error.

Conclusion: according to the results of this review, it seems like acting in the fields of teaching to technicians with little experience by holding training courses within working, rapid control of X-ray generating systems, creating methods to choose the best radiation factors and creating opportunities for students to become familiar with the conditions of a hospital may decrease remarkable amount of repeating, side effects and financial costs.

• 1338

DETERMINE THE DIAGNOSTIC ACCURACY OF CT SCAN TO DIFFERENTIATE EPIDURAL HEMORRHAGE AND SUBDURAL HEMORRHAGE COMPARED TO SURGICAL FINDINGS

Ali Jafari Khalil Abadi [1,*]; Reza Jafari Khalil Abadi [2]; Zeynab Yazdi Sotoodeh [3]; Morteza Salarzaei [4]

[1] *Radiology Student, Student Research Committee, University of Medical Sciences, Zahedan, Iran*

[2] *MSc of Radiobiology, Department of Radiology, University of Medical Sciences, Kerman, Iran*

[3] *MSc of MRI, Department of Radiology, University of Medical Sciences, Zahedan, Iran*

[4] *Medical Student, Student Research Committee Zabol University of Medical Sciences, Zabol, Iran*

[*] *Corresponding author: Ali Jafari Khalil Abadi, Radiology Student, Student Research Committee, University of Medical Sciences, Zahedan, Iran. E-mail:jafarialiradiology@gmail.com*

Abstract:

Introduction: two common complications that occur following head injury is subdural hemorrhage, epidural hemorrhage. It is important to distinguish two types of bleeding in trauma patients. Brain computed tomography can differentiate between internal and external lesions and patients who have suffered traumatic bleeding and need immediate treatment to separate. The aim of this study was to evaluate the diagnostic accuracy of CT in differentiating between the two types of bleeding compared with the results of surgical treatment.

Methods: This cross-sectional study on 116 patients with epidural and subdural bleeding following trauma to the head which had been referred to the emergency room Khatam was done. CT scan of the head was taken from all patients using CT images, the lesions, fractures, bleeding and associated lesion area was determined by a neurosurgeon. All patients underwent surgery and the results of surgery were compared with CT findings. At the end using SPSS 20 software

was used for data analysis.

Results: In this study of 116 patients, 80 males, mean age 97.37 ± 25.18 and 36 females with average age of 19.37 ± 44.88 respectively. Subdural hemorrhage in 69 cases (59.4%) andepidural bleeding in 47 patients (40.5%) occurred. The results of the interpretation of CT scans compared with surgical findings showed that the sensitivity of epidural and subdural hemorrhage CT scan in differentiating high. ($P < 0.01$)

Conclusion: The results showed that two of the lesion (concavity and convexity for subdural for epidural) and extent of bleeding has a high sensitivity compared with standard surgical outcomes and complications of fracture and is not sensitive.

Keywords: Epidural Hemorrhage; Subdural Hemorrhage; Surgery; CT Scan

• 1339

KNOWLEDGE RADIOLOGY TECHNICIAN IN THE RADIOLOGY DEPARTMENT OF THE HOSPITAL TOWARDS THE PROTECTION OF ZAHEDAN IN 2016 YEAR

Ali Jafari Khalil Abadi [1,*]; Reza Jafari Khalilabadi [2]; Vida Sargazi [3]; Reza Rezaei Fard [1]

[1] *Radiology Student, Student Research Committee, University of Medical Sciences, Zahedan, Iran*

[2] *Msc of Radiobiology, Department of Radiology, University of Medical Sciences, Kerman, Iran*

[3] Msc of Medical Physics, Department of Radiology, University of Medical Sciences, Zahedan, Iran

* Corresponding author: Ali Jafari Khalil Abadi, Radiology Student, Student Research Committee, University of Medical Sciences, Zahedan, Iran. E-mail:Jafarialiradiology@Gmail.Com

Abstract:

Background and aim: awareness, familiarity and usage instructions by staff with a beam of radiation protection, can play an important role in radiation protection. If these people do not have the necessary awareness, as a result of their protective behavior was incorrect and may cause injury to yourself or persons who diagnose and treat the disease are forced to use radiation, are. This study was designed to evaluate the knowledge of radiology technicians in hospitals in Zahedan was conducted in 2016 year.

Materials and Methods: In this cross-sectional study, awareness of the radiology department personnel in hospitals in Zahedan were studied. 91 technicians were involved in research The radiology technician knowledge in three areas (personal protection, protection of Radiology and the Patient Protection) through a questionnaire and using the atomic energy organization rules, the validity of which had been approved accredited undergraduate, collect respectively.

Results: 91 technicians in the study, 35 men and 56 women. The results showed that awareness radiology technicians in the field of personal protective 32.5 percent, awareness of the Patient Protection and knowledge in the field of protection of the radiology department 63.8 75.5 percent per cent. As such, results showed that there is a call between the educational level and percentage. It also became clear that there is no relationship between the age of accountability.

Conclusion: The results showed that staff awareness and knowledge in the field of radiation protection of patients in the radiology department of physical protection and good fit but awareness about their individual protection technicians are weak. Therefore, holding training classes in radiobiology and radiation protection technicians to raise awareness is necessary.

Keywords: Radiology Technician; Protection; Zahedan

• 1340

EVALUATION OF RADIATION DOSE RECEIVED BY OPERATING ROOM PERSONNEL DURING RADIOLOGICAL PROCEDURES

Seyed Mohammad Haeri [1,*]

[1] BS

* Corresponding author: Seyed Mohammad Haeri, BS. E-mail:M.HAERI90@yahoo.com

Abstract:

Introduction: utilization of ionizing radiation in some surgery operations (especially orthopedic operations) is inevitable. One of the main occupational hazards of physicians and other personnel could be radiation exposure risk. This study aims to evaluate the exposure dose received by operating room personnel in such examinations.

Methods and materials: 30 personnel of operation room in university affiliated hospitals of Hamadan city (except of physicians and nurses) had been studied as received radiation dose. 3 TLD chips were fixed on the apron of each participant. To estimate the high risks examinations, participants also complete a questionnaire about the type and number of the studies undergoing radiological examinations that they were been participated.

Results: Minimum and maximum level of dose received by the participants was between 0.24 and 0.56 mSv in a forth month periodic time. Therefore amount of annual dose received by personnel would be between 0.73 and 1.7 mSv, respectively (without reduction of background radiation). As the accuracy of TL dosimeters is about 0.1 mSv, therefore the received dose by personnel is very low and comparable with background radiation.

Conclusion: The calculations showed that the radiation received dose by operating room personnel is very low, and they received radiation dose is lower than maximum permissible dose recommended by international commission of radiation protection. However, use of dose recording systems for awareness in the case of absorbed doses over permissible limits is necessary.

Keywords: Operating Room Personnel; Radiation Dose; Radiological Examinations; TLD

• 1341

THE AVERAGE RADIATION DOSE ANNUALLY RECEIVED BY GENERAL PUBLIC

Seyed Mohammad Haeri [1,*]

[1] BS

* Corresponding author: Seyed Mohammad Haeri, BS. E-mail:M.HAERI90@yahoo.com

Abstract:

The average radiation dose annually received by

general public is 2.5msv, and 15% of them is related to medical exposures (1, 2). The use of radiation in the medical practice has evolved since its beginning and 30% to 50% of medical decisions is affected by radio logic examinations (3). However, the hazards of Ionizing radiation is irrefutable. According to recently studies in United Kingdom was estimated that 100 - 250 death per year occurred because of harmful effects of medical exposures (4 1). Reducing the patients received dose as low as reasonably achievable (ALARA) is based on the recommendations of ICRP and NRPB.

Method and materials: This cross- sectional study was conducted between. October 2007and April 2008. 255 questionnaires were given to 255 doctors (125 general physician and 130 staff physician) but only 120 doctors (86 general physician and 34 staff physician) completely answered the questions.

Results: The results of this study indicate that only 58.3% of Doctors (49 GP, 21 SP) knows the units of radiation Dose measurement. Only 10 GPs could correctly estimate the amount of radiation Dose received by patients in a routine radiography of hand, but none of SPS correctly answered.

17.8% of GPs (15 form 84), and 25% of SPS (9 from 36) be aware of annually maximum permissible Dose to general Pubic.

The correct choice about the most sensitive organ to radiation was 81% (68) and 92% (33) by GPs and SPS respectively.

In the case of estimation the received Dose by patients in commonly requested radio logic examinations proportional to the Dose Delivered in a routine radiography of hand, results have been shown in Table 1. The percent of correct, under and over estimate have been shown in Table 1, as well. 10.7% (9) of GPs dido not know that sonography have no radiation dose, but all of the GPs correctly answered this question. Similar question about MRI examination showed that 13% of GPs did not aware of lake of radiation Dose in this Imaging modality, although all of the SPS correctly answered.

Percent of correct answers of doctors to each part of the questionnaire have been shown in Diagram 1.

• 1342

COMPARING THE SENSITOMETRIC PROPERTIES OF DENTAL X -RAY FILMS

Seyed Mohammad Haeri [1,*]

[1] BS

* Corresponding author: Seyed Mohammad Haeri, BS. E-mail:M.HAERI90@yahoo.com

Abstract:

Introduction: The film sensitivity and image quality, determine the diagnostic value of a radiographic image. There are three widely available intraoral films (Agfa Dentus M2 Comfort, Kodak Intraoral E -speed film and Foma Dentix E-speed) in Iran. This study sought to compare the sensitometric properties of this 3 intraoral films and comparing the accuracy in detection of carious lesions. The effect of different processing conditions on sensitometric properties of these films was studied, too.

Methods and materials: To generate characteristic curves of these 3 intraoral films we exposed equal number of films in deferent distances of source. A dental X-ray unit (Soredex) was used to expose study films. All films were developed in an automatic processor with fresh and used developer (at two separate stages). After processing, film densities were measured with a digital densitometer (Konica PDA 85). Sensitometric properties of these films were measured regarding characteristic curves and other data. To determine the accuracy of the films in carious detection, we used a test object was modified from the original described by other studies. We placed the test object on films and exposed them with different exposure factors and after processing 20 dentists reported the number of recorded details.

Result: The base-plus-fog density of Foma Dentix intraoral film is higher than the others. Kodak E-speed was fastest and had higher contrast than the others. Agfa Dentus M2 had greatest latitude, and latitude of Foma Dentix was greater than Kodak E-speed film. Used solutions affected the sensitometric properties of all films. There were significant differences in the number of perceptible details between Dentus M2 and the other films especially when low exposures and used process solutions were employed. No significant differences were observed between Agfa Dentus M2 and other films in terms of their recording of image details at higher exposure generated films.

Discussion: Kodak E-speed film provides a relatively fast speed and high contrast. Agfa Dentus M2 had higher latitude than that of the other films. In addition, Dentus M2 Comfort film provides better details visibility, especially at relatively low exposures.

Keywords: Dental Films Sensitometric Properties; Processing; Exposure

• 1343

OUTCOME SCORE IN PATIENTS WITH TRAUMATIC BRAIN HEMORRHAGE

Reza Jafari Khalil Abadi [1,*]; Ali Jafari Khalil Abadi [2]; Sarir Nazemi [3]; Zeynab Yazdi Sotoodeh [4]; Morteza Salarzaei [5]

[1] MSc of Radiobiology, Department of Radiology, Kerman University of Medical Sciences

[2] Radiology Student, Student Research Committee, Zahedan University of Medical Sciences,

Zahedan, Iran

[3] Radiologist, Department of radiology, Kerman University of Medical Sciences, Kerman, Iran

[4] MSc of MRI, Department of Radiology, University of Medical Sciences

[5] Medical Student, Student Research Committee, Zabol University of Medical Sciences, Zabol Iran

* Corresponding author: Reza Jafari Khalil Abadi, MSc of Radiobiology, Department of Radiology, Kerman University of Medical Sciences. E-mail: jafarialiradiology@gmail.com

Abstract:

Introduction and purpose: Traumatic brain injury (TBI) can lead to pathological damage many of the most important of which can be fractured skull, Brain contusions well as various hemorrhage and hematoma (epidural, subdural, subarachnoid, inter parenchymaland intraventricular). This research aims to study the relationship between CT scan findings, level of consciousness and outcome score in patients with traumatic brain hemorrhage.

Method and material: During a 6-month period 100 patients with traumatic intra-cranium hematoma referred to emergency department were studied. They were then transferred CT.

Scan department for brain CT. Scan in order to determine type of hematoma, location of hematoma, change of midline shift and volume of hematoma. Patients with clear and visible hemorrhage were excluded out of the study. The level of consciousness was measured and recorded based on Glasgow Coma Scale in time interval of entrance time and 24 hours after patients' hospitalization. Patients outcome was determined based on Glasgow Coma Scale. The collected finding was; data was analyzed using SPSS 20 software.

Results: Based on CT. Scan findings the most current type of hematoma is subdural. Hematoma location in 30 people was epidural, in 44 people subdural and in 26 people inter-parenchyma. Also outcome of 13 patients was death, 3 people with vegetative state, 17 people with brain sever injury, 20 people in low state and 47 people in normal state. According to obtained results there was a significantrelationship between level of consciousness and volume of hematoma. Also it was determined that there is a significant relationship between patients' outcome and .level of consciousness while releasing. ($P < 0.05$)

Discussion: Our study shows that outcome of patients involving intra-brain traumatic hemorrhage depends on CT. Scan findings and level of consciousness. Among CT scan findings there is a significant reverse relationship between hematoma volume and midline shift with level of consciousness.

Keywords: CT Findings; GCS; GOS; Head Trauma

• 1344

THE INVESTIGATION OF THE EFFECT OF BISMUTH OXID SHEILD ON THE RADUCTAION OF THE AMOUNT OF RADIATIONOF THE PATIENTS IN CTSCAN

Kobra Rasoolinejad [1,*]; Zahra Zangene [2]; Reza Afzalipoor [3]

[1] Technologist of radiology Imaging section of Ghaem hospital Firozabad. Shiraz University of Medicine, Fars, Iran

[2] Technologist of radiology, Imaging section of ghaem hospital. Shiraz University of medicine

[3] medical physics group ,medical collage Iran medical university Tehran Iran

* Corresponding author: Kobra Rasoolinejad, Technologist of radiology Imaging section of Ghaem hospital Firozabad. Shiraz University of Medicine, Fars, Iran. E-mail:krasouly@gmail.com

Abstract:

Purpose: In regard to the developments radiation dose has been noticeably increased so based on the protection rules against Rays .It is so important to have and use new shields which don't have any effects on imaging quality.

The aim of the research is the effect of bismuth oxide (BI^2O^3) protection

shields on the decrease of Way of studying: Advanced and systematic search on IT data base (pub med, Google scholar ,Embase) with these key words (CT Scan ,Radiation dose, Bismuth, Shielding , Imaging Quality) has been done and the result have been investigated.

Conclusion: The results showed the Bismuth oxide has more capacity to attract X-rays. Because of it is high density and atomic number and it also has more efficiency and less toxicity than Lead. The use of these shields due to their lightness is easier and can be used properly instead of Lead shields.

Keywords: CT Scan; Bismuth Oxide; Protection

• 1345

EVALUATION OF THYROID STUNNING IN PATIENTS WITH HYPERTHYROIDISM AFTER IODINE THERAPY

Zahra Fazeli [1,*]; Ali Shabestani Monfared; Rasool Zakavi [1]

[1] *Mashhad University of Medical Sciences, Mashhad, Iran*

[*] *Corresponding author: Zahra Fazeli, Mashhad University of Medical Sciences, Mashhad, Iran. E-mail:ghazal7.fazeli@yahoo.com*

Abstract:

Background and Aim: Thyroid stunning is a radiobiological phenomenon in which a diagnostic radioiodine dose leads to the reduced uptake of a subsequent therapeutic dose by the remnant thyroid tissues or functioning metastases. Thyroid stunning occurs when a diagnostic dose is administered before therapeutic dose. It seems that even low doses of radioactive iodine (131I) might lead to thyroid stunning. With this background in mind, this study aimed to evaluate thyroid stunning in patients with hyperthyroidism following iodine therapy.

Materials and Methods: This clinical trial was conducted on 42 patients with hyperthyroidism, referred to the nuclear medicine research center of Ghaem hospital, Mashhad, Iran and Shahid Beheshti hospital of Babol, Iran for iodine therapy. The patients were divided into two groups of fixed-treatment dose and low primary dose of 131I. The patients in the fixed-dose group received the conventional treatment dose, while the primary-low-dose group was administered a primary dose of 10 μCi, in addition to the conventional treatment dose. Then, in both, thyroid scanning was performed to determine thyroid uptake after 48 h, using a gamma camera with high-energy collimators. Planar quantification was performed using the geometric mean approach.

Results: The mean total count of thyroid cells in the primary-low-dose and fixed-dose groups was 304529.751 ± 205198.1 and 246309.76 ± 133991.723, also uptake of The total activity in thyroid (A) was 48.95% and 45.55% in the fixed-dose and primary-low-dose groups, respectively.

• 1346

DOSIMETRIC EVALUATION OF MEAN GLANDULAR DOSE FOR MAMMOGRAPHY IN KERMANSHAH WOMEN

Milad Moradi [1,*]; Sajad Moradi [2]; Maziar Jalalvandi [3]

[1] *KUMS*

[2] *Nano Drug Delivery Research Center*

[3] *Tehran University of Medical Sciences, Tehran, Iran*

[*] *Corresponding author: Milad Moradi, KUMS. E-mail:miladmoradi70@yahoo.com*

Abstract:

Introduction and Aim: Breast is one of the main radiological sensitive organs, hence it is important to evaluate absorbed dose to this organ especially to the glandular parts. The overall objective of this study was to investigate mean glandular dose (MGD) in mammography.

Methods: The population under study comprised of 80 patient. Entrance skin exposure was measured by dosimetry. Mean glandular dose was calculated by using conversion factors and entrance skin exposure. The suitability of American College of Radiology's (ACR) recommendations regarding mean glandular dose for Kermanshah women was also checked.

Results: The mean age was 49.4 years. The range of breast thickness was 3.2 to 5.4 cm. the mean compressed breast thickness was 4.6 cm. mean compression force was 9.9 dN. The mean values of average glandular dose were 2 mGy.

Conclusions: The result of study indicates that mean glandular doses of Kermanshah women are lower than recommended by the American College of Radiology that assurance the radiation protection principle of patients.

Keywords: Mammography; Mean Glandular Dose; Dosimetry; Protection Principle

• 1347

COMPARISON OF RADIOSENSITIVITY IN HEALTHY WARM, MODERATE AND COLD MIZAJ PERSONS

Fatemeh Asghari [1,*]; Kourosh Gorji [1]; Seyyed Ali Mozaffarpour [1]

[1] *Babol University of Medical Sciences, Mazandaran, Iran*

[*] *Corresponding author: Fatemeh Asghari, Babol University of Medical Sciences, Mazandaran, Iran. E-mail:Fatemehasghari98@Yahoo.Com*

Abstract:

Radiosensitivity is the relative vulnerability of cells to the hurmful effects of ionizing radiation.The response to radiation depends on many factors such as physical characteristic of ionizing radiation including its type, energy and dose rate and also en-

viromental condition. Inherent traits is one of the important reasons of differences in radiation sensitivity. Most of Traditional medicine schools have often based their diagnosis and treatment order on physical and mental traits of patients which called mizaj (temperament). Mizaj is an inherent characteristic which indicates the properties of a cell, a tissue an organ and of the organism as a whole and represents the physical and chemical properties of body. In this study, the association between the type of mizaj and radiosensitivity was investigated.

Materials and Methods: Thirty 20 - 40 years old healthy volunteers were divided into 3 groups of warm, moderate and cold mizaj using a standard questionnaire,2 milliliter blood samples of them were taken and the samples were divided into two part .One part was exposed to 4 Gy of gamma rays from an accelerator sourse and the second one was considered as control. The exposed and non-exposed blood samples were studied by comet assay.

Results: Our study showed that the radiosensitivity index of warm mizaj persons was significantly higher than other persons, also the sensitivity of moderate mizaj persons was more than the cold ones.

Conclusions: According to the Findings, it seems that mizaj type can be used as a radiosensitivity index for determining the given dose to radiotherapy, although more studies are necessary.

• 1348

DO WE NEED A NEW CLASSIFICATION IN RADIOLOGY?

Behzad Ghasemi [1,*]

[1] *Kurdistan University of Medical Sciences, Kurdistan, Iran*

** Corresponding author: Behzad Ghasemi, Kurdistan University of Medical Sciences, Kurdistan, Iran. E-mail:behzad.ghasemi@gmail.com*

Abstract:

For a long time , the radiology books and papers have used a classification based on what is accepted at other non-imaging medical and surgical books ,for instance malformations, normal variants , traumatic lesions , inflammatory disorders, benign and malignant neoplasms .

In this paper, a new approach to classifying radiologic findings is discussed termed "imaging abnormalities". The term "Imaging" is used because the proposed classification can be utilized in all fields of radiology, and even non-radiologic disciplines and the term "abnormalities" can include either normal variants or diseases states.

An imaging abnormality can be a normal variant , or indicative of a disease.

These abnormalities, can be the pathology itself (like an abscess) , or indirectly impress a pathology (a displaced bladder which indicates a pelvic hematoma) or can be a situation that is associated with a disease state (like syndromes).

In this approach Imaging findings can be classified into four types as follow:

-1 presence of a structure that should not be seen (Most neoplasms)

-2 Absence of a structure that should be present (aplasia and ectomies)

-3 A normal structure with one or more types of abnormalities.

Abnormalities in this group include being larger than normal (hypertrophy , megally) smaller than normal (atrophy) , thicker than normal (septal thickening) , thinner than normal (atrophy).

Abnormal (increased or decreased) texture are in this group too, including density, echogenicity and signal intensity.

-4 abnormalities of enhancement.

After contrast using, some abnormalities may be seen that lie in this category. These include enhancement faster than normal, slower than normal, abnormal wash out ,absence of enhancement, abnormal persistence of enhancement, filling defects, enhancing a structure that should not be seen (like fistulas).

This classification helps to have a more systematic approach to imaging, and prepare checklists that are more "imaging based".

• 1349

VARIABILITY AND STABILITY OF RADIOMICS FEATURES IN MAGNETIC RESONANCE IMAGES DUE TO DIFFERENT ACQUISITION MODES AND RECONSTRUCTION SETTINGS IN GLIOBLASTOMA PATIENT

Isaac Shiri [1,*]; Hamid Abdollahi [2]; Sajad Shaysteh [2]; Seied Rabi Mahdavi [1]

[1] *Department of Medical Physics, Iran University of Medical Science, Tehran, Iran*

[2] *Iran University of Medical Science, Tehran, Iran*

** Corresponding author: Isaac Shiri, Department of Medical Physics, Iran University of Medical Science, Tehran, Iran. E-mail:isaac.sh92@gmail.com*

Abstract:

Introduction: Quantitative metrics such as Radiomics features are an active area of research for future prognosis and predictive models with Magnetic Resonance Images (MRI) and other modalities. Despite increase in use of this quantitative and heterogeneity metrics for MR imaging, knowledge about their variability and stability is essential. The purpose of current study was to investigate the variability and stability of Radiomics feature in brain MRI due to different acquisition modes and reconstruction settings.

Methods: Fourteen patients with recurrent Glioblastoma (GBM) who underwent brain MRI included in this study. MR images were acquired using T2w, T1w (in range of 5 to 30 flip angle) with TR of 3.8,4.43 ,8.6 ms, TE 1.8, 2.1,4.1ms, and matrix size of 256 × 256; 1mm isotropic voxel size. GBM lesions were segmented and delineated using semi-automatic 3D region growing algorithms. Following Segmentation and delineation of GBM lesion, 313 quantitative 3D features were extracted from each lesion, corresponding to size, shape, Intensity Direct, Intensity Histogram and textural feature. All Radiomics features were categorized into 3 groups based on coefficient of variation (COV) including a small (COV $\leq$10%), intermediate (10 % < COV $\leq$ 25%) and large (COV > 25%) range of variation with respect to the mean.

Results: Approximately 46% of the Radiomics features (147/313) had a significantly smaller variance. Shape, Inverse Diff Norm and Inverse Diff Moment Norm from GLCM, Homogeneity and correlation feature had the best performance with a COV less than 10%. 113 features had intermediate COV and 53 remain features such as Kurtosis, Skewness, Entropy and HGLZE from GLSZM had high COV.

Conclusion: The variability and stability of Radiomics feature in brain MRI due to different acquisition modes and reconstruction settings is feature-dependent. Radiomics texture Features with high COV could not be considered as a good candidate for reproducible tumors quantification. Features with intermediate COV should be used with caution and features with low COV are better candidates for robust tumor quantification

Keywords: Radiomics; MRI; GBM; Texture

• 1350

THE OPTIMUM LINEAR ACCELERATORS DOSE TO PREVENT TRANSFUSION-ASSOCIATED GRAFT-VERSUS-HOST DISEASE

Bahareh Aboufazeli [1,*]; Ali Shabestani Monfared [1]; Ebrahim Zabihi; Zeinab Abedian

[1] *Babol University of Medical Sciences, Mazandaran, Iran*

[*] *Corresponding author: Bahareh Aboufazeli, Babol University of Medical Sciences, Mazandaran, Iran. E-mail:bahareh.aboufazeli@yahoo.com*

Abstract:

Purpose: Transfusion-associated graft-versus-host disease is a complication that is mortal in 90% of cases. Today, Co-60 devices are utilizing for the suppression of the lymphocytes to prevent this complication. Due to problems such as radioactive source age, problems in source replacement and protection risks, we were looking to replace linear accelerator for this objective and careful determination of its x-ray dose and other settings.

Methods: Firstly, the venous blood of the right-handed people with blood group O+ were exposed to different radiation doses of Linac and were diluted. The proliferative responses of the samples were exposed cells were examined with MTT Assay and TB in comparison with the control after 48h. The average percentage of cell survival in each delivered dose and also the required dose of radiation for the inhibition of lymphocyte proliferation checked and the optimal dose of radiation was obtained 25 Gy in special radiation condition.

Results: The results indicated that irradiation with 25 Gy with 3.5 Gy/min in internal mid-plan by compact 6MV for 30 × 30 field size, 8 cm distance of the samples to the source, and 1370 monitor unit completely suppress the lymphocyte. At same condition and 1096 monitor unit for total 20 Gy we did not find optimal results.

Conclusion: In this research, we have found that linear accelerator with specific exposure condition is a suitable alternative for Cobalt-60 sources and the above-mentioned condition of irradiation can be used to get rid of GVHD concern.

Keywords: GVHD; LINAC; Red Blood Cell Transfusion

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۹- به راحتی مسیرتان را دنبال کنید
■ با پایین آوردن ستون تلسکوپی دستگاه شما دید مناسبی برای حرکت ایمن و راحت در فضاهای شلوغ دارید. ارتفاع دستگاه در این حالت تنها ۱۴۰ سانتی متر است.

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■ قابلیت کنترل حرکت های دستگاه از روی کاور تیوب

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■ هماهنگ سازی کامل با دتکتور و ارتباط دو طرفه با ژنراتور و کنترل شرایط اکسپوز توسط نرم افزار

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■ دو موتور و چرخهای بزرگ حرکت روان و مناسب برای کار در فضاهای کوچک را به راحتی فراهم میکند.

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■ امتیاز اقتصادی و فنی تکنولوژی خازنی دتکتور شما را از خرید باطری لیتیوم بی نیاز می کند.

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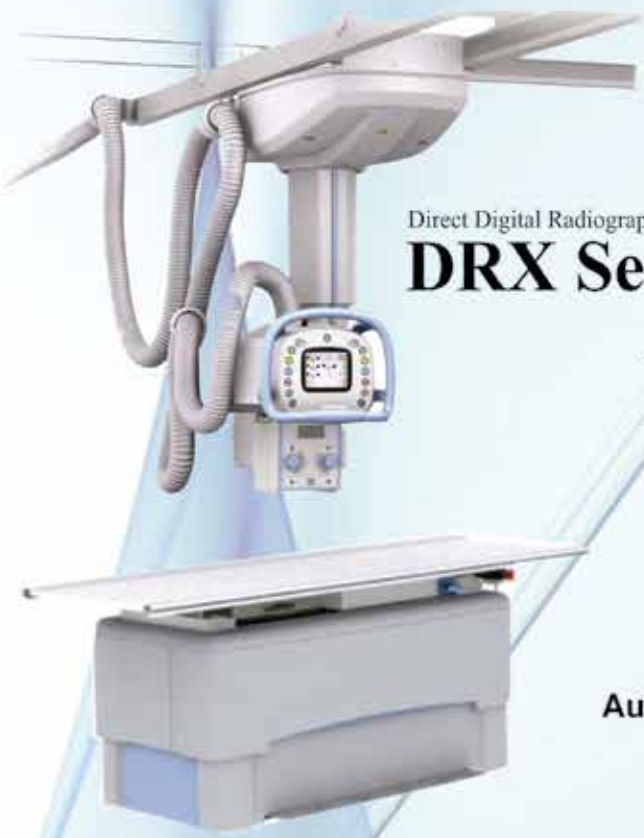

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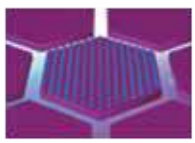

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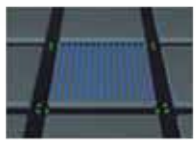

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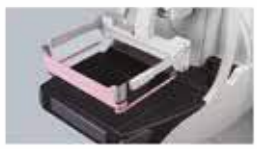

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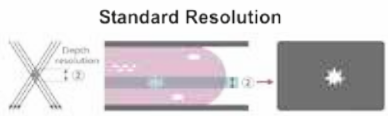

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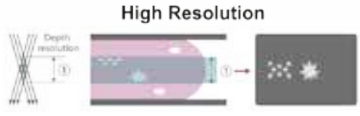

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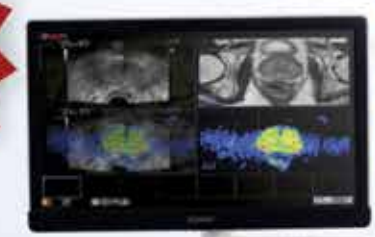

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2D Real Time ShearWaveElastography: الاستوگرافی شیرویو در تمامی پروب ها فعال بوده که تنها الاستوگرافی دقیق و قابل اعتماد و دارای تاییدیه آمریکا می باشد که امکان بررسی کلیه توده ها از قبیل توده های پستان، تیروئید، پروستات و کبد را فراهم می کند و همچنین دارای الاستوگرافی جهت بررسی عضلات، عصب و تاندونها (*MSK*) نیز می باشد.

Liver Fibrosis Assessment : دستگاه دارای دقیق ترین ابزار جهت بررسی فیبروز کبد، با قابلیت نمایش و اندازه گیری *Real Time* بوده و همچنین دارای پارامترهای اندازه گیری و تشخیص میزان گرید کبدهای چرب بصورت کمی نیز می باشد.

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TriVu : امکان تصویربرداری همزمان سه مد، *2D* و الاستوگرافی *ShearWave* و *AngioPLUS*، جهت بررسی خون رسانی توده ها.

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