Iranian Congress
of Radiology

32nd Iranian Congress of Radiology
May 3-6, 2016 - Tehran/Iran

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WELCOME

Welcome Message-ISR President

Radiology 2015 to 2020

There is a new window for radiology and imaging regarding forms of Medicare payment and care system reorganization "health care reform like national health program in our country".

These reforms may affect only the discipline of radiology and imaging but the evolution of its core technologies.

Radiology must improve prognostic power of imaging tools and create new subspecialty with clinical approach for image based diagnosis.

In United state, on March 23, 2010 they decided more patient protection and health insurance coverage to approximately 30 million more Americans and our health ministry decided increased health insurance for all country people "near 100%".

One of restricted payments for health care "technical payment reduction" were for radiologic examinations.

Attention to economy and management and business roles how radiologist should act between low radiologic examination fees and expensive payments for machines and instrumentation. maintenance especially in our country for expensive currency is a problem.

Radiologists recognized the power of digital standards for imaging findings, interpretation, transport and film less activity.

Radiologists also extend curative medicine through interventional radiology.

Although radiologists in the world recognize good methodology for professional payment "RVU or RVS means relative value units or scale system" but in our country we can't reach for a standard and good or win-win methodology.

We wish and wait for an optimum Medicare resource-based relative value scale system that other radiologists reach it in the early 1990s.

By modern core of the diagnostic procedures radiologists are the first participating in diagnostic teams for diagnosis by CT, MRI, U/S, PET-CT and PET-MRI also interventional radiology.

The imaging boom, or remarkable economic success in radiology make it a prime target for cost reduction.

Policymakers have decried or disgrace imaging boom".

In future radiologist will do in 3 ways:

1- striking images in clinical problems by fusion imaging and functional techniques.

2- Changing structure of professional imaging attention to clinic like molecular imaging and optical scanning and intra-operative U/S and MRI.

3- New economic models of imaging "radiol 2011, 8,159-163, American college of radiology.

President of ICR/32 "ICR 2016"Marina Pourafkari is associated professor of Shahid Beheshti Medical University that is one of scientific and

decorous radiologists of our society and is wise president of educational committee and were wise president for ICR/31.
My thanks go to scientific secretary Hamidreza Haghighatkhah Executive secretary Kurosh Abdollahifard and all members of both committees with my best regards to member of chairs of Iranian society of radiology all radiologists, speakers and society for medical and radiological instrument companies especially ICR/32 sponsors.
This is our next or second experience in Milad complex the symbol of Tehran capital city.
I am so happy being together with IRSA population in this congress.

Jalal Jalal Shokouhi MD
President, Iranian Society of Radiology

WELCOME

Dear Colleagues,

I am truly honored to serve as the President of the ***32nd Iranian Congress of Radiology*** and it is a great privilege to welcome all participants to ***ICR 2016*** in Tehran.

In accordance with the high standards that were set for more than three decades, we have tried our best to gather a top team of Iranian and international leading experts in different fields of radiology. It is my privilege to assure that the scientific committee will serve the best interest of all participating radiologists. ICR 2016 will be a great opportunity not only for radiologists but also for all the doctors with other areas of expertise to gather and participate in a scientific program which will have some of the leading radiologists as the presenters and speakers in this event. It is noteworthy that there will be time for participants to interact with some of the most prominent experts in the field of radiology.

This year, the main themes of the congress are ***Women's Imaging*** and Imaging ***Studies of the GI Tract***. The importance and necessity of the existence of Women's Imaging (both regionally and globally) has been a long-existing topic of interest and debate in the field of radiology that will be discussed and dealt with in more details than any previous congress. Also, we will elaborately present and discuss the most recent achievements in the radiological studies of the GI Tract. Furthermore and for the first time in the history of ICR, concepts such as ***Imaging Economics*** and Also ***Steps towards Structured Reporting in Radiology*** will be presented and elaborately discussed and debated.

For the second year in a row, the congress venue is to be the International Convention Center at Milad Tower which is the most outstanding landmark of modern Tehran.

I look forward to seeing you all from May 3rd to 6th, 2016 in Tehran.

Marina Pourafkari, MD
President of the 32nd
Iranian Congress of Radiology
(ICR 2016)

WELCOME

IRSA President -Welcome message

This is our honor to invite you to the 14th congress of Iranian Radiographic Science in May 2016 after this years right now this congress could find its valuable position in renewing the knowledge of radiographers all around our country and we can be proud about preparing and taking part there.
As all of our valuable members know like the years before this congress will be hold with 32end congress of Iranian Radiology society and this collaboration with our Radiologist colleges in those years helps all of us to have better information exchange and find better solution for some common problems.
So dear colleagues we are waiting for your brilliant articles and eloquent presentations and green participate ant.

Ramin Jaberi, PhD
President of IRSA

WELCOME

14th IRSA Congress -Director Welcome message

Dear Colleges
This is my second responsibility in our annual congress in 14th Iranian Congress of Radiographic Science and according to our experience the society of Radiography need and want to renew the informations in this field. As you know the radiographic sciences are changed very quick and all of us have to study hard and it is obvious if somebody don't try in studying can not be a good radiographer so the members of board of Directors of IRSA in line of their responsibilities try to prepare a congress with two parallel approach first introducing new modalities and techniques which can help our colleagues in – upgrading their abilities and second retraining them in their daily practice.
In lost congress our approach for retraining had very good feedback from the radiographers and we were encouraged to continue this way next year. After all we are waiting for all of you next May and our meeting will be so pleasant for us.

Majid Roshanfekr B.Sc.
President of 14th Congress of IRSA

GENERAL INFORMATION

Venue.
International Conference Center of Tehran Milad Tower, Tehran, Iran
Organizer:
32nd Iranian Congress of Radiology (ICR 2016) is organized by the Iranian Society of Radiology.
Date:
May 3- 6, 2016
Language
The language of the congress is 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 • Certificate of attendance
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 the "Main Hall "at Conference Center on the ground floor and will operate from 8:00 to 18:00. Lecturers are requested to submit their presentations 30 minutes before their session. The presentation should be in PowerPoint 2003 format. The files should be in portable media format supplied in flash-disk or CD.
VIP Room
The VIP room (Molavi Hall) is available for all ICR2016 speakers on -1/B1 floor at Conference Center
Electronic Posters
This year we only accept posters in electronic format. 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 web-classroom in hall # I which is located on -2/B2 floor. Presenters should be in web classroom close to their workstation according to the poster sessions program.
Publications
The ICR2016 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 ICR2016.ir.
Transportation
Transport service from Sanat Square to Conference center will be available every half an hour starting from 8:00 until 18:00. Transport between Conference Center and Hemmat Highway will be available each 30 minutes starting from 8:00 until 18:00.
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 voucher for meals in advance at the time of their registration, otherwise they ought to get the voucher from registration desk.
Technical Exhibition
A technical exhibition will take place at the Conference Center, sufficient time during intermissions is reserved for visiting the booths of leading sponsors (Medical Engineering Companies), which present their latest achievements and give you ample expert information. Please refferte the Exhibit guide in your Congress bag.
Society Booth
The Iranian Society of Radiology booth is located on -2/B2. Application forms and general information for membership are available. It provides membership services, information and an opportunity to pay annual dues for the society.
Only the Author is Liable for the Content and Wording of Abstracts. مسئولیت محتوا و نگارش بر عهده نویسنده مسئول مقاله می باشد.

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Title: Evaluation of the Effects of Induced Ischemia (Arterial Vs Venous) on the Extension of Coagulation Necrosis of RFA

Primary Contact: Rasekhi, Alireza
Total Score: 29

Paper ID: 3

Title: Relationship between Renal Volume Calculated by Using Multi-Detector Computed Tomography and GFR Values Calculated by Using Cockcroft-Gault and MDRD Equations in Living Kidney Donors

Primary Contact: Shayganfar , Azin
Total Score: 28.5

Paper ID: 10

Title: To Compare Apparent Diffusion Coefficient (ADC) Results Using 1.5 Tesla (T) and 3.0T Magnetic Resonance (MR) Imaging in Newly Diagnosed Breast Cancer Patients.

Primary Contact: Khalatbari, Azadeh
Total Score: 28

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Title: Determination of Special Criteria for Diagnosis of Pulmonary Infarction with High Accuracy in Non-Contrast Enhanced Spiral Chest Computed Tomography

Primary Contact: Ghaffarie, Amineh
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Title: Intima-Media Thickness of Carotid Arteries in Patients with Psoriasis: A Case Control Study

Primary Contact: Pezeshki Rad, Masoud
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Title: Comparison of the Accuracy of Cardiac Computed Tomography Angiography and Transthoracic Echocardiography in Title: the Diagnosis of Mitral Valve Prolapse

Primary Contact:Nazary, Masoud
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Title: Compatibility of CR Mammographic and Histopathologic Findings in Patients Suspected for Breast Cancer

Primary Contact: Ahmadian Mehrgoo, Leila
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Title: Pregnant Women Follow-up with Suspicious Placenta Accreta and Comparison of Ultrasonographic Findings with Surgical Findings

Primary Contact: Mahvari Habibabadi, Mohadeseh
Total Score: 25.99

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Title: Diagnostic Performance of FDG PET/CT in Patient with Cancer of Unknown Primary Additional Benefit over CT-Based Conventional Work up

Primary Contact: Ghobadi, Mohsen
Total Score: 25.65

Paper ID: 42

Title: Correlation between CTPA Findings with Risk Factors, Clinical and Echocardiography Fndings in Patients Refer from Different Wards of Hospital with Suspected Acute PTE

Primary Contact: Nouri, Shadi
Total Score: 25.6

• **Paper ID: 1**

THE EFFECTS OF INDUCED ISCHEMIA (ARTERIAL VS VENOUS)ON THE EXTENSION OF COAGULATION NECROSIS OF RFA

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Radiofrequency is an electrosurgical technique that uses a high frequency alternating current to heat tissues to the point of desiccation (thermal coagulation necrosis). RFA has increasingly gained attention as a method of treatment of medical malignancies .In spite of having some advantages as compared to surgical incision, a major drawback of this treatment is its inability to reliably create adequate volumes of complete tumor destruction.while RF ablation can be effective for the destruction of small (< 3cm) tumors, the difficulty in treating moderate to large sized tumors is often attributed to the powerful heat-sink effect of tumor blood flow which may draw heat away from the tumor site, substantially limiting the size and uniformity of tumor destruction. This perfusion mediated tissue cooling results from both dissipation of heat in that portion of the tumor closest to large blood vessels as well as capillary level microperfusion.

The purpose of this study is to assess the results of combination of RFA with tissue induced hypoperfusion (Arterial Vs venous clumping and also PVA selective microembolization) in more extensive tissue burn (coagulation necrosis) comparing with RFA-only.this combination may be associated with better results and lower rates of recurrence of tumor in patients with HCC or other tumors.

Method:

In this animal study 11dogs were selected with pregnancy and present lactation being the exclusion criteria. Although the animals varied in age and gender, they were in the same size.. All animal protocols and experiments in accordance with the related institutional animal care codes and a committee was set up for this purpose before the start of the study. RF procedure was done with the same protocol in all groups (TYCO cool tip ,needle with 1cm active length, power of generator 60 WATT, maintenance time 2 mins, tip tempreture 80 C).In every session the animal was anesthetized with sodium pentobarbital and during the study 10 dogs were putdown using an overdose of IV thiopental sodium.

In eight dogs RFA was done in the upper pole of both kidneys and PVA microembolization in the lower pole of left kidney and RF+renal artery clumping in lower pole of right kidney.

In eight dogs RFA was done in the left lobe of liver and RFA+portal vein &hepatic artery clumping was done in the right lobe.Finally in eight dogs RFA was done in one pole of the spleen and RFA+splenic artery and vein clumping in the other pole.In the remaining 3 animals we changed the protocol and selective arterial and venous clumping was done in spleen and liver. The last protocol was done to compare the effect of arterial and venous occlusion separately on the extent of coagulation necrosis. Beside gross measurement of area of coagulation necrosis for comparison, pathologic slides were prepared and coded and attending pathologist for evaluation of microscopic changes (single blinded study).

Result:

Grossly average measured areas of coagulation necrosis in different organs in first protocolare as follows:

In the liver area of coagulation necrosis with RF was 12.3mm in 11.3 mm and with RF+A&V ligation was 18.7mm in 16.7 mm.

In the Spleen average area of coagulation necrosis with RF was 14.8mm in 12.4 mm and with RF+A&V ligation was 17mm in 16 mm.

In the kidneys the average area of coagulation necrosis with RF was 13.5mm in 13.3 mm ,with RF + A&V ligation 16mm in 13.3mm and with RF+PVA micro embolization was 15mm in 12.5 mm.In the remaining 3 dogs as previously mentioned four dif-

ferent methods were done in spleen and the average results were as follow :in the spleen ,coagulation necrosis with
RF : 9mm in 8.5mm
RF+splenic v.ligation :12.5 mm in 11.5mm
RFA+splenic a.ligation:6mm in 7 mm
RFA+splenicA&V. ligation :11.5 mm in 11 mm.

Conclusion:

Difficulty in treating moderate to large tumors is often attributed to the powerful heat-sink effect.consistant with the results of previous studies about decreasing tumor blood flow to aid RF ablation organist may be inferred from the results of the present study that,better resultsmay be achieved by venous occlusion as compared to arterial occlusion .This affect may be due to the importance of the amount of extracellular fluid in well performance of RFA.

• **Paper ID: 3**

RELATIONSHIP BETWEEN RENAL VOLUME CALCULATED BY USING MULTI-DETECTOR COMPUTED TOMOGRAPHY AND GFR VALUES CALCULATED BY USING COCKCROFT-GAULT AND MDRD EQUATIONS IN LIVING KIDNEY DONORS

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Context:

It is essential that the donors' state of health and in particular their renal function be carefully ascertained so that the donor's health as well as the transplant can be maintained. In this regard, one of the primary steps is to estimate the donor's GFR. The MDRD and the Cockcroft-Gault formulas have been used for this purpose. nontheless discrepancy in the results of these two formulas mandates, finding new techniques with more accuracy. In this context, it appears that renal volume calculated from CT scan may be a valuable index to assess the renal function.

Aims:

This study was conducted with the aim to investigate the correlation between renal volume and the GFR values derived from the Cockcroft-Gault and the MDRD equations in potential living kidney donors referred to the multislice imaging center at Alzahra Hospital in 2014.

Methods and Material:

This analytical study comprised 66 candidates for donation and their GFRs were calculated using the two aforementioned formulas. Then their kidney volumes were measured by using 64-slice CT angiography and the correlation between renal volume and the GFR values were analyzed using the SPSS software. Statistical analysis used: SPSS software.

Results:

There was no correlation between the left kidney volume and the MDRD-based estimates of GFR ($p=0.772, r=0.036$). There was also no correlation between the right kidney volume and the MDRD-based GFR values ($p=0.251, r=0.143$). A direct linear correlation was found between the left kidney volume and the Cockcroft-based GFR values ($p=0.001, r=0.397$). There was also a significant direct linear correlation between the right kidney volume and the GFR values derived from the Cockcroft equation ($p < 0.001, r=0.465$).

Conclusions:

The kidney volume derived from multislice CT scan can help predict the GFR value. The limitations of this study include small sample size, wide age range of the participants and the suboptimal resolution of 64-slice multislice scanners. Further studies with larger sample size and using high resolution scanners are warranted to determine the accuracy of this method in candidates of kidney donation.

• **Paper ID: 10**

APPARENT DIFFUSION COEFFICIENT

(ADC) RESULTS USING 1.5 TESLA (T) AND 3.0T MAGNETIC RESONANCE (MR) IMAGING IN NEWLY DIAGNOSED BREAST CANCER PATIENTS.

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this retrospective review was conducted on 160 consecutive women with 163 Invasive Ductal Carcinomas (IDC) with a pre-operative breast MRI tacken between 6/2008 and 12/2009 where diffusion-weighted MR imaging was performed using the same b-values. Index lesion characteristics and pathology diagnoses were recorded and the mean ADC values achieved with both systems were compared. The Mann-Whitney U test was used for statistical analysis. the study was approved by the institutional ethics board.

Results:

Of 163 cancer cases 58% were examined by 1.5T and 42% on 3.0T equipment. The mean cancer size on MRI was 2.54 cm (ranged 0.6 to 9 cm). The mean ADC value was 0.85 x 10-3 mm2/s ± 0.27 (SD) on 1.5T and 0.92 x 10-3 mm2/s ± 0.20 (SD) on 3.0T (p=0.01). as for tumor grade on histopathology,, the mean ADC value of high-grade IDC was 0.86 x 10-3 mm2/s ± 0.26 (SD) on 1.5T and 0.91 x 10-3 mm2/s ± 0.21 (SD) on 3.0T (p=0.230); and or fnon-high grade IDC the value was 0.84 x 10-3 mm2/s ± 0.28 (SD) on 1.5 T and 0.92 x 10-3 mm2/s ± 0.20 (SD) on 3.0T (p=0.015).

Conclusion:

ADC values were higher when 3.0T system was used. This was statistically significant for grade 1 and grade 2 cancers or all 3 grades combined but not for grade 3 isolated. ADC measurements obtained for IDC may be dependent on the magnetic field strength used.

• Paper ID: 12

SPECIFIC CRITERIA FOR DIAGNOSIS OF PULMONARY INFARCTION WITH HIGH ACCURACY IN NON-CONTRAST ENHANCED SPIRAL CHEST COMPUTED TOMOGRAPHY

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Objectives:

To determine the diagnostic accuracy of some predefined criteria for diagnosis of pulmonary infarction in non-contrast enhanced spiral chest computed tomography (CT scan) done in patients with non-specific complaints.

Material and methods:

In this retrospective study, 1584 consecutive non-contrast enhanced spiral chest CT scans of emergency department patients with pulmonary complains other than Pulmonary Thromboembolism (PTE) were reviewed. In the next step, patients with subpleural consolidations on non-contrast CT scan, suspected for pulmonary infarction, who were also evaluated by multidetector CT (MDCT) angiography were included in the study.
Non-contrast enhanced spiral chest CT scans of patients were divided into two distinct groups based on peripheral consolidation features; Group A: peripheral consolidations with reversed halo, clear margin, central streaks of air lucency, located in the lower lung fields associated with pleural reaction in which healthier areas were oriented toward the hilum; and group B: simple peripheral consolidations without mentioned criteria. Comparison was made with the results of CT angiography by T-test and ROC test.

Results:

Among 1584 CT-scans included in the study, 102 cas-

es showed peripheral consolidations in the non-contrast enhanced chest CT scan and MDCT angiography was performed for them. Consolidations in 35 patients met our predefined criteria and consequently they were assigned to group A with the rest in group B. In group A (35 patients), 32 patients showed PTE in segmental branches of pulmonary arteries on MDCT angiography, also in one of the three patients that CT angiography findings were not conclusive for PTE, CT guided lung biopsy proved the diagnosis of infarction. In group B (67 patients) MDCT angiography demonstrated PTE in only seven patients and in none of this group's patients undergoing lung biopsy, pulmonary infarction was proved.
The results suggested a diagnostic accuracy of 92.16%, specificityof 98.36%, sensitivityof 82.93%, positive predictive value (PPV) of 93.33%, and negative predictive value (NPV) = 97.14% for our predefined criteria in order to diagnose pulmonary infarction on non-contrast chest CT scan.

Conclusion:

Presence of the described imaging criteria in non-contrast spiral chest CT scan may strongly predict pulmonary thromboembolism. It may be particularly of help in the medical centers with lack of emergency access to CT angiography.

• Paper ID: 18

INTIMA-MEDIA THICKNESS OF CAROTID ARTERIES IN PATIENTS WITH PSORIASIS: A CASE CONTROL STUDY

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Background:

Psoriasis is a chronic inflammatory immune disorder which has been linked to increased cardiovascular mortality and morbidity. Carotid intima-media thickness (IMT) measurement is a promising tool for detecting atherosclerosis in its pre-occlusive/sub-clinical phase. This study compared sub-clinical atherosclerosis of the carotid arteries in psoriatic patients and healthy controls using high-resolution ultrasonography.

Method:

We studied 45 psoriatic patients and 45 healthy controls matched for age and gender. The clinical severity of skin manifestation in psoriatic patients was estimated using the Psoriatic Area Severity Index (PASI). Lipid profiles [including serum triglyceride (TG), serum low density lipoproteins (LDL) and serum high density lipoproteins (HDL),fasting blood suger (FBS)] were measured from blood samples. Intima-media thickness (IMT) of the common carotid arteries (CCA) were measured ultrasonographically. Diabetes mellitus, hypertension, renal failure, positive history of cardiovascular or cerebrovascular disease were exclusion criteria. Subjects who were receiving lipid-lowering therapy, antihypertensive or anti-aggregant drugs, nitrates or long-term systemic steroids were also excluded.

Results:

Psoriatic patients showed significantly higher IMT than controls. The mean of the intima-media thickness of the four vessels examined showed a positive correlation with patients' mean ages, disease duration, PASI scores, systolic blood pressure and triglyceride levels,and no correlation with BMI.

Conclusion:

Psoriasis is an independent risk factor for sub-clinical atherosclerosis. This cardiovascular impairment is influenced mainly by disease severity and duration,and serum TG levels

• Paper ID: 20

COMPARISON OF THE ACCURACY OF CARDIAC COMPUTED TOMOGRAPHY ANGIOGRAPHY AND TRANSTHORACIC ECHOCARDIOGRAPHY IN THE DIAGNOSIS OF MITRAL VALVE PROLAPSE

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Background:

Cardiac multidetector computed tomography (MDCT) has been mainly utilized in the diagnosis of valvular heart morphology and function along with the assessment of coronary artery disease. This studyaimed to evaluate the diagnostic capacity of coronary MDCT angiography for the diagnosis of Mitral Valve prolapse (MVP), as compared to transthoracic echocardiography (TTE).

Methods:

A total of 40 patients who had undergone both TTE and MDCT within a three-month period were included in the study. Two parameters of mitral valve leaflet thickness and leaflet billowing were measured using both techniques. The MDCT results were compared with those of TTE, which was the reference standard. Results: Using the Receiver Operating Characteristic (ROC) test on the data regarding MDCT-measured leaflet billowing received from MDCT angiography suggests that the area under the ROC curve is 96% for a declared variable, which is absolutely significant ($P < 0.001$), and MDCT-measured leaflet billowing is an appropriate index for the diagnosis of mitral valve prolapse. On the basis of the achieved cut-off point from the ROC analysis (which equals 2.5 mm of leaftlet billowing) the MDCT-measured leaflet billowing shows a sensitivity and specificity of 68.4 and 95.2% respectively. The false positive and false negative results are 4.8and 31.6% respectively.
The positive and negative predictive values (PPV and NPV) of the test equals 92.9and 76.9%, respectively. Finally, the consistency of the MDCT measured leaflet billowing for diagnosing
mitral valve prolapse is 82.5%. Based on the mentioned test, the consistency of the MDCT-measured-leaflet thickness test is 47.5%.

Conclusion:

Along with the assessment of coronary arteries, the presence or absence of MVP can be reliablyevaluated by MDCT angiography.

• Paper ID: 22

COMPATIBILITY OF CR MAMMOGRAPHIC AND HISTOPATHOLOGIC FINDINGS IN PATIENTS SUSPECTED FOR BREAST CANCER

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Background:

Breast cancer is the most common type of cancer as well as the most common cause of death from cancer among women in the world and inIran. In this study, consistency of mammographic findings of breast lesions were compared with those of histopathology.

Methods:

Demographic data (age/gender) and mammographic findings (location, size, density, microcalcification and margin of lesion(s)) of 138 individuals suspected for breast cancer (BIRADS 4A or more in CR mammography) were collected. We analyzed and matched mammographic findings with histopathologic findings with respect to benignity or malignancy of the lesions. SPSS v20 software was used for data analysis.

Results:

138 individuals suspected for breast cancer (2 men and 136 women) with mean age of 45/64 ± 9/54 years were included in the study. The pathology findings in 87 patients (63%) indicated benignity and in 51 patients (37%) revealed malignant nature of the lesion that was biopsied. The most frequent location for both malignant and benign lesions was upper outer quadrant. In evaluation of lesion density; 94% of malignant lesions had high density, 2% were of equal and 4% were of low density, while 84% of benign lesions were highly dense, 10.3% were of equal and 5.7% were of low density. 16% of benign lesions and 25.5% of malignant ones were more than two cm in size. The most common marginal pattern in malig-

nant lesions was spiculation and angulation while benign ones were mostly macrolobulated. Benign type microcalcification was reported in 3.4% of benign lesions and none of malignant ones. Malignant and suspicious microcalcifications were reported in 4.5% of benign lesions and 33.7% of malignant ones.

Conclusion:

It seems that CR mammography is reliable for evaluation of microcalcifications and lesion margin however,there was no statistically significant difference in terms of lesion density and size between malignant and benign lesions. Based on the results of this study CR mammography may not be of help for accurate evaluation of lesion density however, this subject is still open for furtherinvestigations.

• Paper ID: 30

FOLLOW-UP OF PREGNANT WOMEN WITH SUSPICIOUS PLACENTA ACCRETA AND COMPARISON OF ULTRASONOGRAPHIC FINDINGS WITH SURGICAL FINDINGS

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Background:

Diagnosis of placenta accreta is important to perform definite and prompt therapeutic measures. In this study, the ultrasonographic findings in pregnant women suspected to have placenta accreta were compared with their surgical findings.

Methods:

In this prospective cohort, 150 consecutive pregnant women with suspected placenta accreta at a training referral hospital in 2014 and 2015 were enrolled. The results of gray-scale ultrasonographic study were compared with surgical findings to determine the sensitivity, specificity, positive predictive values, and negative predictive value.

Results:

The mean age of the subjects was 30.5±4.7 years. history of uterine surgery, dilatation and curettage, and abortion was positive in 4%, 6.7%, and 20% of the subjects respectively. The position of placenta were anterior, posterior, lateral, and fundal in 66.7%, 12%, 13.3%, and 8%, respectively. On ultrasonography, increased localized lacuna thickness, absence of echo-lucent region behind the placenta, increased diameter of vessels, and irregular hyper-vascularity was present in 4%, 1.3%, 4%, and 4% of the subjects, respectively.While the diagnosis of placenta accrete was made in 6 patients(4%) on Ultrasound study2 patients (1.3%) came as true positive aftersurgery (P=0.001). The sensitivity and specificity of ultrasonography for diagnosis of placenta accreta were 100% and 97.3%, respectively. Increased localized lacuna thickness, increased diameter of vessels, and irregular hyper-vascularity each had a sensitivity and specificity of 100% and 97.3%, respectively.Absence of echo-lucent region behind the placenta had a sensitivity and specificity of both 100% . The positive and negative predictive values of ultrasonography for diagnosis of placenta accreta were 33.3% and 100%, respectively.

Conclusions:

In view of the costs involved, it would be better to initially screen the suspected cases of placenta accreta with gray-scale ultrasonography. Use of Doppler ultrasonography is recommended only in subjects with anterior placenta, those with multiple cesarean sections, and also the patients with abnormal gray-scale ultrasonographic findings.

• Paper ID: 31

DIAGNOSTIC PERFORMANCE OF FDG PET/CT IN PATIENT WITH CANCER OF UNKNOWN PRIMARY AND ITS ADDITIONAL BENEFIT OVERCONVENTIONAL CT-BASED WORK UP

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Objectives:

The aim of the current study was to investigate additional values of FDG PET/CT as an appropriate imaging tool in early phase of initial standard work up in patients with Cancer of Unknown Primary (CUP).

Methods:

Sixty-two newly diagnosed CUP patients with inconclusive diagnostic CT scans of chest, abdomen and pelvis referring for FDG PET/CT were enrolled in this study. Standard of reference was defined as histopathology, other diagnostic procedures and a 3-month clinical follow up. The results of PET/CT were categorized with regardsto suggestion for primary site and additional metastasis and were classified as true positive, false positive, false negative and true negative. The impact of additional metastasis revealed by FDG PET/CT on treatment planning and the contribution of FDG PET/CT in early diagnosis were investigated.

Results:

Of 62 patients with a mean age of 62 (30 men, 32 women), PET/CT correctly identified primary origin in 32% with a false positive rate of 14.8%. No primary lesion was detected after negative PET/CT according to the reference standard. Sensitivity, Specificity and accuracy were 100%, 78% and 85%, respectively. Additional metastatic site was found in 56.% of patients with 22% impact on treatment planning. Time contribution of PET/CT was 10% of total diagnostic pathway.

Conclusion:

By Providing higher detection rate of primary origin with excellent diagnostic performance, as well as shortening the diagnostic pathway and improving treatment planning, FDG PET/CT may play a major role in diagnostic work up of CUP patients and may be recommended as an alternative imaging tool in early phase of investigation.

• Paper ID: 42

CORRELATION BETWEEN CTPA FINDINGS WITH RISK FACTORS, CLINICAL AND ECHOCARDIOGRAPHY FINDINGS IN PATIENTS WITH SUSPECTED ACUTE PTE REFERED FROM DIFFERENT WARDS OF HOSPITAL

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Background:

It is suggested that the combination use of imaging and clinical findings as well as evaluation of patients' risk factors would be more helpful for proper risk stratification for early diagnosis and treatment of Pulmonary thromboembolism (PTE). In this study, the correlation between CTPA findings with risk factors and clinical and echocardiography findings of patients referred from different wards of our hospital with suspected acute PTE were determined.

Methods:

In this cross sectional study, hospitalized patients aged 18 years or older with high clinical suspicion of PTE, referred to the imaging center of our hospital from different wards for CTPA , were enrolled. The frequency of different clinical presentations, risk factors, items of Wells' criteria and echocardiographic findings were compared in patients with and without PTE as diagnosed according to the CTPA results.

Results:

In this study, 310 patients with the mean age of 56.78(18.20) years who were suspected to have PTE were studied. According to the CTPA results, PTE was diagnosed in 53(17.1%) of patients. as for clinical manifestations, tachypnea, pleuritic chest pain and edema of lower extremities were significantly more frequent among patients with PTE than those

without (P < 0.05). Major surgery was the risk factor which was significantly more prevalent among patients with PTE (P < 0.05).Frequency of Wells' criteria except hemoptysis were significantly higher in patients with PTE than those without (P < 0.05). The frequency of all studied echocardiographic variables were significantly higher in patients with PTE than those without (P < 0.05).The highest numbers of referrals in order were from emergency, pulmonary, surgery wards, intensive care unit (ICU) and obstetrics departments. The prevalence of PTE was highest in surgery (51.9%) and orthopedics (40%) wards. The rate of negative CTPA results was higher in ENT (100%) and obstetrics (96.2%) wards.

Conclusion:

the findings indicated that the rate of positive CTPA results in patients suspected of having PTE varies with the ward they have been referred from, which emphasizes on the need for revision our diagnostic protocols for PTE. furthermore, considering the association of some risk factors and clinical, imaging and echocardiographic findings with the results of CTPA , the results of this study may also be utilized in improving the accuracy of decision on making for patients suspected of having PTE .

• Paper ID: 49

CORONARY ATHEROSCLEROSIS EVALUATION AMONG IRANIAN PATIENTS WITH ZERO CORONARY CALCIUM SCORE IN COMPUTED TOMOGRAPHY CORONARY ANGIOGRAPHY

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Background:

Coronary artery calcification (CAC) is a specific and sensitive indicator of marker for the atherosclerotic disease process. However, calcium scoring may miss noncalcified plaques of clinical importance. The present study aimed to identify the presence and extent of coronary plaques on computed tomography coronary angiography (CTCA) in patients with a zero CAC score, the second objective of this study was to evaluate the association between coronary risk factors and the presence of noncalcified plaques.

Methods:

In a retrospective descriptive-analytic study, a total of 2000 consecutive patients
who had undergone CTCA between September 2012 and September 2014 at Alzahra Hospital in Isfahan, Iran were enrolled. Three hundred and eighty-five patients with a zero calcium score were included in the study. The demographic information and coronary artery disease (CAD), risk factors including diabetes mellitus (DM), hypertension, hyperlipidemia, smoking, and family history of CAD, were obtained by means of a questionnaire. Furthermore, the presence of plaques and extent of stenosis were evaluated in patients with zero CAC score.

Results:

Of the 385 patients with a zero calcium score, 16 (4.2%) had atherosclerotic plaques. Among them, 6 (1.6%) had significant (> 50%) coronary stenosis, and 10 (2.6%) had no significant (< 50%) coronary stenosis.
Hyperlipidemia, DM, and smoking were significantly associated with obstructive CAD. With the odds ratios for the development of coronary artery plaque at 5.9, 14, and 32.5, respectively.

Conclusion:

Although, CAC scoring is a noninvasive and valuable method to evaluate CAD; but zero CAC score does not absolutely exclude the CAD, especially in the presence of risk factors such as diabetes, hyperlipidemia, and smoking.

• Paper ID: 51

COMPARATIVE ASSESSMENT OF SUPINE AND UPRIGHT LATERAL RADIOGRAPHS AND MRI IN LUMBAR SPONDYLOLISTHESIS

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Background:

a comparative assessment of supine lateral radiograph (SLR), upright lateral radiograph (ULR), and MRI in quantitative assessment of lumbar spondylolisthesis has performed.

Methods:

In 80 patients (53 female,) with lumbar spondylolisthesis, the percentage of sagittal translation, grading of slippage, and the involvement level were retrospectively evaluated on SLR, ULR, and MRI. Interclass correlation coefficient (ICC) was calculated for the percentages of sagittal translation in each technique, and difference in the diagnosis of slippage grading was assessed by means of McNemar analysis.

Results:

Spondylolisthesis occurred at the levels of L3-L4, L4-L5, and L5-S1 in 7 (8.8%), 29 (36.2%), and 44 (55.0%) patients, respectively. The mean overall percentage of sagittal translation at SLR, ULR, and MRI were 22.75%, 27.71%, and 16.97%, respectively. In our evaluation of the agreement between SLR and ULR, the ICC for the mean overall percentage of vertebral slippage was 0.83 (at all levels, P=0.0001), indicating excellent agreement (L3-L4, ICC=0.98; L4-L5, ICC=0.86; L5-S1, ICC=0.75). In the assessment of the agreement between SLR and MRI, the ICC for the mean overall percentage of vertebral slippage was 0.67 (at all levels, P=0.0001), indicating substantial agreement (L3-L4, ICC=0.48; L4-L5, ICC=0.79; L5-S1, ICC=0.61). In the evaluation of the agreement between ULR and MRI, the ICC for the mean overall percentage of vertebral slippage was 0.65 (at all levels, P=0.0001), indicating substantial agreement (L3-L4, ICC=0.41; L4-L5, ICC=0.57; L5-S1, ICC=0.69).
McNemar tests comparing the diagnostic performance between SLR and ULR in overall slippage grading revealed no significant difference (at all levels, P=0.219) with a P value of 0.1 and 0.25 at L4-L5 and L5-S1 levels, respectively; whereas, the difference of SLR and MRI in overall slippage grading was statistically significant (all levels, P=0.0001) with a P value of 0.0001 at the level of L4-L5. However, the difference of SLR and MRI in the diagnosis of slippage grading at the level of L5-S1 was not significant (P=0.06).

Conclusions:

In terms of quantitative assessment of spondylolisthesis, there was an excellent agreement between SLR and ULR and a good agreement between SLR and MRI. Also, the performance of SLR and ULR in spondylolisthesis grading was not significantly different. There is an overall acceptable agreement among supine lateral radiograph, upright lateral radiograph, and MRI in the assessment of the severity of spondylolisthesis.

• Paper ID: 52

THE AGREEMENT BETWEEN ULTRASOUND AND BIOPSY EVALUATION OF SURGICALLY-REMOVED AXILLARY LYMPH NODES IN PATIENTS WITH BREAST CANCER

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Background:

Although the current standard approaches to staging of axillary lymph nodes (LN) in breast cancer

employsurgical exploration of sentinel LN, patients with breast cancer might benefit from non-invasive diagnostic approaches, without complications such as disruption of breast lymphatic drainage. To this end,the imaging techniques such as ultrasonography (US) have been suggested so far. We aimed to test the agreement between the US examination of LN and pathologically confirmed lymphadenopathy (LAP).

Methods:

In this longitudinal study, 252 women with breast cancer were examined regarding LAP with US, conducted under the supervision of an expert radiologist. The results of pathologically removed LN were compared with US using kappa agreement method.

Results:

252 patients with Mean ± SD age of 53.72 ± 12.91 were studied. Most of the tumors were in the upper outer quadrant (UOQ , 55.2%) and central (22.6%) sites. The majority of the tumors showed invasive ductal carcinoma (88.5) or invasive lobular carcinoma (8.3%) on pathology. Interestingly, the agreement between US detection of LAP and post-surgical pathologic investigation was good (Kappa ratio 0.693; $p < 0.0001$; Sensitivity = 75.94% , Specificity = 94.12%). We observed that a suspicious LAP on US was associated with significantly increased risk of pathologically confirmed involved lymph node (relative risk with 95% confidence interval, 12.91, 9.47 - 17.59; $p < 0.0001$).

Conclusion:

The results of this study are in line with previously gathered evidence supporting the benefits of follow-up US studies of the regional LN for breast cancer patients.

• Paper ID: 56

SYSTOLIC COMPRESSION OF MYOCARDIAL BRIDGED CORONARY ARTERY AND ITS MORPHOLOGIC CHARACTERISTICS: A COMBINATION STUDY OF COMPUTED TOMOGRAPHY ANGIOGRAPHY AND INVASIVE ANGIOGRAPHY

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Background:

Myocardial bridging (MB) is a congenital anomaly in which a segment of a major epicardial coronary artery courses through the myocardium. This anomaly can lead to myocardial ischemia, arrhythmia and even death. The effectiveness of coronary computed tomographic angiography (CCTA) in detection of MB and its morphologic features and the accuracy of invasive coronary angiography (ICA) in evaluation of systolic compression have been shown in some prior studies.

Objective:

The present study aims to evaluate the correlation between the depth and the length of myocardial bridge as determined on CCTA and the degree of luminal narrowing of the involved tunneled segment as calculated by ICA.

Methods:

109 consecutive patients diagnosed to have myocardial bridging on CCTA who had already performed ICA were studied and having calculated the degree of systolic compression by ICA, the depth and length of MB was determined in CCTA for them The correlation between depth and length of MB and systolic compression was then evaluated.

Results:

The degree of systolic compression correlated with the depth of myocardial bridging. On the other hand, there was no correlation between the length of MB and the degree of systolic compression.

Conclusion:

Systolic compression of MB was influenced by the depth of the tunneled segment, not its length

• Paper ID: 59

CAROTID INTIMA-MEDIA THICKNESS IN PATIENTS WITH INFLAMMATORY BOWEL DISEASE (IBD)

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Background:

Recent studies have suggested an association between Inflammatory Bowel Disease (IBD) and atherosclerosis; for which carotid intima-media thickness has been considered as an early marker. The aim of this study was to assess the extent of subclinical atherosclerosis in IBD patients by measuring the intima-media thickness of the common carotid artery.

Method:

Forty-four patients were enrolled in the study. Patients aged >45years, with history of cardiovascular disease or known risk factor for atherosclerosis were excluded from the study. Forty-four healthy subjects were studied as controls. Intima-media thickness measurement was performed in all patients and controls by carotid ultrasound proximal to carotid bifurcation.

Results:

The common carotid artery intima-media thickness was significantly higher in patients with IBD compared to healthy subjects(p=0.001).

Conclusion:

Patients with inflammatory bowel disease have increased risk of early atherosclerosis than healthy controls as shown by greater values of the common carotid artery intima-media thickness.

• Paper ID: 60

THE ROLE OF PREOPERATIVE MRI IN THERAPEUTIC DECISION MAKING OF BREAST CANCER

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Background:

The diagnostic and prognostic characteristics of MRI in breast cancer patients remain to be elucidated. Considering the higher sensitivity of MRI in detecting pattern of tumor involvement, we aimed to investigate its agreement with traditional imaging methods including mammography and ultrasonography (US) and also its impact on surgical treatment.

Methods:

In this longitudinal study, 100 women with breast cancer underwent MRI investigation. MRI results were compared with ultrasonography (US) and mammography. The impact of MRI on the selection of surgical procedures as breast conservative surgery (BCS) or modified radical mastectomy (MRS) was determined.

Results:

97 patients with Mean ± SD age of 45.57 ± 11.34 were studied. US and mammographic results were fairly in agreement (K=0.546, $p < 0.001$) regarding the pattern of tumor involvement (ipsilateral, contralateral, and multifocal). While the agreements between MRI and other imaging methods were poor (kappa with US = 0.203, kappa with mammography = 0.292); MRI was excellently in line with the postoperative pathological findings (kappa=0.846; $p < 0.0001$). MRI was found to be sensitive (84.85%) and specific (94.03%) to correctly detect the tumor

sites ($p < 0.0001$), and significantly influenced the selection of treatment (Kendall's tau = 0.522; $p < 0.0001$). The majority of these changed options were MRS (33.34%) and neo-adjuvant MRS (18.52%).

Conclusion:

In line with the evidence supporting the role of preoperative MRI for breast cancer patients, especially for cases with inconsistent US and mammography results, we revealed a higher sensitivity and specificity for MRI concerning correct detection of tumor sites. MRI also proved to significantly influence the treatment choices.

• Paper ID: 63

STUDY OF CORRELATION BETWEEN PSORIASIS AND CAROTID INTIMA MEDIA THICKNESS (CIMT)

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Background:

Psoriasis is a common, chronic, inflammatory disorder associated with serious medical comorbidities Such as Cardiovascular diseases. Systemic inflammation plays an important role in the pathogenesis of atherosclerosis in psoriatic patients. Therefore, persistent skin inflammation in psoriatic patients may contribute to the development of premature atherosclerosis, as it occurs in rheumatoid arthritis and systemic lupus erythematous. We aimed to evaluate the relationship between Carotid Intima Media Thickness (CIMT) (a predictor of subclinical atherosclerosis) and psoriasis in psoriatic patients.

Methods:

Thirty one plaque-type psoriasis patients (10 males, 21 females; mean age 33±10 years) and 31 healthy individuals (9 males, 22 females; mean age 32±10 years) were included. Subjects with Atherosclerotic risk factors were excluded in both of the groups. Demographic data, psoriasis area and severity index (PASI) score of the psoriasis group, and disease duration were recorded. Carotid Intima Media Thickness values between two groups were compared.

Results:

Maximum and average CIMT values of psoriatic patients were higher than those of the healthy group,however, the difference was not statistically significant (maximum CIMT: 0.59±0.06 mm vs. 0.56±0.08 mm, Pv=0.14; mean CIMT: 0.51±0.06 mm vs. 0.49±0.08 mm, Pv=0.44). A positive correlation was observed between mean CIMT and age in patients (Pv=0.001). Also a positive correlation was observed between mean CIMT and duration of the disease (Pv=0.012). CIMT was not observed to be correlated with the age of onset of the disease and PASI score.

Conclusions:

By employing measuring Pearson's correlation coefficient , a positive correlation was observed between mean CIMT and age and also a positive correlation between mean CIMT and duration of the disease in the cases group. No correlation was observed between psoriasis and CIMT, and also between CIMT and age of onset of the disease and PASI score.

• Paper ID: 66

GALLSTONE DISEASE DETECTED BY ULTRASONOGRAPHY IN FUNCTIONAL DYSPEPSIA: PREVALENCE AND ASSOCIATED FACTORS

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The aim of this study was to evaluate the frequency of gallbladder stones in Functional Dyspepsia (FD) by abdominal ultrasonography and to determine the factors associated with this frequency in Guilan province. A total of 195 subjects who were referred to the outpatient clinic of Razi Hospital, a tertiary referral

center (Guilan, Iran) to evaluate FD were included in this study. They were interviewed by using a questionnaire and underwent ultrasonography. 18.5% of the subjets were male and 81.5% werefemale. The overall frequency of Gallstones (GS) was 19% (37/195) of whom 17% males and 83% were female. In patients with dyspepsia, the presence of fatty liver evidenced by ultrasonography was 67% (131/195). From the 131 patients with fatty liver disease, 24 (18.3%) were also reported GS. The most frequent symptom in all participants as well as patients with GS and patients with fatty liver was abdominal pain (69.7%, 81% and 66%, respectively) followed by bloating. The most common Risk factor associated with increased odds ratios (ORs) for the development of gall stones was diabetes mellitus (OR = 2.63) .It was also shows that gallbladder wall thickening was more common in patients with GS (OR = 36.63). GS disease was not significantly related to the age, gender, fatty liver, renal stone, history of hypertension (HTN)and hyperlipidemia (HLP), alcohol consumption and smoking status . It maybe inferred from the results of this study that patients with FD especially if they have diabetes should be referred for upper abdominal ultrasonography for screening and early detection of GS disease.

• **Paper ID: 67**

INTER-OBSERVER RELIABILITY OF PULMONARY ARTERY OBSTRUCTION INDEX FOR SEVERITY ASSESSMENT OF PULMONARY THROMBOEMBOLISM USING CT ANGIOGRAPHY

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Background:

In addition to making the definite diagnosis, researchers have recently been trying to use CT pulmonary angiography (CTPA) for severity assessment in acute pulmonary thromboembolism (PTE). Qanadli score is one of the obstruction scoring systems introduced for this purpose. In this study, we aimed to determine how observer dependent this test is.

Methods:

Two trained radiologists studied 34 CTPAs with definite PTE diagnosis and evaluated the severity of obstruction in pulmonary circulation using Qanadli score. Pearson correlation coefficient was measured between the two observers' scores and the mean difference was calculated using Bland-Altman analysis. Mann-Whitney analysis was used for comparing the trunk, main right and left, lobar and segmental pulmonary arteries.

Results:

Mean Pearson correlation coefficient for Qanadli scores as measured by the two observers was 0.92(0.82-0.97 95% CI) of. On Bland-Altman analysis, the mean difference between the measurements was 1.21 (95% CI= -0.01-2.43) which was not statistically significant. Mann-Whitney analysis did not show any significant difference in the obstruction degrees at different levels of the arteries.

Conclusion:

Despite the difficulty in measurement, Qanadli obstruction score has low observer dependence and high reproducibility. This only informs us of the score's validity and does not imply the test's diagnostic or prognostic superiority. It is also concluded that the scores' interobserver variability does not account for the great heterogeneity in the results of related studies.

• **Paper ID: 68**

ABDOMINAL FAT DISTRIBUTION AND CAROTID ATHEROSCLEROSIS IN GENERAL POPULATION: A SEMI-AUTOMATED METHOD USING MAGNETIC RESONANCE IMAGING

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Background:

Current evidence suggests functional differences in visceral and subcutaneous fat. We investigated the association between quantitative measures of central adiposity with indicators of carotid atherosclerosis including intima-media thickness (IMT) and plaque in general population using a semi-automated method on magnetic resonance imaging (MRI) data.

Methods:

In this cross-sectional study 200 subjects (52% female), aged 50-77 years, were randomly selected from Golestan Cohort Study. Participants underwent ultrasound examination of carotid arteries and abdominal MRI. Segmentation and calculation of visceral (VFA) and subcutaneous fat area (SFA) were performed of three levels using a semi-automated software. Various conventional anthropometric indices were also measured.

Results:

Among 191 enrolled subjects, 77(40%) had IMT≧0.8 mm. Carotid plaques were detected in 86(44%) subjects. In separate multivariate analysis models, unlike SFA and other anthropometric indices, last tertile of VFA values was associated with excess risk of at least threefold for IMT≧ 0.8 mm (OR: 3.8, 95%CI: 1.36-6.94, P= 0.02). There was no significant difference between mean values of categorized obesity indices in subjects with and without plaque, nonetheless participants in highest tertile of VFA values were demonstrated to have higher risk of having more than one plaque (OR: 4.57, 95%CI: 1.03-20.11, P= 0.034).

Conclusions:

Higher amount of visceral fat, measured by semi-automated technique using MRI, is associated with increased IMT and having more than one carotid plaque in general population, while subcutaneous fat measures are poor indicators for identifying carotid atherosclerosis.

• Paper ID: 69

THE VALUE OF MULTIDETECTOR COMPUTED TOMOGRAPHY COMPARED TO CONVENTIONAL CORONARY ANGIOGRAPHY FOR DETECTING IN-STENT RESTENOSIS

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Background:

Diagnostic value of multi-slice computed tomography (MSCT) for detecting in-stent restenosis in comparison with conventional coronary angiography remains uncertain. The present study aimed to determine the value of MSCT for detecting in-stent re-stenosis.

Methods:

This historical cohort study was conducted on 226 patients with the history of percutaneous coronary intervention between 2000 and 2014 who were referred to MSCT unit at Alzahra heart center in Isfahan. The subjects were followed-up by telephone for performing coronary angiography for up to three months after MSCT and any cardiac events among them was recorded.

Results:

Among all of the study subjects, 63 (27.9%) underwent coronary angiography up to three months after MSCT in whom 2 stents in left circumflex artery (LCX) assessment, 2 in left anterior descending artery (LAD) assessment and none in right coronary artery (RCA) assessment were uninterpretable. Considering these cases and the findings in coronary angiography regarding detection of occlusion or restenosis, sensitivity, specificity, positive predictive value (PPV), negative predictive value (NPV), and accuracy of MSCT was 92.9%, 66.6%. 92.9%, 66.6%, and 88.2%, respectively for detection of occlusion in LCX stents, 100%, 100%, 100%, 100%, and 100% respectively for detection of occlusion in LAD stents, and 80.0%, 0.0%, 80.0%, 0.0%, and 66.7% respectively for detection of occlusion in RCA stents. The overall, sensitivity, specificity, PPV and NPV of MSCT for detection of coronary stent restenosis were 93.8%, 70.0%, 93.8%, 70.0%, respectively.

Conclusion:

MSCT has high diagnostic value for detecting in-stent restenosis. Diagnostic accuracy of MSCT for detecting stent restenosis is considerably variable among the coronary arteries with the highest diagnostic values for LAD and the lowest diagnostic values for RCA.

• Paper ID: 70

ENHANCEMENT PATTERN OF MALIGNANT BREAST LESIONS IN MRI WITH GADOLINIUM CONTRAST

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Background:

Considering the higher sensitivity of contrast-enhanced MR imaging for invasive breast cancer, and its role in preoperative and follow-up assessments of breast cancer, we aimed to probe breast cancer enhancement patterns of MRI with gadolinium contrast.

Methods:

In this cross-sectional study, 100 women with breast cancer underwent MRI with gadolinium contrast to evaluate the enhancement patterns.

Results:

100 patients with Mean ± SD age of 46.24 ± 11.03 were studied. The tumors showed median (interquartile range) size of 4580.4 (1473.7-17803.2) mm3, with heterogeneous (54%) and rim enhancements (11%). Moreover, type III (59%) and II (17%) were found to be the most common enhancement patterns. Invasive ductal carcinoma (IDC) was the most prevalent pathology (88%), and 56% of individuals showed axillary lymphadenopathy (LAP). No significant correlations between MRI enhancement patterns and tumor size or LAP were observed. However; regional, clumped, and linear patterns were associated with higher numbers of tumors ($p < 0.001$)

Conclusion:

the results indicate that MRI enhancement patterns maybe of particular importance for preoperative examinations of breast cancer.

• Paper ID: 72

IMPROVEMENT OF DISTENSION AND MURAL VISUALIZATION OF BOWEL LOOPS USING NEUTRAL ORAL CONTRASTS IN ABDOMINAL COMPUTED TOMOGRAPHY

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Background:

To assess and compare the image quality of 4% Sorbitol and 2% diluted iodine (positively charged oral contrast agent) in abdomino-pelvic multi-detector computed tomography.

Methods:

Two-hundred patients, referred to the Radiology Department of a central educational hospital for multi-detector row abdominal-pelvic computed tomography, were randomly assigned to two groups: the first group received 1500 mL of 4% sorbitol solution as a neutral contrast agent, while in the second group 1500 mL of meglumin solution as a positive contrast agent was administered in a one-way randomized prospective study. The results were independently reviewed by two radiologists. Luminal distension and mural thickness and mucosal enhancement were compared between the two groups. Statistical analysis of the results was performed by Statistical Package for the Social Sciences software version 16 and the Mann-Whitney test at a confidence level of 95%.

Results:

Use of neutral oral contrast agent significantly improved visualization of the small bowel wall thickness and mural appearance in comparison with administration of positive contrast agent ($P < 0.01$). In patients who received sorbitol, the small bowel showed better distention compared with those who received iodine solution as a positive contrast agent ($P < 0.05$).

Conclusion:

The results of the study demonstrated that oral administration of sorbitol solution allows better luminal distention and visualization of mural features than iodine solution as a positively charged contrast agent.

• Paper ID: 75

BREAST LESIONS APPEARANCES IN CT SCAN

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Background:

Breast abnormalities are frequently overlooked or inaccurately assessed or reported at multidetector computed tomography (CT). These kinds of reports can result in legal issues for the clinician, patient's anxiety, and unnecessary diagnostic work-up and costs.

Methods:

This study was conducted on forty patients with different breasts lesions on multidetector CT scan, subjects were candidate for thoracic CT scan due to different indications such as: staging for other cancer, related clinical signs or respiratory and cardiac symptoms.

Result:

We have described different breast changes on thoracic CT scan including: cancer, fibroadenoma, scar, fat necrosis, fibrosis, seroma, recurrence, and residue.

Conclusion:

CT scan is valid enough in many breasts cases to allow a reliable diagnosis. General radiologists who report thoracic CT scan should know how to characterize breast lesions incidentally found on CT scan and enhance the value of the their report for appropriate case management.

• Paper ID: 76

COMPARISON BETWEEN RADIOGUIDED OCCULT BREAST LESION LOCALIZATION (ROLL) AND WIRE LOCALIZATION, RANDOMIZED CONTROLLED TRIAL

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Background:

This study was designed to compare radioguided occult lesion localization with more routine and stan-

dard wire localization in non-palpable breast lesions. Effectiveness of complete excision, time duration, surgeon and radiologist ease of use and the cosmetic outcome were all evaluated.

Methods:

This prospective study included patients with non-palpable breast masses who were candidates for complete surgical resection. Patients were randomized into two groups of radioguided localization and wire localization. Radiologic, surgical, and pathologic data were collected and analyzed.

Results:

This study comprised 60 patients, randomly assigned to two equal groups of Wire Guided Localization (WGL) and Radioguided Occult Lesion Localization (ROLL). ROLL method was significantly easier for the radiologist than WGL (P-Value=0.0001). The mean duration of localization under ultrasound guide was shorter in the ROLL group than in the wire localization group ($p < 0.001$). The mean difference in duration of the surgical procedure was not statistically significant. Radiography of the surgical specimens showed 100% lesion excision in both techniques. In both methods complete excision of lesions with clear margins was achieved, as was proved by pathology. The surgical resections were slightly heavier in the ROLL group, however, this difference was not statistically significant (p=0.06).

Conclusion:

The ROLL technique is an effective method for localization of non-palpable non-malignant breast lesions and can be used instead of wire. It is a fast and simple technique.

• Paper ID: 78

MR ENTEROGRAPHY FINDINGS IN 300 KNOWN CASES OF CROHN'S DISEASE: INITIAL REPORT FROM A REFERRAL CENTER IN IRAN

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Background:

Magnetic Resonance Enterography (MRE) has become a modality of choice in the assessment of patients with Crohn's disease (CD) either for initial investigations or follow-up of diagnosed patients.
this study presents our experience on 300 CD patients who underwent MRE during the first 30 months after the launch of a MRE facility at a referral center in Tehran, Iran.

Method:

All patients who were referred with a suspected diagnosis of CD were enrolled. Patients older than 15 years of age with a definite diagnosis of CD based on either ileocolonoscopy or histopathological studies were included in the final report.

Results:

Out of 594 screened cases, 300 (50.5%) including 160 females (53.3%) and 140 males (46.7%) were finally diagnosed with CD. The mean age of the patients was 37.42 ± 14.41 years with a median of 36 years and ranged between 15 years to 77 years. The most prevalent phenotype of CD, was inactive (quiescent) observed in 162 (54.0%) of cases. This was followed by stricturing in 44 cases (14.7%), active in 40 (13.3%), and active on chronic or penetrating each at 27 (9%). The number of referred patients increased from 51 cases in the first 6 months to 165 in the last 6 months.

Conclusion:

This study presents the first report of MRE from Iran. Large number of referred patients to a single referral center provides a great opportunity to further inves-

tigate the application of MRE in the diagnosis and follow-up of patients with CD.

• **Paper ID: 86**

PREGNANCY ASSOCIATED BREAST CANCER (PABC) : DIFFICULTIES IN DIAGNOSIS BY IMAGING MODALITIES

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Background:

To evaluate the radiological findings of Pregnancy Associated Breast Cancer (PABC) and discus the difficulties in diagnosis by imaging modalities.

Methods:

In a retrospective review we evaluate the mammographic and sonographic features of 40 patients who were diagnosed with PABC during the previous 8 years .Sonography was performed for all patients and both mammography and sonography were performed for 22 patients .The age of the patients ranged between 25 and 44 years.

Results:

Mammography revealed positive findings in 16 cases. Mammographic findings included :masses (n=10) ,masses with calcifications (n=2), calcifications alone (n=2), skin thickening (n=2) and asymmetric density (n=2).The most common sonographic findings was a hypo echoic mass with heterogeneous echogenicity and irregular margin (n=22).Prallel orientation was detected in 10 cases ,posterior acoustic enhancement in 10 cases and cystic component in 8 patients .Sonographic findings ofa solid mass with posterior acoustic enhancement ,parallel orientation and cystic component were somewhat different from the appearance of non-PABC.

Conclusion:

Ultrasound is an excellent imaging method for diagnosis of PABC .However when the imaging results are suspicious, a biopsy should be performed to obtain a pathologic diagnosis .PABC is often advanced at diagnosis.

• **Paper ID: 95**

EVALUATION OF PATIENT RADIATION EXPOSURE DOSE IN INTERVENTIONAL CARDIOLOGY

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Background:

In the diagnosis and treatment of Coronary Artery Diseases performed with x-ray, numerous images have to be taken from this area of the body which causes an increase in patient's radiation dose.The objectives of this study are the measurement of Dose Area Product (DAP) and fluoroscopy time. Furthermore it evaluates the correlation between DAP and fluoroscopy time, DAP and Body Mass Index (BMI), and fluoroscopy time and BMI.

Methods:

In this study, 119 patients were investigated during a six-month period. Among the subjects, 43 patients underwent Percutaneous Transluminal Coronary Angioplasty (PTCA) and 76 patients underwent Coronary Angiography (CA). Similar angiography equipment was used in all of the patients.

Results:

The mean values of DAP for CA and PTCA were 17.99 and 55.49 Gy.cm2 respectively in women and 18.87 and 51.74 Gy.cm2 in men. Strong correlation between DAP and fluoroscopy time for CA ($p <$

0.001) and PTCA ($p < 0.02$) was observed. Correlation between DAP and fluoroscopy time with BMI was investigated but significant relationship was not found between them.

Conclusions:

mean values of DAP and the fluoroscopy time in this study are lower than previously conducted studies Which may be attributable to the competence and experience of the attending cardiologist as well as the suitable pulse rate (15 frame per second) which was used in this study.

• PaperID: 100

INVESTIGATION OF PULMONARY ARTERIES INVESTIGATION FOR PULMONARY EMBOLISM WITH NON-ENHANCED CHEST CT SCAN

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Background:

Pulmonary embolism is a common cause of acute chest syndrome with a high rate of morbidity and mortality. In patients undergone chest CT scans, attention to the various symptoms of pulmonary embolism can help detect the disease, even in cases that are not clinically suspected. Since the symptoms of pulmonary embolism in the lung parenchyma are nonspecific; in this study, we tried to investigate the pulmonary artery and its branches to look for abnormal areas of with a view to finding the value of the Hyperdense and Hypodense intraluminal signs in detection of pulmonary embolism.

Methods:

this study was conducted on 171 patients who) underwent chest CT with 16-MDCT and pulmonary CT angiography simultaneouslyat Imam Reza and Ghaem hospitals. First , the non- enhanced chest CT images were evaluated for the presence of abnormal areas of density within the lumen of the pulmonary arteries consequently the location of involvement on basis of the central (main pulmonary artery and the left and right main branches) or peripheral (side artery distal to the main branch of the pulmonary artery) involvement were determined. Then, the CT angiography images were studied for emboli and concordance with the location of the abnormal density on non- enhanced CT scan.

Results:

The study population consisted of 171 patients (57.3% female and 42.7% male with mean age at 37/57 years). A non- enhanced chest CT scan and pulmonary CT angiography were investigated simultaneously. In this study, in a total of 58 patients (43/92%) the intra luminal signs (including both Hyperdense and Hypodense intra luminal sign) in non- enhanced CT were seen. The results of CT angiography showedthat 18 (31%) cases had normal CT Angiography, 24 patients (37/41%) had evidence of central emboli, and 16 patients (58/27%) had evidence of peripheral embolism. For the luminal Hyperdense sign; false negative rate, false positive rate, sensitivity, specificity, positive predictive value and negative predictive value for pulmonary embolism were 13/5%, 4/1%, 48/89%, 98/44%, 75/86% ,and 83/80% respectively. Furthermore, for the luminal Hypodense sign; false negative rate, false positive rate, sensitivity, specificity, positive predictive value and negative predictive value for pulmonary embolism were 15/8%, 6/4%, 40%, 91/27%, 62/07% and 80/99% respectively.

Conclusion:

The present study revealed that the luminal Hyperdense sign in non- enhanced chest CT scan had high negative predictive value and specificity, especially for Central pulmonary artery embolism; however, the sensitivity and predictive value of this sign aren't desirable, especially for peripheral embolism. In our investigation, the luminal Hypodense sign for diagnosis of embolism (both central and peripheral), had relatively high specificity and negative predictive value nonetheless, it lacked a desirable sensitive and positive predictive.

Paper ID: 103

100-KVP PULMONARY 64-MDCT ANGIOGRAPHY: COMPARISON OF VASCULAR ENHANCEMENT AND IMAGE QUALITY WITH 50 ML OMNIPAQUE TO 30 ML OMNIPAQUE IN A RANDOMIZED CLINICAL TRIAL

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Objectives:

The purpose of this study is to compare the vascular enhancement & image quality of pulmonary CT angiography (CTA) performed on a 64-MDCT scanner with 30 mL of IV contrast material to those obtained with the standard contrast dose of 50 mls.

Methods:

100 patients with suspected pulmonary embolism (PE), weighing under 85 kg with no congestive heart failure or irregular supra ventricular tachycardia , were randomly assigned to 2 groups (Group-A, n=50; 100 kVp ,100 mA with care dose, pitch 1.5, IV contrast 50ml [Omnipaque 350mgI/ml], flow rate 4ml/s; Group B, n=50; 100 kVp 100mA with care dose, pitch 1.5, IV contrast 30ml [Omnipaque 350mg I/ml], flow rate 4ml/s). 40cc of IV saline chaser was administered at the same rate in both groups. Image acquisition in group A was started when the main pulmonary artery attenuation reache 45 HU, while Image acquisition in group B was started when SVC attenuation reaches 80 HU. Attenuation values were recorded for the main, right main, selected lobar, segmental and sub-segmental branches. Intravascular enhancement homogeneity from central to sub-segmental level was also assessed visually using a semi-quantitative score from 1 (non diagnostic) to 5 (excellent).

Results:

There was no statistically significant difference in age, gender and scan length between the two groups. 11 cases of pulmonary embolisms were found in group A & 10 cases of pulmonary embolisms were in group B (mostly of segmental type). The mean attenuation measurements of the main, right main, selected lobar, segmental, and sub-segmental pulmonary arteries for Group-B were 398, 399, 402, 403 & 375HU, respectively and for Group-A were 401, 392, 378, 375 & 365HU, respectively. A visual score of 4 or 5 was given to 82% of studies in the 50-mL group and 80% of studies in the 30-mL group.

Conclusion:

Contrast media administration for 64-MDCT Pulmonary CTA in individuals weighing < 85 kg, with no CHF or irregular SVT, can be significantly reduced without compromising diagnostic image quality.

Paper ID: 104

EFFICACY OF MRI T2* IMAGING IN DIAGNOSIS OF ECTOPIC PREGNANCY

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Background:

Ectopic Pregnancy (EP), in which a fertilized ovum implants outside the uterine cavity, is the most common emergency in early pregnancy. The aim of this study was to assess MRI in diagnosing Ectopic Pregnancy (EP), emphasizing on T(2)*-weighted imaging (WI) efficacy in a trial that was conducted in 2015.

Methods:

This is a prospective study of 35 female patients (18 to 42 years, average 30.9) clinically suspected of EP during 2015. Twenty had minimal vaginal bleeding and slight abdominal pain. All had positive pregnancy tests, and sonography showed no intrauterine pregnancy despite estimated gestational age of embryos and/or high concentrations of human chorion-

ic gonadotrophin. MRI was performed with a 1.5T imager (Siemens, Vision VB33A) with a body-array coil. T(2)-WI (HASTE), T(1)-WI (2D FLASH), and T(2)*-WI (2D FLASH) were obtained without contrast. T(2)-WI was routinely obtained in 3 directions. T(2)*-WI orientation was determined based on the T(2)-WI. One of 4 radiologists with experience in interpreting abdominal MR images interpreted images with reference to transvaginal ultrasonography (TVUS) and laboratory results. Abnormal adnexal mass with remarkable low signal area on T(2)*-WI was diagnosed as EP.

Results:

Out of 35 subjects who were previously diagnosed with EP, Tubectomy in Twenty and abdominal total abdominal hysterectomy in one case confirmed the diagnosis. EP was ruled out in one case by diagnostic laparoscopy. Out of 7 cases who were negative for EP on Ultrasound, no mass was detected in three, and no area of low signal was recognized on T(2)*-WI in the masses in two. EP was ruled out in 5 of 7, and in 2 of the five, who underwent tubectomy, EP without bleeding was diagnosed.with all EPs being tubal pregnancies at final diagnosis, 19 were ampullar pregnancies and one was interstitial. sensitivity, specificity and accuracy of MRI as a diagnostic tool for EP was calculated at 95%, 100% and 96% ,respectively.

Conclusions:

MRI with T(2)*-WI is a sensitive, specific, and accurate method to evaluate EP. T(2)*-WI is highly accurate for detecting and diagnosing EP because of its sensitivity to fresh hematoma.

• Paper ID: 111

ASSESSMENT OF THE RELATIONSHIP BETWEEN THE DENSITY OF DURAL VENOUS SINUSES AND BLOOD HEMOGLOBIN AND HEMATOCRIT LEVELS ON UNENHANCED BRAIN CT

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Background:

Today, many patients with neurological symptoms, undergounenhanced brain CT as the first diagnostic stepwhich occasionally does not lead to any pathologic finding. Anemia is a condition which can present with neurological symptoms without any findings on imaging. Correlation between dural venous sinuses density and hemoglobin level has been shown in some recent studies; to this end, by evaluating venous sinuses density on brain CT, timely detection and treatment of underlying anemia may be possible.

Methods:

CBC was requested for 78 subjects who CTs were reviewed and reported as normalData regarding CBC parameters and mean HU in SSS, TH and transverse sinuses were analyzed.

Results:

A relatively strong direct linear correlation was found between hemoglobin and HU which can be formulated on: HB = 0.2 × SSS HU + 1.2 × sex factor - 0.01 × age (Sex factor = 0 for female and 1 for male). Determining a cut-off point of SSS HU Mean by means of ROC curve to predict anemia, at HU≤50, we will be able to predict anemia with 84.62% sensitivity, 75.38% specificity and 75.64% accuracy in general population and with 90.91 % sensitivity, 63.64% specificity and 67.27% accuracy in female population.

Conclusion:

In this study a significant positive correlation was found between hemoglobin level and mean HU of dural sinuses hence hemoglobin level can be predicted based on HU values and differential diagnosis list can be narrowed yet. Determining a cut-off point of HU to predict anemia needs more studies to be done.

Abbreviations:

SSS=Superior Sagittal Sinus, TH=Torcula Herophili TS=Transverse Sinus, HU=Hounsfield Unit

• Paper ID: 117

CT SCAN EVALUATION OF

NEUROBLASTOMA IN CHILDHOOD

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Introduction:

Neuroblastoma (NBL) is the most common extra cranial tumor in childhood. It accounts for almost 15% of childhood cancer fatalities. The most common primary sites for NBL are the adrenal glands, extraadrenal retroperitoneum and posterior mediastinum. Less common sites are neck and pelvic regions. CT scan is the most widely used imaging modality to evaluate NBL and can demonstrate origin of the tumor, tumor extension, local and vascular invasion, adenopathy, calcification, and metastasis to adjacent or distant organs. The aim of current study is evaluation of CT scan findings of neuroblastoma in childhood.

Patients and methods:

In a cross –sectional study, all children under 12 years of age with histopathologically proven neuroblastoma who had been referred to Mofid children hospital between March 2012 to September 2015 were included. Their past medical records and the first CT images at the time of disease presentation were reviewed. Imaging findings were recorded in a check list and the data were analysed using the SPSS 16 software.

Results:

A total number of 50 patients were evaluated, among them 26 were male and 24 were female. The mean age of the patients was 33 months old (range:1 to 48 months). Primary site of the tumor was located in the abdomen in 74%, in the posterior mediastinum in 24% and in the pelvis in 2% of the patients. The origin of the abdominal tumor was adrenal glands in 46% and extra adrenal retroperitoneum in 28% of cases. Indistinct border and irregular morphology of the tumor was seen in 60% of cases. Low attenuation areas without contrast enhancement were seen in 70% of cases. Extension of mass across the midline was noted in 40% of patients. Tumoral calcification was observed in 48% of cases, 36% of which were abdominal in origin and 12% were mediastinal. Large vessels were encased by the tumor in 30% of cases. Inferior vena cava (IVC) and abdominal aorta were encased in 16% of cases followed by celiac trunk (13%), renal vein (11%), superior and inferior mesenteric arteries (SMA and IMA) in 10% of abdominal cases. Encasement of vessels also was seen in 16% of mediastinal tumors. Thoracic aorta, subclavian artery and brachiocephalic artery were encased in 8% of mediastinal cases. CT scan revealed metastatic involvement in 52% of cases. The most common sites of metastasis were lymph nodes (38%), bone (32%), intracranial (16%), liver (14%), subcutaneous (12%), lungs and orbit (8%), in order. No evidence of metastasis to liver, lungs and orbit was seen in mediastinal NBLs. Intraspinal extension of tumor was observed in 18% of cases, 12% of which were mediastinal in origin and 6% were abdominal. Calcification was not seen in intraspinal extension of the tumor.

Conclusion:

CT scan is a cost efective and reliable imaging modality to evaluate features of NBL and its local and distant metastatic involvement in children.

Paper ID: 120

SIGNIFICANCE OF MRI BASED AXILLARY LYMPHNODE METASTASIS DETECTION IN PRIMARY BREAST CANCER

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Background:

Considering the excellent sensitivity of MRI in detection of metastatic involvement of axillary lymph nodes which is one of the paramount prognostic variables in breast cancer, we aimed to study breast cancer patients regarding the lymphadenopathy (LAP) detected by MRI and pathologies of theses metastatic LAPs.

Methods:

In this cross-sectional study, 144 women with breast cancer were examined by
MRI for axillary lymphadenopathy. The pathology of LAP was also assessed.

Results:

144 women with breast cancer (Mean ±SD age of 48.80 ±12.76) were studied. 69.2% of them had single breast mass, 23.1% of them had two breast masses, and 6 patients showed multifocal tumors.The majority of patients (72%) had axillary LAP on MRI. MRI was 72% sensitive for detecting metastatic LAP. Invasive ductal carcinoma (IDC) was the most common type of pathology in axillary lymph node dissection (83.3% of LAPs). There was no significant association between particular pathologies and correct detections of LAPs by MRI.

Conclusion:

In line with literature, it may be inferred that, as a non-invasive tool, MRI has valuable diagnostic performance with 72% sensitivity and 80% specificity for preoperative evaluation of metastatic axillary lymph nodes in women with breast cancers.

• PaperID: 125

PROGNOSTIC VALUE OF CORONARY ARTERY CALCIUM SCORE FOR PRESENCE AND SEVERITY OF CORONARY ARTERY DISEASE

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Background:

Coronary Artery Disease (CAD) is one of the most common causes of morbidity and mortality. although coronary angiography is considered as the gold standard method for evaluation of coronary artery disease and its management, it is also an invasive method. Recently ,along with other alternative non-invasive techniques , coronary artery calcium score (CACS) has been introduced as a well-established and validated imaging tool. Evidence has suggested appropriate clinical applications in both symptomatic and asymptomatic patients for CACS. Nonetheless stenosis of coronary arteries may not be rulled out solelybased on absence of coronary artery calcificationwhich results in controversies regarding the usefulness of CACS for predicting coronary artery stenosis. The aim of this study was to determine the prognostic value of CACS for presence and severity of CAD among patients with suspected sign and symptoms of the disease.

Methods:

In this cross –sectional study, 748 consecutive patients with suspected CAD, referred to radiology department for coronary computed tomography angiography (CCTA) were enrolled. Before CCTA, the CACS was measured using a 64 - slice CT scanner. Mean of CACS was compared in patients with different severity of coronary artery stenosis. The association between CACS with different CAD risk factors was determined also. Different cutoff points of CACS with highest sensitivity and specificity for discriminating different levels of coronary artery stenosis were determined using receiver operating characteristic (ROC) curves. Results: The mean,(SD) of CACS in patients with no stenosis, non-significant stenosis, single-vessel disease, two-vessel disease and three vessel disease were 13.2 (4.5), 135 (19.9), 293.6 (40.7), 558.1 (84.5) and 809.1 (141.1), respectively. Mean CACS was significantly different in different levels of coronary artery stenosis ($P < 0.001$) and there was significant positive association between severity of CAD and CACS ($P < 0.001$, $r = 0.781$).Mean,(SD) of CACS was significantly higher in patients with hypertension, hyperlipidemia, diabetes, positive familial history of CAD and smokers than in those without mentioned risk factors and nonsmokers($P < 0.05$) .There was significant positive association between CAD risk factors and mean of

CACS (P < 0.001).ROC curve analysis indicated that the optimal cutoff point for discriminating CAD (presence of stenosis) from non stenosis condition was 5.35 with a 88.6%sensitivity and 86.2% specificity. Area under the curve for different levels of coronary artery stenosis did not have sensitivity and specificity for discriminating different levels of CAD severity (< 70%).Conclusions: The findings of this study, demonstrated that there is a significant association between CACS and presence as well as severity of CAD.CACS may have appropriate prognostic value for determination of coronary artery stenosis but not for discriminating severity of the stenosis. hence it may be inferred that, CACS measurement is a noninvasive imaging technique with a relatively low level of radiation exposure for predicting coronary artery stenosis, it is recommended to use this scoring method before CCTA as a screening tool in patients with suspected CAD

• Paper ID: 133

A COMPARATIVE STUDY OF FAST RESULTS IN HEMODYNAMICALLY STABLE AND UNSTABLE PATIENTS WITH BLUNT ABDOMINOPELVIC TRAUMA

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Objectives:

FAST (Focused abdominal sonography for trauma) has high sensitivity and specificity for detection of the intraperitoneal free fluid in the abdominopelvic blunt trauma patients. In this study,we investigated results of FAST in stable and unstable patients with blunt abdominopelvic trauma with a view to identifying the most suitable candidates for this test and avoid excessive use of FAST.

Methods:

A descriptive cross sectional study was performed at Poursina Hospital, Rasht, Iran. 2500 patients with blunt abdominopelvic trauma, who referred to the emergency room of the hospital between 2012 and 2014, were enrolled and underwent FAST scan. These patients were divided into two groups (Hemodynamically stable & unstable)and the result of FAST exam and laparotomy in these patients were evaluated. All data were recorded in the registration forms and analyzed with SPSS software using descriptive test.

Results:

2500 patients (73% male & 27% female) were evaluated. Among the 2459 hemodynamically stable patients, 31 had a positive result in FAST scan and 2 underwent laparotomy. In 41 patients with hemodynamic instability, 40 patients had a positive FAST scan result and all of them underwent laparotomy which give FAST 99.7% specificity ,91% sensitivity ,90%positive predictive value & 99.7% negative predictive value . The overall accuracy was 99.5%.

Conclusion:

The utilization of FAST scan for screening of abdominopelvic blunt trauma patients who are hemodynamically unstable.should be reserved for blunt abdominopelvic trauma patients who are hemodynamically unstable where In addition to detecting intraperitoneal free fluid, It gives surgeons convenient approach to the surgery.

• Paper ID: 142

SHORT AND LONG TERM EFFICACY OF PERCUTANEOUS BALLOONING OF BENIGN BILIARY STRICTURES

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Background:

Benign biliary stricture is a challenging clinical condition which can be treated in different ways. Surgery, endoscopic repair and percutaneous balloon dilation are the available options. Percutaneous balloon dila-

tion is recommended when surgery and endoscopic interventions fail. Although this method is currently used in Iran there is no published data about its safety and efficacy as yet. We conducted this study to evaluate safety and long term result of treating benign biliary strictures by percutaneous balloon dilation.

Methods:

We included all 34 Patients on whom PBBD procedures had been performed at our center between 2011 and 2014 in the study. The patients were eight males and 26 females, and their ages ranged from 20 to 62 years (mean age: 44 years). One week after biliary balloon dilatation procedure patients were followed by percutaneous transhepatic cholangiography. The dilatation session was repeated if remained stricture was visible on PTC. Follow-ups in 1, 3,6,12 and 18 months later were done if the duct was patent on PTC. Serum Bilirubin level, liver enzymes level and ultrasonography findings were investigated in every follow-up session.

Results:

Our initial technical success rate was 97%.3 patients died at 2 and 6 months after the procedure due to irrelevant diseases. All patients became symptom free one month after the procedure. Serum bilirubin and ALP levels decreased significantly one month after the procedure (P-Value < 0.001)
We followed the other 31 patients for 18 months, recurrence occurred in 4 patients at 8, 10, 15 and 16 months after procedure. Our long term success rate at 6,12 and 18 months after the procedure was 91%, 85% and 79.5% ,respectively.

Conclusion:

PBBD is a safe and effective method to manage benign biliary strictures with excellent short and long term results.

• Paper ID: 148

SPECTRUM OF NON-CNS FINDINGS ON FETAL MRI OF REFERRING PATIENTS TO FAGHIHI HOSPITAL, A ONE YEAR SURVEY

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Background:

Over the last decades, adjunct to ultrasound (US) imaging which is the primary modality for prenatal evaluation, magnetic resonance imaging (MRI) has played an important role for providing additional information or confirming ultrasound findings.
Considering ultrasound limitations such as lack of an acoustic window in the fetus with oligohy¬dramnious, a small field of view, limited soft-tissue acoustic contrast, and beam attenuation by maternal adipose tissue, MRI has gained popularity as a powerful complementary modality. While suspected CNS congenital anomalies on ultrasound are the most common indications for performing fetal MRI, many non-CNS congenital anomalies can also be effectively evaluated by MRI.
Our objective in this study was evaluation of the frequency of various non CNS anomalies on fetal MRI's performed in our center.

Methods:

In a cross sectional retrospective study, from November 2014 to December 2015, pregnant women referred for fetal MRI with suspected anomalies diagnosed on prenatal ultrasound, were included in the study. All MRI's were done on a 1.5 T Siemens Avanto Magnet with a 4 channel body coil. Mothers with GA of 19 weeks or above were examined in the right tilt position. Sequences included T2 HASTE, Trufisp images with 6 mm slice thickness in axial, coronal and sagittal planes to mother's body. T2 HASTE and Trufisp images were also taken with 4 mm slice thickness relative to the specific fetal body part being evaluated. T1 flash images were obtained

in at least one plane based on clinical indication.
We investigated the available images for any non –CNS anomalies and categorized the data in seven groups including fetuses presented with head and neck ,thoracic and diaphragm , gastrointestinal and abdominal wall ,genitourinary and musculoskeletal anomalies , hydrops fetalis and the last group was the fetuses which showed no abnormality . The data were collected and descriptive analysis was done to achieve index of frequency.
Some fetuses showed more than one group anomaly which were categorized in each group separately.

Results:

A total of 55 patients (61.1 %) out of 90, referred for fetal MRI due to non –CNS anomalies that was detected in US.
Oligohydraminous was the most common associated finding beside non –CNS anomalies that seen in 14 (25.45%) patients.
19 (34.54%) fetuses with suspicious US, showed no congenital anomaly.
Thoracic and diaphragmatic anomalies was the most common which noted in 15 (27.2 %) fetuses .congenital cystic adenomatous malformation(CCAM) seen in 5 (33.3 %) cases of this group .diaphragmatic hernia noted in 2 cases of this group (13.33%).
Genitourinary problems noted in 12 (21.81%) fetuses and multicystic kidney disease included 5 (33.33%) of cases in this group.
7 (12.7%) cases had gastrointestinal and abdominal wall anomalies and omphalocele was the most common abnormality in this group.
Head and neck problems seen in 6 (10.9%) fetuses and nuchal thickening were noted in 3 (50%) of this group.
3 (5.4%) cases had musculoskeletal anomalies that club foot was the most common pathology.
One (1.8%) of fetuses presented with hydrops fetalis.

Conclusion:

Superior soft tissue contrast, relative operator independence, and a large field of view are factors that make fetal MRI a great adjunct in obstetric imaging. After exclusion of the CNS anomalies, most common indication for evaluating the fetus with MRI was thoracic and lung anomalies (including diaphragmatic hernia) and genitourinary anomalies. Musculoskeletal and head and neck anomalies were the least common anomalies in this group.

• Paper ID: 171

SATISFACTION WITH RADIOLOGY REPORTS AMONG REFERRING PHYSICIANS AND RADIOLOGISTS IN SHIRAZ UNIVERSITY OF MEDICAL SCIENCES

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Background:

To investigate and compare the opinions and expectations regarding the radiology report of radiologists and referring clinicians and to identify trends, discordance, and discontent.

Mehods:

A total of 200 clinicians and 50 radiologists were invited to participate in two surveys, COVER (for clinical specialists and general practitioners) and ROVER (for radiologists). Respondents were asked to state their level of agreement with 46 statements on a Likert scale basis. Dichotomized results were compared by using the $\chi 2$ statistical method.

Result:

175 completed forms, corresponding to a response rate of 21% were prepared for analysis. Most clinicians declared themselves satisfied with the radiology report. The vast majority of clinicians considered it an indispensable tool and accepted that the radiologist is the best person to interpret the images. Nearly all agreed that they need to provide adequate clinical information and state clearly what clinical question they want to have answered. Itemized reporting was preferred for complex examinations by both the clinicians and the radiologists. A majority in both groups were convinced that learning to report needs to be taught in a structured way.

conclusion:

These surveys reiterate the role of the radiologist as a well-informed medical imaging specialist; however, some of the preferences of radiologists and clinicians diverge fundamentally from the way radiology is practiced and taught today, and implementing these preferences may have far-reaching consequences.

• **Paper ID: 175**

ROLE OF ULTRASONOGRAPHY IN DIAGNOSIS OF INTESTINAL MALROTATION

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Background:

Intestinal malrotation is characterized by defect in the process of rotation and fixation of bowels around superior mesenteric vessels during embryological development. Mesenteric vessel malposition is seen in patients with malrotation. However, some other diseases are also associated with this ultrasonographic finding. The main objective of this study was to investigate the role of ultrasonography in the diagnosis of intestinal malrotation in children.

Methods:

This study was conducted in Dr. Sheikh Children's Hospital, from 2009 to 2014. We included 60 patients, under 15 years of age and suspected of intestinal malrotation in this study. Patient age, gender, clinical symptoms, ultrasonographic findings, and final diagnosis were recorded.

Results:

Among 60 patients, 31 (52%) were male. The mean age of patients was 2.8 ± 1.3 years. The most common clinical symptoms were vomiting (n=27, 45%), and abdominal pain (n=13, 22%). The diagnosis of intestinal malrotation was confirmed in 50 cases. Inversion of mesenteric vessels was detected in 41 patients with malrotation, while no ultrasonographic finding was observed in the other 9 patients. Therefore, ultrasound examination had a sensitivity of 82%. Other diagnoses, associated with abnormal mesenteric vessels findings, included jejunal atresia (n=1), choledocal cyst (n=1), gastric volvulus (n=1), and duodenal web (n=1).

Conclusions:

Ultrasonography is a sensitive diagnostic method for detecting intestinal malrotation in suspected patients. Various congenital anomalies are associated with mesenteric vessel malposition, including intestinal malrotation, diaphragmatic hernia, internal hernia, duodenal atresia, gastric volvulus, duodenal web, and choledochal cyst.

• **Paper ID: 176**

DIFFUSION WEIGHTED IMAGING AS STRONG BIOMARKER FOR DIFFERENTIAL DIAGNOSIS OF MENINGIOMA BRAIN TUMORS

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Background:

Effective treatment planning in patients with meningioma brain tumors relies on accurate differentiation of benign and malignant tumors on Magnetic Resonance (MR) images. Apparent Diffusion Coefficient (ADC) map has shown potential in accurate diagnosis of a wide range of tumors by indicating tumor cellularity. However, in meningiomas, the significance of ADC-map is under debate. The objective of this study is to investigate the role of heterogeneity analysis of ADC-maps by calculating spatial features, consisting of histogram, gray-level co-occurrence

matrix (GLCM) and run-length matrix (RLM) texture, and Gabor features, within a tumorous region through a computer-assisted classification framework. The achieved values for binary classification accuracy, sensitivity, and specificity after robust feature selection, are respectively 85.1%, 72.3%, and 90.6%, respectively.

The feature selection strategy majorly retained GLCM and RLM textural features, indicating that heterogeneity properties of a tumor could be a potential biomarker of the tumor malignancy.

In this study, we aim to propose an automated classification framework by exploring the heterogeneous regions of meningioma brain tumors through an accurate combination of imaging features extracted from ADC map including textural characteristics such as, rotation invariant texture features based on Gabor filtering and first- and higher- order texture features. We hypothesize that spatial heterogeneous manifestation of malignant tumors, which can be evaluated by textural features, can be a reliable biomarker of tumor malignancy. Furthermore, automated tools, if proven accurate, can ultimately be applied to (i) provide more reliable differentiation, (ii) avoid invasive procedures such as biopsy, especially in cases where the risks outweigh the benefits, and (iii) expedite or suggest the diagnosis (histological examination is usually time-consuming).

Methods:

We propose a multi-parametric framework for meningioma brain tumor classification. The proposed scheme consists of four major stages: (1) Co-registration of ADC map to their corresponding anatomical MRI (post-contrast T1-weighted (T1C) images); (2) delineation of the tumor border by selecting regions of interest (ROIs) on T1C images, creating a mask of tumor, and overlaying the mask on the corresponding ADC-maps; (3) feature extraction and selection; (4) automatic classification based on support vector machines based on radial basis functions (SVM-RBF).

Results:

RBF classifier was applied to 30% of the data (with 100 times of random selection) for devising the best predictive model of meningioma brain tumor malignancy and was tested for accuracy on the remaining 70% of the data in each of the 100 iterations. The cross-validation was performed by using leave-one-out method and the classification performance was evaluated and reported in terms of sensitivity, specificity, and accuracy.

Conclusions:

Accurate differentiation of malignant from benign brain meningioma based on MR images could play a crucial role in decision making about the most appropriate therapy plan for patients and to avoid imposing unnecessary interventions for patients with benign tumors or planning insufficient treatments which could compromise the quality of life or survival of the patient with malignant tumor. Despite being useful in diagnosing a wide range of tumors, the role of ADC-map in meningioma brain tumors remains a matter of debate. As hypothesized earlier, the heterogeneity of meningioma tumors could be the discriminating biomarker of tumor malignancy. This hypothesis was supported by the outcome of the proposed classification scheme: among all retained features by feature selection method, texture features, which represent spatial heterogeneity within a tumorous region, were most predominant. This implies that if efficient texture features are extracted for differentiation of brain tumors, high accuracy could be achieved with fewer number of features. In this study, we thrived to develop an accurate computer-assisted classification method for differential diagnosis of benign and malignant meningioma brain tumors from ADC maps.

• Paper ID: 178

ENDOVASCULAR TREATMENT OF BUERGER'S DISEASE

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Background:

Buerger's disease, also known as thromboangiitis obliterans (TAO), is a chronic, inflammatory, non-atherosclerotic vasculopathy, predominantly presented with distal extremity ischemia in young male

smokers. The diagnosis is mainly clinical. However, suggestive angiographic findings include segmental occlusive lesions, which are more severe distally, corkscrew (tree root or spider leg) collaterals, and normal proximal arteries without evidence of atherosclerosis. Treatment is based on tobacco use cessation, medical management, endovascular interventions, such as percutaneous transluminal angioplasty (PTA), and surgical treatments, including arterial revascularization (bypass surgery), lumbar or thoracic sympathectomy, and amputation. The main purpose of this study was to assess the efficacy of endovascular therapy for the management of Buerger's disease.

Methods:

All patients with Buerger's disease, who underwent PTA, between 2012 and 2015, were studied retrospectively. Patients' age, gender, smoking history, presenting sign or symptom, and treated arteries by balloon angioplasty were recorded. All patients were monitored for resolution of symptoms and clinical outcome.

Results:

A total of 6 male patients with the mean age of 42 years were evaluated. All cases were smokers. Patients presented with ischemic rest pain only (n=1), ulcer (n=3), or gangrene (n=2). A total of Sixteen vessels in 7 lower limbs were treated, including 5 popliteal arteries, 4 peroneal arteries, 3 posterior tibial arteries, 2 anterior tibial arteries, 1 tibioperoneal trunk, and 1 superficial femoral artery. After the procedure and during follow-up, two patients had clinical improvement without experiencing any significant symptom. Reintervention was required in 1 patient, whose symptoms resolved completely after the second PTA. In other 2 patients with symptom relief after PTA, minor amputation of toe was done due to previously established necrosis. One patient eventually underwent limb amputation due to persistence of severe ischemia and development of gangrene.

Conclusions:

Endovascular treatment of Buerger's disease, as a technically demanding procedure, should be reserved for properly selected patients, based on arteriographic evaluation. This therapeutic option can also be considered as the last resort in patients with severe ischemia or nonhealing ulcers to give a chance for limb salvage before planning for amputation.

• Paper ID: 179

INTER AND INTRA-OBSERVER AGREEMENT IN REPORTING MAMMOGRAMS AT IMAM KHOMEINI CANCER INSTITUTE

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Introduction:

To evaluate the reproducibility of mammography interpretation, which is a subjective process. The aim of this study was to assess intra and interobserver agreement in interpreting mammograms according to BI-RADS (Breast Imaging Reporting and Data System) standardized lexicon among three expert breast radiologists, specialist in mammography reporting, of Imam Khomeini Cancer Institute Radiology Center.

Methods:

A set of 37 full-digital two-view mammograms (Cranio Caudal (CC) and MedioLateral Oblique(MLO)), were randomly selected among all mammographic examinations done atour center between January 2011 to July 2012, either for diagnostic or screening reasons. Three radiologists experienced in reporting mammography according to BIRADS lexicon which is routine in our center, participated in this study. Mammograms of all patients were reported twice by each reader with an interval of one month. A check list-questionnaire was designed to interpret lesions and breast density of mammograms. Agreement was calculated using Kappa test and statistical software SPSS version 16.0.

Results:

The radiologists showed very good (Kappa > 0.8) to good (Kappa 0.6-0.8) inter and intra-observer agreement in reporting mammographic density and malignancy associated findings, good intra-observer and moderate (Kappa 0.4-0.6) inter-observer agreement for reporting intramammillary lymph node, masses and its characteristics including shape, density and borders, and reporing the distribution of calcifications. They had fair (Kappa 0.2-0.4) agreement on reporting BIRADS and poor (Kappa < 0.2) inter- and intra-observer agreement in Reporting Focal asymmetric density and asymmetric breast tissue.

Conclusion:

The reporters have an acceptable agreement in reporting malignancy associated findings, suspicious masses and mammographic density at our center, indicating that mammography reports of our center are reliable enough to screen high risk patients for breast cancer. However the variability in reporting BIRADS category and asymmetric findings which are equaly important may result in high rate of missed or over diagnosed individuals. Further studying to evaluate false positive and false negative reports of suspicious lesions are recommended at our center.

• **Paper ID: 186**

AORTIC AND PULMONARY ARTERY DIAMETERS IN THE GENERAL POPULATION MEASURED WITH MULTIDETECTOR COMPUTED TOMOGRAPHY SCAN

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Background:

as a common pathology of chest the aneurysm of thoracic arteries is associated with high rate of mortality. However, the aneurysms are treatable if detected before rupture. As assessment of the normal thoracic arteries size in the healthy population can help with therapeutic decision making, the present study was conducted to evaluate normal range of aortic and pulmonary artery size using multidetector computed tomography scan (MDCT).

Methods:

2043 chest MDCTs which were performed between 2005 and 2013 for assessment of non vascular problems in Alzahra hospital, were studied. Intraluminal arterial diameters including ascending aorta diameter (AAD), descending aorta diameter (DAD), pulmonary artery diameter (PAD) and chest anterioposterior diameter (CAPD) were measured prospectively. Exclusion criteria were history of cardiovascular disease and presence of atherosclerosis plaque on MDCT images. The linear correlation analysis was performed between AOD, DAD, and PAD and some parameters such as gender, age and CAPD.

Result:

1037 (50.8%) of patients were male and 1006(49.2%) were female, the age range of patients were 15 to 89 years .The mean aortic diameters had following measurements: 32.8±5.2mm and 31.4±4.9mm for the ascending aorta and 25.6±3.9mm and 24.3±3.8mm for the descending aorta in male and female retrospectively. The mean diameter of PDA was 26.7±3.5mm and 26.2±3.6mm in male and female retrospectively.. AAD was directly associated with age, gender and pulmonary artery diameter ($P < 0.05$). There was direct association between PAD and CAPD ($P < 0.05$) but no significant correlation between aortic diameter and CAPD. All arterial diameters increased with age ($P < 0.05$).

Conclusion:

for detection the enlarged thoracic arteries it is necessary to have the normal range of arterial size. This study defined normal dimensions of thoracic ascending and descending aorta and pulmonary artery. Age and gender are the most important factors that should be considered in evaluating normal arterial diameters.

• Paper ID: 190

ASSESSMENT OF THE AXILLARY, INTERNAL MAMMARY, AND MEDIASTINAL LYMPH NODE INVOLVEMENT IN PATIENTS WITH BREAST CANCER USING CT SCAN METHOD

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Background:

The purpose of this study was to investigate anatomic distribution and morphological characteristics of the axillary, internal mammary, and mediastinal lymph node involvement in patients with breast cancer using spiral CT method.

Methods:

Anatomic distribution and morphologic characteristics of the axillary, internal mammary, and mediastinal enlarged lymph nodes including margin, calcification, coalescence of adjacent lymph nodes, cavitation, and contralateral or ipsilaterla involvement to the breast mass or mastectomy site were recorded in 100 patients with breast cancer using spiral CT scan technique.

Results:

The most common site of lymph node enlargement was mediastinum (39%). Lymph node enlargement was also detected in axillary (22%) and IMN (7%) areas. Lymph node involvement was more common in patients with previous mastectomy/lumpectomy. In mediastinum, zones 4 and 10 were most commonly affected. Spiculated margin and cavitation were merely detected in axillary lymph nodes. Furthermore, calcification in patients without previous radiotherapy was merely identified lymph nodes (zones 4 and 10). Coalescence of the adjacent lymph nodes was more common in mediastinum zones 4R and 7 of mediastinum of patients without previous mastectomy. Ipsilateral involvement of the lymph nodes was more extensive than contralateral involvement. Sternum destruction along with IMN enlargement was found in 28% of the studied cases.

Conclusion:

Our results presented a comprehensive view of the anatomical distribution and morphological features of the axillary, internal mammary, and mediastinal lymph nodes in patients with breast cancer. These findings demonstrated that CT scan can be method reliable modality for early diagnosis of tumor metastasis or recurrence in patients with breast cancer. Furthermore when axillary, IMA and zone 4 and 10 of mediastinum lymph node involvement is seen, a more precise evaluation of breast must be done.

• Paper ID: 192

ASSOCIATION BETWEEN CLINICAL FEATURES OF THE PATIENTS WITH LOW BACK PAIN (LBP) AND CROSS-SECTIONAL AREAS (CSA) OF THE LUMBAR MUSCLES MEASURED USING MAGNETIC RESONANCE IMAGING (MRI)

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Background:

In this study we sought to evaluate correlation between clinical features (including disability score, age, sex, and LBP duration) of the patients with LBP (n=199) and CSA of the multifidus, psoas, and erector spinae muscles measured using MRI.

Methods:

Patients included 68 (34.2%) males and 131 (65.8%) females. MRI images of the paravertebral muscles were provided in T1 weighted sagittal, T2 weighted sagittal and axial sequences. Subsequently using the PACS program, muscles CSA were calculated from T2 weighted axial sequences. Oswestry Disability Index (ODI) was provided for each patient. Based on ODI score, patients were categorized into 5 groups (grade 0-4).

Results:

Subjects included 78 patients with LBP duration of less than 6 months with an average ODI of 13.8 among whom grade 2 disability was the most common grade at 56.4%(n=44) and 121 patients with LBP duration of greater than 6 months with an average of ODI = 24.5 among whom grade 3 disability was the most common grade at 38.8% (n = 47 ().

Conclusions:

CSA of psoas and erector spinae muscles in patients with chronic LBP (duration greater than 6 months) were significantly less than measurements in patients with acute LBP (duration less than 6 months). No significant correlation between ODI and lumbar muscle CSA were found. Additionally age and CSA of the lumbar muscles were inversely proportional which was not significant.

• Paper ID: 195

CT-GUIDED PERCUTANEOUS CORE NEEDLE BIOPSY FOR DIAGNOSIS OF MEDIASTINAL MASS LESIONS; EXPERIENCE WITH 110 CASES IN TWO UNIVERSITY HOSPITALS IN ISFAHAN, IRAN

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Background:

CT-guided percutaneous core needle biopsy (CNB) is a diagnostic technique for initial assessment of mediastinal mass lesions. This study was conducted to evaluate its diagnostic yield and its complication rate.

Methods:

We reviewed the records of CT-guided PCNB in 110 patients with mediastinal mass lesions performed at Kashani and Alzahra hospitals, Isfahan, from 2006 to 2012. Gender, age at the time of biopsy, size and anatomic location of the lesion, number of passes, site of approach, complications and final diagnosis were extracted.

Results:

Subjects included 52 (47.2%) females and 58 (52/7%) males with mean age of 41 ± 8 years. The most common site of involvement was the anterior mediastinum (91.8% of cases). An average of 3/5 passes per patient had been performed for tissue sampling. Parasternal site was the most frequent approach for PCNB (in 78.1% of cases). Diagnostic tissue was obtained in 99 (90%) biopsies, while in 11 (10%) of cases specimen materials were inadequate. Lymphoma (49.5%) and bronchogenic carcinoma (33.3%) were the most frequent lesions in our subjects. The overall complication rate was 17.2% of which 10.9% was pneomothorax, 5.4% was haemoptysis and 0.9% was vasovagal reflex.

Conclusion:

CT-guided PCNB is a safe and reliable procedure which can provide a precise diagnosis for patients with both benign and malignant mediastinal masses, and it is considered the preferred first diagnostic procedure for this purpose.

• Paper ID: 203

EVALUATION OF THE CORRELATION BETWEEN SPERM ANALYSIS PARAMETERS AND COLOR DOPPLER ULTRASONOGRAPHY FINDINGS IN PATIENTS WITH THE TESTICULAR VARICOCELE

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Background:

Varicocele as one of the most common causes of sperm abnormalities in men is defined as dilation of the testicular vein (pampiniform venous plexus) for

more than 2 millimeters. The main diagnostic procedure to detecting varicocele is ultrasonography in which the vein diameter using B mode sonography and venous reflux using color Doppler sonography are evaluated. the aim of this study was to investigate the efficacy of color Doppler sonogarphy in detecting sperm abnormality in patients with varicocele.

Methods:

In this study, 99 patients reffered for evaluation of varicocele were studied for the for varicocele size and venous reflux by Color Doppler ultrasound. Concurrently semen analysis was carried out for patients. Finally ultrasonography findings and semen analysis data were compared.

Results:

The results of this study revealed that semen analysis parameters including sperm morphology, sperm count, sperm motility, and volume of semen were significantly correlated with the diameter of varicocele while weren't correlated with the testicular size. More ever the findings indicated that semen analysis parameters and size of the varicocele were significantly different between patients with reflux of more than 1 second.

• Paper ID: 204

INVESTIGATION OF THE CONCORDANCE BETWEEN THE SONOGRAPHIC AND PATHOLOGIC FINDINGS OF THE ULTRASOUND GUIDED CORE NEEDLE BIOPSY OF BREAST LESIONS (WITH BIRADS 4 OR 5)

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Introduction:

Core needle biopsy (CNB) provides a relatively large tissue specimen which facilitates accurate histopathologic diagnosis. Recognizing the relationship between pathologic and imaging findings is useful for diagnosing malignancy and minimizing invasive procedures .The aim of this study is to investigate the relationship between pathologic and sonographic findings.

Methods:

In this retrospective study, 336 patients with BI-RADS 4 or 5 sore were selected. These patients were referred to the 16 Azar clinic of Tehran University for performing biopsy between 2013 and 2015. The patients were evaluated in terms of demographic and sonographic characteristics. All of sonographies were performed by one radiologist using the same ultrasound machine and then biopsies were performed under ultrasound guide. The specimens were sent to two accredited laboratories for reporting. Pathologic findings were classified into 3 categories according to the ACR 2013 as :benign, malignant and high-risk groups. Sonographic and pathologic findings were recorded in questionnaires. Data were analyzed by descriptive and inferential statistics using SPSS21 software.

Results:

The mean age of patients was 11.70 ± 42.81 years (82-14). The mean size of tumor was 8.06 ± 16.73 mm (50-5 mm).94.3 % of patients were classified as BIRADS 4 and 7% of patients were classified as BIRADS 5.In general, benign tumors were observed in 283 patients(84.2%), malignant tumors were observed in 48 patients(14.3%) and high-risk tumors were observed in 5 patients(1.5%). 3 patients (1.2 %) in B4a group and 2 patients(6.9%) in the B4c group were classified into the high risk group. 19 patients (100%) in group B5, 9 patients (20%) in group B4b and 20 patients (69%) in group B4c were classified into the malignant group.The most prominent

discordancy was in the B4c group where 24.1% (7 patient) were labled as benign,mostly due to granulomatous mastitis or fat necrosis.
There was a significant correlation between pathologic diagnosis and BIRADS ($P < 0.01$).

Conclusion:

This study indicates the importance of using ACR lexicon method in the classification of breast lesions (BIRADS system) and performing biopsy for all B4 and B5 breast lesions.

• **Paper ID: 206**

MRI-GUIDED PROSTATE NEEDLE BIOPSY VS TRANSRECTAL ULTRASOUND(TRUS)-GUIDED BIOPSY IN 94 PATIENTS WITH SUSPECTED PROSTATE CANCER

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Objective:

This study was conducted to investigate the efficacy of MRI-guided prostate biopsy in patients with suspected prostate cancer with negative results for prostate cancer using a primary TRUS study.

Methods:

In this observational study, 94 patients with suspected prostate cancer were enrolled between May 2013 and November 2014. Patients were biopsied using TRUS-guided and MRI-guided method and efficacy of both methods were compared in terms of ability in detecting positive cases.

Results:

In this study 28 cases with suspected prostate cancer where detected by MRI-guided biopsy of prostate and histopathology confirmed the diagnosis in 24 of them(sensitivity=100% and specificity=94%) and whereas using the TRUS method alone only 3 out of 24 true positive cases(12.5%) could be detected.Data analysis using chi-square test revealed that the number of true positive cases detected using MRI method was significantly higher than the ones detected by systematic approach ($p < 0.001$).

Conclusion:

In line with the results of other studies, it can be concluded that MRI-guided biopsy has good diagnostic efficacy for detecting positive cases in that have falsely been considered negative in systematic biopsy of prostate and therefore is more valid for diagnosis of prostate cancer.

• **Paper ID: 214**

MYOMETRIAL INVASION, A COMPARISON OF MAGNETIC RESONANCE IMAGING, TRANSVAGINAL AND DOPPLER SONOGRAPHY IN PATIENTS WITH ENDOMETRIAL CARCINOMA.

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Introduction:

Here we aimed to evaluate the correlation between Magnetic Resonance Imaging and transvaginal sonographic findings with histopathologic results in predicting depth of myometrial invasion in endometrial carcinoma. We also aimed to study the relationship between Doppler indexes of uterine arteries and depth of myometrial involvement in endometrial carcinoma.

Methods:

We performed a cross sectional study on 45 women with histologically confirmed diagnosis of endometrial carcinoma. The study was conducted from October 2009 to December 2012. Patients with endometrial carcinoma were consecutively recruited form those who were regularly visited at the gynecology clinic of a large university general hospital. All patients were evaluated by 3-tesla magnet MRI and

transvaginal sonography with the same protocol for assessment of depth of myometrial invasion.Transvaginal color Doppler sonography of uterine arteries for measurement of RI and PI was performed in all of them. Hysterectomy was performed for all patients and the result of imaging and pathologic studies were compared. According to 2009 FIGO staging ,Stages 1a and 1b were determined based on the depth of myometrial invasion of less or more than 50% respectively.

Results:

The mean endometrial thickness was 25.1±16.4mm (2.2-62), which was 18.4±14.4mm in patients in stage 1a and 38.5 ± 11.5 in patients in stage 1b ($p < 0.0001$). There were significant differences between stage 1a and 1b regarding the number of patients with irregular endoometrial-myometrial interface($p=0.01$). Color Doppler indices of uterine arteries were significantly different between patients in stages 1a and 1b(P value < 0.05) while Positive Predictive Value (PPV) Negative Predictive Value (NPV) ,sensitivity, specificity and accuracy for the MRI study were 92.3%, 86.6%, 92.3% , 86.6% 88%in, respectively. The figures dropped to 88.9% for PPV , 76.5% for NPV 85.7% for sensitivity 81.3% for specificity and 84% foraccuracy was for ultrasound study.

Discussion:

The findings of this study showed that 3-Tesla MRI study provides valuable information for evaluation of patients with endometrial carcinoma, which is identical to the results of previous studies performed with 1.5 and 3-Tesla MRI. Our findings do not support a preferential application of 3 T rather than 1.5 T MRI for the evaluation of depth of myometrial invasion in endometrial cancer patients. Transevaginal sonography can be used as an alternative method with acceptable accuracy, whenever MRI is contraindicated or unavailable for evaluation of myometrial invasion. We also showed that there are significant differences in Doppler indices of uterine arteries in patients with more or less than 50% of myometrial invasion.

• Paper ID: 215

A COMPARATIVE STUDY ON HYSTEROSALPINGOGRAPHY RESULTS AMONG WOMEN WITH PRIMARY INFERTILITY AND THOSE WITH SECONDARY INFERTILITY

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Background:

This study was conducted to compare the findings of hysterosalpingography (HSG) among women with primary infertility and those with secondary infertility.

Methods:

This was a cross sectional retrospective study carried out among infertile patients who underwent HSG at Royan Institute, Tehran, Iran, from September 2010 till April 2011. All infertile women who underwent HSG at our imaging department during this period of time were recruited in the study. Cases were divided into 2 groups: “primary infertility” (group1: N=868) and “secondary infertility” (group2: N=333). Patient’s history files, HSG images and reports were assessed to collect data. Demographic information, HSG findings and prevalence of each were analyzed and compared between two groups by means of SPSS16 software, using descriptive statistics.

Results:

A total number of 1201 infertile women were enrolled in this study. Patients aged 28.1±5.2 years in average in group1 and 31.29±5.1 years in group2. Average duration of infertility was 3.9 years among women in group1 and 5.13 years in group2. HSG report was “normal” in 70.7% of cases with primary infertility and among54.7 % of women with secondary infertility. 30.3% of primarily infertile women had at least one abnormal HSG finding while the prevalence of abnormal HSG results was 45.3%in patients with secondary infertility. Abnormal appearances were classified as follow: tubal pathologies (5.8% in group1 and 11.1% in group2), cavity filling defects (5.4% in group1 and 9.3% in group2) congenital

uterine anomalies (16.6% in group1 and 20.4% in group2) and limited passage of contrast media (2.5% in group1 and 4.5% in group2).

Conclusion:

Our study demonstrated that the incidence of abnormal HSG result was slightly higher in women with secondary infertility in comparison with primarily infertile women. This difference was more related to "acquired abnormalities" such as tubal disease or cavity lesions and adhesion rather than congenital uterine anomalies.

• Paper ID: 217

OUTCOME OF PREGNANCY AMONG PREGNANT WOMEN WITH ABNORMAL SCREENING NUCHAL TRANSLUCENCY AT HOSPITALS OF SHAHID-BEHESHTI UNIVERSITY OF MEDICAL SCIENCES

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Background:

Nuchal translucency (NT) measurements in the first trimester screening between 11 and 14 weeks' of gestation is regarded as a clear marker for aneuploidies. The presence of a thickened NT, even if the karyotype is normal, can be associated with structural abnormalities.
To study the outcome of cases with Nuchal Translucency (NT) ≥ 1.3mm in the first screening test of pregnancy.

Methods:

This cross sectional study was performed at hospitals of Shahid-Beheshti University of Medical Science .Totally, 201 cases with NT≥ 1.3 mm who attended the first trimester screening were studied.
Results: Of screened cases, 201 fetuses had an NT≥1.3 mm , of them 20 fetuses (10%) were abnormal.
In abnormal cases we had 17 cases of trisomy 21, one case of trisomy 18, one case of IUFD and one case of isolated VSD .

Conclusion:

In the setting of routine prenatal screening, an increased NT measurement is a marker of a high-risk pregnancy for the presence of fetal anomalies which mandates a meticulous investigation for the presence of anomalies.

• Paper ID: 225

CAROTID ARTERIAL INTIMA–MEDIA THICKNESS AND RESISTANCE AND PULSATILITY INDICES OF UTERINE AND RENAL ARTERIES IN PREECLAMPSIA: A QUANTITATIVE ANALYSIS BY COLOR-DOPPLER ULTRASONOGRAPHY.

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Background:

The recent development of high resolution ultrasonography has provided the opportunity to measure intima-media thickness and also arterial wall thickness in the peripheral arteries in pregnant women afflicted with preeclampsia. . The present study aimed to Determine Resistance Index (RI) and Pulsatility Index (PI) of uterine artery and renal artery as well as common carotid intima-media thickness (IMT) in pregnant women with preeclampsia using Color-Doppler ultrasonography and also to compare these parameters with healthy pregnant women.

Methods:

This case-control study was conducted on 50 consecutive Iranian women who had preeclampsia and were recruited from the routine prenatal clinic from April 2013 to March 2004. Also, 50 age and gestational week-matched normotensive pregnant women were included as the control group. IMT of common carotid artery as well as RI and PI indices of uterine and renal artery were measured by color-Doppler ultrasound.

Results:

Comparison of uterine RI between women with preeclampsia and healthy pregnant women showed higher RI in the former group (0.50 ± 0.07 versus 0.45 ± 0.09, p = 0.002). Also, uterine PI in women with preeclampsia was higher than in the healthy group (0.84 ± 0.19 versus 0.71 ± 0.17, p = 0.005). The RI index of renal artery was 0.56 ± 0.08 in preeclampsia group and 0.55 ± 0.07 in the healthy group which was not statistically significant (p = 0.480). There was also no significant difference in PI indicesof renal artery between the preeclampsia group and normotensive subjects (0.93 ± 0.23 versus 0.94 ± 0.19, p = 0.930). Comparison of IMT of common carotid artery in preeclampsia group and control group showed significantly higher IMT in the former group (0.49 ± 0.06 versus 0.44 ± 0.07, p < 0.001).

Conclusion:

While increased common carotid IMT and also RI and PI indices of uterine artery are common findings in preeclamptic women that may indicate early and late preeclampsia related cardiovascular complications. RI and PI of renal artery donot seem to be affected by preeclampsia. Nonetheless, the results of this study are yet to be investigated in more studies.

• Paper ID: 230

A NOVEL METHOD FOR IDENTIFYING TUMORS IN MAMMOGRAPHY IMAGES USING WITH IMAGE MINING TECHNIQUES

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Introduction:

Breast cancer is the most common cancer and the leading cause of death from cancer among women-worldwide. Moreover, detection of tumors in different sizes and shapes often poses a daunting task particularly in the early stages of tumor formation. According to official statistics of the National Cancer Institute in America, 10 to 30 percent of breast lumps in mammographies are indistinguishable by radiologists. The aim of this study is to show a novel method for detecting tumors which combines mammography with analysis of existing databases.

Methods:

Courtesy of the Breast Cancer Surveillance Consortium (BCSC), (affiliated to the National Cancer Institute). Data pertaining to a number of mammograms was analysed with the Weka software. Output of algorithm for each image was evaluated by a radiologist for detection of breast lesions.

Results:

Comparing the mammogram images with an existing database can be very helpful. This method improved and optimize with neural network in terms of certitude and promptitude.

Conclusions:

The results of this study showed that using the image mining techniques and its integration with the neural network algorithm may increase the accuracy of identifying breast tumors to 97.4%.

• Paper ID: 233

EVALUATION OF IMAGE GUIDED VACUUM ASSISTED BREAST BIOPSY INDICATIONS IN 71 CASES IN BREAST CANCER RESEARCH CENTER FROM APRIL 2014 TO SEPTEMBER 2015

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Introduction:

Breast cancer is one of the most common causes of death in women in the world and among Iranian women. Mammography is the basic method for breast cancer diagnosis. Nonetheless ,breast sonography has also become an essential part in evaluation of breast cancer and a valuable adjunct to screening mammography and physical exam. These nodularities are of particular importance in the diagnosis of non-palpable masses and microcalcifications. So, in these cases imaging plays an important role for tissue diagnosis. FNA and CNB are valuable and well established techniques that are still widely used the more recently devised VABB can be performed under MRI, sonography or mammography guidance and has proved clinical value. The main indication for the use of VABB is for detection of microcalcifications which is usually performed under stereotactic guidance. Indications for Ultrasound-guided VABB are still under debate. It has the potential to replace surgical biopsies for small breast nodular lesions and it can also be used for complete removal of benign lesions instead of surgical resection. Other indications for VABB include evaluation of palpable or non-palpable nodular lesions (B3 or B4a) with attempting complete removal of the lesions to eliminate the need for later follow-ups. In this study we evaluated VABB indications in patients referred to the Breast Cancer Research Center.

Methods:

This study was performed from April 2014 to September 2015 at the Breast Cancer Research Center. Total number of cases was 71 of which 44 cases (70%) were performed under mammography guidance and 27 (30%) were sono-guided. Biopsies were done with vacuum device from Hollogic Company and number 9 needles from Suros Company.

Results:

The age spectrum of subjects was 28 to 70 years. Two main indications for sono-guided VABB were therapeutic and diagnostic. The major indication for diagnostic VABB was evaluation of masses which were suspected of intraductal papilloma which was mainly compatible with histopathology results. (i.e. papilloma and papillary lesions).The main indication for mammo-guided VABB was suspected calcifications which in 14 cases (30%) led to the diagnosis of DCIS on histopatology, one case was diagnosed with LIN1, one case with flat epithelial atypia and 2 cases with invasive CA. These cases had to undergo surgery as part ofstandard treatment. For two cases ,malignancy grade in the histipathology report that followed surgery was up from DCIS to invasive cancer and from DIN2 2 to DIN3. while for one case,it was downgraded from DIN3 to DIN2 and in one case no foci of DCIS was detected on postsurgery histopathology. In the remaining 10 cases, histopathologic report before and after surgery were identical.

Conclusion:

Image-guided VABB is an accurate and safe method with good correlation with the gold standard (surgery) that and can be an alternative to excisional surgery under some circumstances.

• **Submission ID: 16**

EVALUATION THE SENSITIVITY OF FLAIR AND DWI PRE AND POST GADOLINIUM INJECTION AS COMPARED TO DELAY ENHANCE T1W IN DETECTION OF ACTIVE MS LESIONS

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Purpose:

Multiple sclerosis is the most common autoimmune disorder affecting the central nervous system. As of 2008, between 2 and 2.5 million people are affected globally with ratesvarying widely in different regions of the world and among different populations. While the cause of MS is not clear as yet but proposed causes for this disorder include: Immunologic Factors, Environmental
Factors, Infectious Factors, Genetic Factors, and gender preference. MS can cause many symptoms, including blurred vision, loss of balance, poor coordination, slurred speech, tremors,
numbness, extreme fatigue, problems with memory and concentration, paralysis, and blindness and more. Four disease courses have been identified in multiple sclerosis:
relapsing-remitting MS (RRMS), primary-progressive MS (PPMS), secondary-progressive MS (SPMS), and progressive-relapsing. MRI is the most sensitive method for revealing asymptomatic dissemination of lesions in space and time.

Methods:

55 patients with MS plaques were evaluated by FLAIR and DWI pre and post Gadolinium injection compared with 15 min delay T1w SE.

Results:

post injectionFLAIR had significantly better performance in detection of active MS lesions in terms of numbers and signal intensity. DWI and ADC images without contrast were capable of differentiating active active from non-active plaques.

Conclusion:

The results of this study showed that, post injection-FLAIR offered the highest accuracy in detection of active MS lesions which is due to the CSF signal suppression in FLAIR, and hence enough TR recovery time in enhanced active plaques.

• **Submission ID: 107**

RADIOPROTECTIVE EFFECT OF MELATONIN IN PREVENTIONOF CANCER-RELATED THROMBOCYTOPENIA IN PATIENT WITH RECTAL CANCER

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Background:

Rectal cancer is the second most common cancer worldwideand is commonly treated with a combination of radiotherapy and chemotherapy before surgery. However, the treatment is often associated with such sideeffects as thrombocytopenia which may be attributable to the effect of ionizing radiation on tissue water where by free radicals are produced and cause cellular damage or death by reacting with biomolecules such as DNA, RNA and various proteins. This effect may hypothetically be offset by molecular scavengers of free radicals such as melatonin. Given the importance of this issue, in this study the protective effect of melatonin in preventing thrombocytopenia caused by radiation cancer treatment in patients with rectal cancer will be evaluated.

Methods:

This study was conducted on 2 groups of 30rectal cancer patients .One group treated with a daily dose of 20mg melatonin for 28 days and onegroup receiving placebo. After the end of trial the two groups were compared interms of platlet count..
which may also increase the activity of some antioxidant enzymes.
It is also expected that treatment of patients who undergo radiotherapy with melatonin may result in less decrease in the number of platlet count.

• Submission ID: 116

EVALUATION OF STAFF AND ENVIRONMENT EXPOSURE FROM 18F-FDG AT THE FIRST PET/CT AND CYCLOTRON CENTER IN IRAN

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Introduction:

PET/CT using 18F-FDG has been introduced as a non-invasive method for diagnosis, staging and assessment of response to therapy of various malignancies. Using 18F-FDG PET requires special consideration due to the 511 Kev gamma radiations which can be generated by positron-emitter florin18. To this end, radiation protection is a vital requirement at any PET/CT center. The aim of this study was to assess the staff radiation exposure (whole body and organ specific dose) as well as the environment radiation dose at a PET/CT and cyclotron center.

Methods:

80 subjects were included in this study. The measurement of absorbed dose was performed on 14 staff at the PET/CT and cyclotron center of Masih Daneshvari hospital. The staffs absorbed dose of thyroid glands, lens of the eyes, breasts, fingers, and whole body were measured. moreover, 20 locations were considered for evaluation of accumulative dose and dose rate in order to assess the amount of radiation received by the radiation staff and the public using ThermoLuminescent Dosimeter (TLD) and Geiger-Muller dosimeter. The values of thermoluminescence, electronic personal dosimeter and Geiger–Muller dosimeter were also compared with each other.

Results:

The mean ±SD annual equivalent organspecific radiation exposure dose for scanning operators' lens of eyes, thyroid glands, breasts and fingera, were 0.262±0.044, 0.256±0.046, 0.257±0.040 and

0.316±0.118, respectively. The maximum and minimum annual whole body exposure doses for injector and the chemist group were (3.98±0.021) mSv/yr and (1.64±0.014) mSv/yr, respectively. The observed dose rates in the uptake room at a distance of 0.5 meter from the patient were 5.67 µSv/h whereas the value of 4.94 and 3.08 µSv/h were recorded near the patients' head in PET/CT room and 3.5 meters away from the reception desk respectively.

Conclusion:

In this study the injector staff and the scanning operators received the highest level and second highest levels of radiation. This study confirmed that,levels of radiation exposure dose received bythe radiation staff during PET/CT procedure with 18F-FDG were effectively minimizeddue to efficient shielding and using trained radiation staff at the PET/CT and cyclotron center of Masih Daneshvari hospital.

• **Submission ID: 119**

THE SCIENCE OF RADIOMICS: MERGING OF RADIOLOGY, COMPUTER AND MOLECULAR BIOLOGY SCIENCES

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Background :

Extracting and analysis of large amounts of quantitative information from medical images by using advanced feature analysis and the relating of this extracted information to biological and clinical endpoints is called Radiomics. Radiomics is defined as the conversion of images to higher dimensional data and the subsequent mining of these data for improved decision support. It can be performed with tomographic images from CT (computed tomography), MRI (magnetic resonance imaging), and PET (positron emission tomography) studies.

Methods:

Radiomics is designed to develop decision support tools and focuses on improvements of image analysis by using the high-throughput computers to hundreds extracted of descriptive quantitative features from medical images of a given modality.

Radiomics includes 8 main steps:

(1) Acquisition of high quality standardized imaging (2) Defining the Region of interest (ROI) or Volumes of interest (VOI) (3) Segmenting the ROI or VOI (5) Extracting and qualifying descriptive features from the ROI or VOI (6) Placing these data in shared databases (7) Mine the data for hypothesis generation, and (8) The final step is analysis of the acquired imaging features to increase the power of the decision support models with other patient characteristics such as, clinical reports, laboratory test results, demographics, pathology, blood biomarkers and genomic or proteomic assays.
Quantitative imaging features can be extracted based on intensity, shape, size or volume and textural features (which include information about tumor phenotype and microenvironment) and functional parameters.

Conclusion:

Radiomics, hypothesizes that medical imaging features are enriched with crucial information regarding tumor phenotype which provides crucial information about characterization of entire tumors. And this date could capture additional information about that genomic and proteomics patterns then genomic and proteomics patterns can be expressed in terms of macroscopic image-based features, which could be improving individualized treatment selection and monitoring and enhance cancer diagnostics.
With high-throughput computing, it is now possible to rapidly extract innumerable quantitative features from tomographic images and conversion into mineable high-dimensional data, and combining this data to predict outcomes either alone or in combination with additional information, such as demographic, clinical, comorbidity, proteomic, or genomic data.
If this hypothesize proven, we can infer phenotypes

or gene–protein signatures from the quantitative analysis of medical image data.

• **Submission ID: 127**

ASSESSMENT OF THE DIAGNOSTIC ACCURACY OF DOUBLE INVERSION RECOVERY SEQUENCE IN COMPARISON WITH FLAIR AND T2W_TSE IN DETECTION OF BRAIN MULTIPLE SCLEROSIS PLAQUES

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The purpose of our study was to find out the diagnostic accuracy of Double Inversion Recovery sequence compared to FLAIR and T2W_TSE in detection of brain MS plaques.
MS disease usually affects young adults and leads to chronic disabilities. While the disease has been thought to distinctively affects theCNs white matter, involvement of the gray matter has recently been the focus of some attention.histopathologic studies have shown that a considerable number of lesions in multiple sclerosis are situated inside the cortex and subcortical white matter boundaries. conventional MRI cannot show cortical lesions well, so several attemptsrecently been mode to improve MRI ability to depict more MS lesions especially in gray matter.
Cording to the anatomical situations of lesionsDifferent pulse sequences will increase the sensitivity to detect the Multiple Sclerosis lesions. While FLAIR imaging has less sensitivity in displaying lesions in the posterior fossa, It produces the highest sensitivity to detect lesions near the CSF, in the juxtacortical and the periventricular white matter,on the other hand conventional T2W_SE/TSE sequences are more sensitive to display infratentorial lesions. …… but the problem of detecting juxtacortical lesions….. exists In double inversion recovery (DIR) sequence, the signals from both white matter and cerebrospinal fluid (CSF) will be suppressed, so DIR images display great delineation of gray matter/white matter , gray matter/cerbro spinal fluid and white matter/cerebro spinal fluid.

Methods and materials:

Fifty five patients were included in our study, imaging was performed with a 1.5T Philips MR system using DIR, FLAIR, and T2W_TSE sequences.
On DIR sequence different TIs (first TI=3400 ms and second TI=325 ms) were employed in order to suppress CSF and white matters signal.
Axial planes were performed in these three sequences with the same anatomical andgeometricposition, and parameters that influence resolution, including FOV, matrix, Voxel size and Number of signal averaging (NSA)

Results:

DIR showed significantly more MS lesion load in all anatomical regions when compared to both FLAIR and T2W_TSE, Also the contrast between GM–WM was excellent in DIR.
More over DIR sequence had the highest sensitivity and accuracy in demonstrating the cortical and mixed white matter-grey matter lesions as compared with FLAIR and T2 sequences.

Conclusion:

In order to detect more MS lesions in number and size as compared to FLAIR and T2_W TSE,we recommend to add DIR sequence in the routine MR protocols of MS patients

• **Submission ID: 210**

PATIENT RADIATION EXPOSURE DOSE MEASUREMENT IN COMMON MEDICAL X-RAY EXAMINATIONS IN IRAN

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The main purpose of this study was to investigate patient radiation exposure dose in the chest (PA/AP/LAT) and skull (PA/AP/LAT) X-ray examinations, as frequent procedures. The study was performed in eight public hospitals of Khuzestan province, Iran. Patient dosimetry was conducted on 567 standard patient X-ray examinations (males: 61.2%, female: 38.2 %). Dosimetry protocol in this study was the indirect method, according to the International Atomic Energy Agency (IAEA) technical reports series No. 457. Patients weighed 70±10 kg on average were considered as standard. In the indirect dosimetry approach, exposure parameters such as kVp, mAs, Focal Film Distance (FFD) and tube outputs recorded during data acquisition were used for calculating air kerma on the patient's skin, the Entrance Surface Air Kerma (ESAK) that is recommended by the IAEA as the most appropriate patient dosimetry quantity in simple radiographic examinations. This survey reveals significant variations in the radiological practice. The Results showed that according tothe parameters set by radiology technologists, which change in a wide range, mAs varied from 2 to 80 for skull PA, from 2 to 202 for chest and LAT and FFD varied from 50 to 180 for skull LAT projection. The study showed that patient doses in three chest projections exceed the IAEA and European Commission Dose Reference Levels (EC DRLs), 1.0, 1.12 and 2.20 mGy for chest PA, chest AP and chest LAT, respectively. Results also showed that mean ESAKs of patients in skull projections were generally lower than the IAEA and EC DRLs, 1.5, 1.72 and 2.25 for skull LAT, skull AP and skull PA, respectively. This study provides evidence that dose reduction in the simple X-ray examinations is feasible by update clinical audits and implementation of systematic Quality Assurance (QA) and Quality Control (QC) programs. The authors recommend that DRLs obtained in this study can be used as local DRLs in Khuzestan area and dose surveys must be performed in all provinces to establish National Dose Reference Levels (NDRLs) in Iran.

• **Submission ID: 211**

RADIATION DOSE MEASUREMENT FOR PATIENTS UNDERGOING COMMON SPINE MEDICAL X-RAY EXAMINATIONS AND PROPOSED LOCAL DIAGNOSTIC REFERENCE LEVELS

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Abstract:

The main purposes of this study were to investigate patient radiation exposure dose in Spine radiographic examinations, as high dose procedures and propose the first LDRLs (Local Diagnostic Reference Levels) in Khuzestan region, southwest of Iran. ESD (Entrance Skin Dose) values of patients who underwent six spine radiographic procedures including cervical (AP/LAT), thoracic (AP/LAT) and lumbar (AP/LAT), as high dose procedures, were evaluated. Patient doses were calculated from patient's individual anthropomorphic data (weight, height and organ thickness) and exposure parameters (kVp, mAs, FFD and projection) based on the IAEA (International Atomic Energy Agency) Technical Report Series No.457. Indirect dosimetry method was conducted on 412 patients (57% men and 43% women) at seven high-patient-load hospitals. This survey reveals significant variations in the radiological practice. Despite large discrepancies found in the tube loadings (3-128 for lumbar AP and 3-200 for lumbar LAT), ESDs in all examinations were lower than the IAEA and EC (European Commission) DRLs (Diagnostic Reference Levels), at 1.30, 1.65, 2.29, 3.09, 5, 7.5 mGy for cervical AP, cervical LAT, thoracic AP, lumbar AP, thoracic LAT and lumbar LAT respectively. Optimization of radiological practice could be accelerated by updating clinical audits and patient dose considerations, adequate training of students, implementation of systematic QA and QC programs and the use of qualified diagnostic medical physicists in the imaging departments. It is advisable that DRLs obtained in this study can be used as local DRL and dose surveys must be performed in all regions to establish NDRLs (National Diagnostic Reference Levels) in Iran. Also, national authorities must review periodically reference levels to ensure that it remains appropriate.

• **Submission ID: 227**

OPERATOR AND PATIENT RADIATION DOSE DIFFERENCE IN CORONARY ANGIOGRAPHY AND PCI BETWEEN TRANSRADIAL AND TRANSFEMORAL ACCESS

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Abstract :

Introduction:Transradial access for Coronary Angiography and Angioplasty has increasingly gained popularity for its clinical and safety benefits however, it is also challenged by the issue of and now more prevalent, but patient and operator radiation dose.
High radiation dose in procedures is dangerous for both operator and patient and may vary according to Angiographic equipment, physical and clinical factors and operator experience. For these reasons, different results have been achieved in previous studies.
Materials and Method: in this randomized clinical trial 326 patients were selected and underwent Angiography and PCI with both TRA and TFA methods by the same operator and Angiographic system. Flouroscopic time(FT) ,Cineflouro time(CFT),Skin dose (SD)and Dose area product(DAP)and operator dose for each procedre were recorded.
For operator and patient dosimetry we used SMART RAD and Ionization chamber .We also evaluated clinical parameters in each procedure which were then compared with each other.

Results:

Success rate in both access ways were the same .Mean procedure time in TRA was 7.66 min. for CAG and 33.23 min for PCI whereas in TFA method, this figure dropped to 7.1 min. for CAG and 31.79 min. for PCI (P=0.54,P=0.36). Contrast amount and access site complications although a little lower in TRA, were not significantly different between the two methods.(P=0.12). SD,FT and CFT in both access methods were the same however, mean patient radiation dose by DAP which amounted to 3907 for TRA and 4653 for TFA was significantly different between the two groups which was despite being only observed in CAG+PCI,.

Conclusion:

The risk of radiation exposure in both TRA and TFA access methods for CAG and PCI are almost the same and within safety limits, however, TRA offers the advantage of less access site complications and better patient compliance which renders it the method of choice especially in Primary PCI.

• **Paper ID: 9**

BREAST IMPLANT IMAGING

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In recent years the medical facilities are faced with:

1- Increasing number of diagnosed breast cancer cases which have resulted in the enormous number of reconstructive surgeries.
2- Increasing request for cosmetic surgical manipulations, with special attention to tonic breasts.

Breast implants are associated with a variety of untoward effects, some of which being serious and needing appropriate attention, early diagnosis and immediate intervention.

The most common side effect is rupture of the implant, however many other complication including: fibromatosis, anaplastic large cell lymphoma, interaction with cardiac imaging findings, confusing the cancer recurrence with inflammation secondary to silicongel.

These new circumstances have led to an increasingly frequent need, for more accurate and sophisticated imaging methods, to be able to study prosthetic breast implants and their integrity, and clarifying benign from malignant findings.

However, the standard method for evaluation of breast implant integrity have been stressed to be MR, but the value of ultrasonography and mammography is kept by most authors.

The author has analyzed the recent literature regarding various issues of breast implants as a daily dilemma facing radiologists in our country and all over the world.

• **Paper ID: 11**

SONOGRAPHIC FINDINGS OF BREAST MASSES AND ITS COMPLIANCE WITH PATHOLOGIC FINDINGS AND ALSO DETERMINE ACCURACY OF SONOGRAPHY TO DIFFERENTIATE BENIGN AND MALIGNANT LESIONS

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Sonographic findings of breast masses and its compliance with pathologic findings and also determine accuracy of sonography to differentiate benign and malignant lesions.

Purpose:

In ultrasonography features, each benign and malignant lesions has specific diagnostic characteristics, however in some cases, it is very difficult to discriminate these two types of lesions. The present study aimed to assess ultrasonography findings of breast lesions and also its agreement with biopsy findings to determine diagnostic value of ultrasonography.

Materials and Methods: In this cross-sectional study, 120 consecutive women suffered breast pain or discomfort and evidences of breast masses underwent ultrasonography. The findings of ultrasonography were confirmed by biopsy.

Results:

According to pathological findings, 61.7% of lesions were benign and 38.3% were malignant that the most common type of malignant lesion was intra-ductal carcinoma, and the most frequent benign lesions were fibrocystic changes (15%) and fibro adenoma (15%). features matched with malignant type of lesions were speculated margin ($P < 0.001$), irregular shape ($P < 0.001$) and indistinct margin ($P = 0.02$). In contrast, benign feature was mostly matched with pure cystic content ($P = 0.04$), circumscribed margin ($P < 0.001$), oval shape ($P < 0.001$), and size of mass less than 10 mm ($P < 0.03$). Ultrasonography

had a high value to discriminate benign from malignant lesions with a sensitivity of 87%, a specificity of 95.9%, a positive predictive value of 93% and a negative predictive value of 92.2% and an accuracy of 92.5%.

Conclusion:

Ultrasonography is a noninvasive method with high diagnostic value for differentiating benign from malignant features.

• Paper ID: 34

DETERMINATION OF COMPLICATIONS ASSOCIATED WITH ULTRASOUND-GUIDED BREAST CORE NEEDLE BIOPSY (CNB)

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Objective:

To determine types and frequencies of potential ultrasound-guided breast core needle biopsy (CNB) complications in a referral center.
Ultrasound-guided CNB has proven to be a safe and reliable technique for sampling BI-RADS 4, 5, and occasionally 6 breast lesions that can be clearly seen on ultrasound. It is less invasive than surgery, can be performed quickly, does not deform the breast, and causes minimal scarring and complications. However, some minor complications have been reported for CNB in the literature. Herein, we investigated probable complications associated with breast CNB in women referred to our center.

Patients and Methods:

A total of 100 women referred for breast CNB were randomly enrolled in the study. The breast lesions were seen in ultrasonography clearly and all of them were of BI-RADS 4 or higher. The CNBs were done under sterile condition with gauge 14 tru-cut needle. Then, the patients were followed by telephone interview in 48 hours and two weeks after CNB had been done, and their probable complications and final histopathologic report were recorded. Finally, the data were analyzed using SPSS v20 software.

Results:

16% of the cases experienced complications. 50% of complications were limited to the first 48 hours, and the rest were experienced during the first 48 hours and two weeks after the CNB had been done. The complications included severe pain despite analgesic consumption (13%), fever (9%), redness (8%), bruising (6%), stiffness (2%), paresthesia (2%), infection (1%), and hematoma (1%). There was no significant difference in complication incidence between malignant and benign lesions.

Conclusion:

The breast CNB seems to be a good diagnostic tool with low complication incidence and all of side effects are minor. Also there is no difference between benign and malignant lesions in the rate of complication. However, further studies with larger sample sizes should be done in this area in the future.

• Paper ID: 44

PATIENT POSITIONING FOR BREAST SONOGRAPHY

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Introduction:

Breast ultrasound is very operator dependent. It is a difficult technique.
The major contraindication of breast sonography is inadequate operator experience.

Materials and methods:

The most important parts of breast sonography are

equipments and patient positioning.
We describe some of frequently used patient positioning methods and show their true and false points using our cases.

Results:

The best positioning method should spread the breast evenly across the chest wall to allow the uniform depth of field and to reduce thickness allows optimization of focusing.

Discussion:

Patient positioning depends on the size and position of breast on the chest wall; placing the hand behind the head most be adjusted. Access to the axilla is also important.
Sometimes it is necessary to use some instruments to help better positioning.

Conclusion:

Every breast radiologist most knows patient positioning methods and their basics to choose the best method.

• Paper ID: 62

CORRELATION OF MAMMOGRAPHIC DENSITY WITH BREAST NODULARITY IN PHYSICAL EXAMINATION

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Background:

Mammography is an important diagnostic tool to detect breast lesions, the sensitivity of mammography to detect breast cancer lies between 00% and 00%, but it's value is considerably restricted in breasts with dense tissue due to hidden underlying small lesions. " lowering the sensitivity of mammography to 45% in very dense breasts, On the other hand exactly this subgroup of patients with dense breasts is at significant greater risk for developing breast cancer in comparison to those with more "fatty breasts". Therefore, there is a trend toward adding other diagnostic tools in women with dense breasts on mammography.

Materials & Methods:

After approval by the ethic committee, all women who were referred for screening or diagnostic mammography from mars 3002 to February 3004 were invited to participate in this study. Informed consent was taken and age and the reproductive history including menopausal status and number of parities were recorded. Clinical breast examination and assessment of breast nodularity was performed by one general surgeon using the nodularity scale of Goodson. Standard non-digital mammography with craniocaudal and mediolateral view was obtained and breast density was determined by one radiologist according to the density classification of the American College of Radiology (ACR-density classification). The radiologist was blinded for the results of the clinical examination. To assess the relationship between breast nodularity and texture on clinical examination with mammographic breast density the agreement level between these two variables was evaluated by the Kappa variable. The relation between mammographic breast density and age, menopausal status, number of parities was calculated by t-Test and Chi-square.

Results:

230 women with a mean age of 54 were included. The agreement level between nodularity grade on palpation and mammographic breast density was 0.304(p-value=0.000). Women with "more nodular" breasts on palpation had denser breasts on mammography in comparison to those with "less nodular" breasts. Almost all postmenopausal and multiparous women had low density mammograms.

Conclusion:

Clinical data such as nodularity on palpation, menopausal status and number of parities can predict very well the mammographic density. These individual differences should be considered in breast cancer screening programs in the future.

• Paper ID: 93

COMPARISON OF MAMMOGRAPHY AND ULTRASONOGRAPHY FINDINGS

WITH PATHOLOGY RESULTS IN PATIENTS WITH BREAST CANCER IN BIRJAND, IRAN, DURING 2012-2014

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Background and Objectives:

Early diagnosis of breast cancer, the incidence of which among Iranian women is about a decade earlier than the developed countries, is very important. In this study, we aimed to compare the mammography and ultrasonography findings with those of pathology in patients with breast cancer.

Materials and Methods:

This descriptive cross-sectional study was performed using medical
records of 79 patients with breast malignancies, who were referred to Imam Reza Hospital and private laboratories of Birjand, Iran, from December 2012 to December 2014. The patients' information was recorded using a checklist including name, code, age, ultrasound results, mammography results, and pathology reports. The results of ultrasonography and mammography were compared with pathology findings as the gold standard.

Results:

The mean age of the patients was 46.94±11.76 years. The results showed that 74.7%, 16.5%, and 7.6% of the patients had ductal carcinoma, lobular carcinoma, and mixed carcinoma, respectively. About 72.5%, 24.6%, and 2.9% of the patients had stage 2, 3, and 1 breast cancer, respectively. Moreover, it was found that the right breast was involved in 44.9% of the patients, while the left breast was involved in 53.8% of the patients. In addition, both breasts were involved in 1.3% of the patients. The ultrasound findings were positive and false negative in 97.5% and 2.5% of the cases. Moreover, the mammography results were positive and false negative in 98.7% and 1.3% of the patients.

Conclusion:

This study showed that mammography is the preferred modality in screening breast
cancer patients, the use of complementary tests such as ultrasonography is recommended,
especially in high-risk women.

• Paper ID: 102

DOSE COMPARISON BETWEEN FULL FIELD DIGITAL AND SCREEN/FILM MAMMOGRAPHY

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Objectives:

The main purpose of this review study was the comparison between doses delivered by a full-field digital mammography system and a screen/film mammography unit [38].

Methods:

At first study The American College of Radiology Imaging Network Digital Mammographic Imaging Screening Trial enrolled 49,528 women to compare FFDM and screen-film mammography for screening. For second study, Exposure parameters and breast thickness were collected for300 screen/film and 296 digital mammograms. The Entrance Surface Air Kerma (ESAK) was calculated from anode/filter combination, kVp and mAs values and breast thickness, by simulating spectra through a program based on a catalogue of experimental X-ray spectra. The average glandular dose (AGD) was also computed.

Results:

Found results from a study showed Mean glandular dose per view averaged 2.37 mGy for screen-film mammography and 1.86 mGy for FFDM, 22% lower for digital than screen-film mammography, with sizeable variations among digital manufacturers. 12% of screen-film mammography cases required more than the normal four views, whereas 21% of FFDM cases required more than the four normal views to cover all breast tissue. When extra views were included, mean

glandular dose per subject was 4.15 mGy for FFDM and 4.98 mGy for screen-film mammography, 17% lower for FFDM than screen/film mammography and the results of another study showed an overall reduction of average glandular dose by 27% of digital over screen/film mammography. The dose saving was about 15% for thin and thick breasts, while it was between 30% and 40% for intermediate thicknesses.

Conclusion:

On average, found results from different articles showed significant dose reduction for digital mammography than screen/film mammography.

• Paper ID: 110

DIAGNOSTIC AND ADDITIONAL PROJECTIONS IN MAMMOGRAPHY

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An annual mammogram is a screening mammogram and usually involves taking images (views) of each breast from two different directions in craniocaudal and mediolateral views. If the radiologist interpreting the screening mammogram images sees something that is questionable, unclear or abnormal on the standard views, ask for additional imaging.
In many cases, diagnostic additional mammographic views will help show that the abnormality is highly likely to be benign (non-cancerous). When this occurs, the radiologist may recommend that the woman return at a later date for a follow-up mammogram, typically in six months. However, if an abnormality seen with diagnostic mammography is suspicious, additional breast imaging (with exams such as ultrasound) or a biopsy may be ordered.
The common additional views are magnification, true lateral and spot compression views, however knowledge of radiologist about the technique and diagnostic value of the other uncommon and problem solving views such as cleavage, tangential, rolled, exaggerated, oblique, Cleopatra and Eklund views is necessary.
Our goal in this presentation is to explain common and uncommon additional views which help the radiologist in determined the next plan in front of abnormal findings in screen mammography.

• Paper ID: 118

A CASE OF FIBROLYMPHANGIOMA OF THE BREAST MIMICKING BREAST CANCER.

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Lymphangiomas are congenital malformations of the lymphatic system and consist of dilated lymph channels lined by endothelium.
The morphology of the lesions varies according to the character of the surrounding connective tissue. They may range from cysts in loose areolar tissue to superficial vesicles in dense fibrous tissue and features of both may coexist.
Lymphangiomas in the breast are rare entities, and only a few cases have been reported in the literatures. Here, we report a case of breast fibrolymphangioma in a 38 years-old man, which is an extremely rare benign tumor specially in breast and is not reported yet; mimicking extensive breast cancer. It presented as a palpable mass in the left breast with recent rapid growth.
Its sonographic appearances and the unique MRI features are explained and shown in this article. Incisional biopsy revealed the final diagnosis.

• Paper ID: 121

APPLICATION OF COMPUTED TOMOGRAPHY LASER MAMMOGRAPHY IN BREAST CANCER DIAGNOSIS

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The basic principle underlying CTLM imaging is the fact that any malignant tumor requires neovascularization to grow beyond 2 mm in size. It does this by elaborating angiotactic substances, which stimulate the growth of structurally and functionally abnormal blood vessels. This pattern, called angiogenesis, has been described in the majority of malignant, and also in some benign breast lesions.
This neovascularization, which results in a greater volume of hemoglobin in a confined area, can be visualized using absorption measurements of laser light. By setting the CTLM Laser to a wavelength that matches the crossover point of both oxy- and desoxyhemoglobin at 808 nanometers, CTLM visualizes both forms of hemoglobin. At this wavelength, water and fat, the other constituents of breast tissue, have a very low absorption coefficient. Thus, their absorption has little effect. CTLM therefore produces a "hemoglobinangiogram" of the breast. Tissue with high hemoglobin concentration shows high absorption of laser light, whereas tissue with low hemoglobin levels shows less or no absorption. Thus, normal breast tissue and benign lesions show no or minimal absorption of laser light, whereas malignant breast lesions should show increased absorption.

Materials and methods:

The CTLM scanning mechanism consists of a continuous wave laser source and an array of 84 collimated photodiodes arranged in third-generation computed tomographic geometry about an aperture that will accommodate most breast sizes A pair of linear photodiode array cameras is used to map the position of the laser beam on the surface of the breast to the physical location of the beam–breast interface within the scanning chamber, thereby creating an accurate measurement of the breast's perimeter at the interrogated slice. During the CTLM procedure, the patient lies prone on the table with one breast pendant in the scanning chamber. The CTLM exam is a free-space measurement: there is no coupling medium between the scanning gantry and the breast, and no part of the scanning mechanism contacts the breast. The scanning mechanism rotates 360°, initially in a plane near the chest wall, and measures the light diffused by the breast at a number of views in a single slice.

Discussion:

Mammography is the golden standard of breast imaging diagnosis; it has high sensitivity in fatty breast with sharp contrast. Screening mammography and digital mammography are of limited value in dense breasts. In extremely dense and heterogeneously dense breasts, mammography sensitivity is decreased.
The risk of cancer is increased from 2.5 to 5 times with the density ascending. So it is important for the malignant lesions to be detected early in dense breast Because of the limit of mammography, radiology physicians turn to ultrasonography. In simple cysts, the accuracy of ultrasound is 96% to 100%. However, when ultrasound imaging is used for the differentiation of hyperplasia from solid lesions that mammography could not distinct, it is not high as a result of the overlapping characteristics of solid benign and malignant lesions. In the last several years, functional imaging, such as MRI and PET-CT, has gained interest and been paid more attention to. MRI can provide important information in function with high sensitivity in detecting invasive ductal cancer and ductal carcinoma in situ. A new field of research is laser-light-based breast imaging.
The relationship of angiogenesis between tumor grade and angiogenesis is another important factor affecting the characterization of tumors with imaging techniques related to angiogenesis. Grade II and III cancers more often showed increased absorption than grade I cancers.
Conclusion
computed tomographic laser mammography, used as an adjunct, is a feasible tool to improve the diagnostic capabilities of mammography. The improvement in diagnostic accuracy for the combination of mammography and CTLM compared to mammography alone was statistically significant.

• **Paper ID: 126**

EVALUATION OF RELATION FACTORS AFFECTING ON BREAST CANCER IN WOMEN CLIENT TO THE RADIOLOGY DEPARTMENT OF FATEMIEH HOSPITAL IN HAMADAN 2014

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Background/Objectives:

Breast cancer is the most common cancer among women with around 19% of mortality. Fortunately, despite the high incidence rate of breast cancer, with an early diagnosis could be controlled and some time is curable.

Patients and Methods:

This cross-sectional study was performed in 3 months in the radiology department in Fatemieh hospital (mammography unit). In this study, the report of mammography among women who were referred to radiology department Fatemieh hospital was used. Finally, according to the radiologist's report and answer the questions that had been given, the relationship between the symptoms and the results obtained from mammography were studied. The data were analyzed using SPSS version22 descriptive and analytic Statistics (Logistic regression).

Results:

The majority of patients (57.1 %) to the radiology department for mammography, to determine the period and 42.9% of patients were referred because of problems. High density was observed in the majority of patients (47.5%). Lesion wasn't found in 202 patients, 1% of malignant tumors and 4.8% benign tumors were observed 92.5% of clients did not have breast secretion. The age on the type of diagnosis was effective. Also, Relationship between breast surgery and breast cancer was observed (P=0.04).

Conclusions:

In this study, medical records of 500 patients were examined. According to the results The results of this study demonstrate that, age is one of the most important factors in incidence breast cancer.

• Paper ID: 144

COMPARISON BETWEEN DIGITAL BREAST TOMOSYNTHESIS (DBT) VERSUS FULL-FIELD DIGITAL MAMMOGRAPHY (FFDM)

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Digital breast tomosynthesis (DBT) is expected to overcome some inherent limitations of mammography clinical performance caused by overlapping of normal and pathological tissues. The main purpose of these researches is to compare breast cancer and calcification visibility in Digital breast tomosynthesis (DBT) to cancer visibility in Full Filed digital mammography (FFDM). This work reports the final results of some clinical studies involving diagnostic population.

Methods:

The study done in Italy (Gisella Gennaro and etal) enrolled 200 consenting women who had at least one breast lesion discovered by ultrasound, they underwent tomosynthesis in one view [mediolateral oblique (MLO)] of both breasts at a dose comparable to that of standard screen-film mammography in two views [craniocaudal (CC) and MLO] and (ROC) analysis was performed. Clinical performance of DBT compared with that of FFDM was evaluated in terms of the difference between areas under ROC curves (AUCs) for BIRADS scores.
Second study (Marco Bertolini and etal) of a commercial full field digital mammographic system versus tomosynthesis mode was evaluated in terms of the image signal difference to noise ratio (SDNR). A contrast detail phantom was obtained embedding 1 cm Plexiglas, including 49 holes of different diameter and depth, between two layers containing a breast-simulating material. The phantom was exposed with the details plane perpendicular to the X-ray beam using the manufacturer's standard clinical breast acquisition parameters.
In the third study (M. Lee Spangler) One hundred paired examinations were performed utilizing FFDM and digital breast tomosynthesis. Twenty biopsy-proven cancers, 40 biopsyproven benign calcifications, and 40 randomly selected negative screening studies were retrospectively reviewed by five radiologists in a crossed multireader multimodal observer

performance study. Data collected included the presence of calcifications and forced BI-RADS scores. Receiver operator curve analysis using BI-RADS was performed.

Results:

In first study that was in Italy Overall clinical performance with DBT and FFDM for malignant versus all other cases was not significantly different (AUCs 0.851 vs 0.836, p=0.645). The lower limit of the 95% CI or the difference between DBT and FFDM AUCs was −4.9%.
In the second study SDNR in the digital breast tomosynthesis (DBT) images was higher than that of the full-field digitalmammography (FFDM) for 38 out of 49 details incomplex background conditions. The relative SDNR results for DBT and FFDM images showed a dependence on the diameter of the details considered,but overall the results was not significantly different.
In the third study Overall calcification detection sensitivity was higher for FFDM (0.84% [95% CI, 0.79–0.88%]) than for digital breast tomosynthesis (0.75% [95% CI, 0.70–0.80%]). In the cancer cohort, 75 (76%) of 99 interpretations identified calcification in both modes. Of those, a BI-RADS score less than or equal to 2 was rendered in three (4%) and nine (12%) cases with FFDM and digital breast tomosynthesis, respectively. In the benign cohort, 123 (62%) of 200 interpretations identified calcifications in both modes. There was no significant difference in the nonparametric computed area under the receiver operating characteristic curves (AUC) using the BI-RADS scores (FFDM, AUC = 0.76 and SD = 0.03; digital breast tomosynthesis, AUC = 0.72 and SD = 0.04)

Conclusion:

Clinical performance of tomosynthesis at the same total dose as standard screen-film mammography is not much inferior to digital mammography and diagnostic performance as measured by area under the curve using BI-RADS was not significantly different.

• **Paper ID: 153**

TECHNICAL ISSUES IN MAGNETIC RESONANCE MAMMOGRAPHY: A REVIEW ARTICLE

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Magnetic resonance (MR) imaging, when used in conjunction with mammography and ultrasonography, can be a powerful tool for breast imaging and investigating the pathological breast.
MR imaging may provide key information that leads to an alteration in treatment plans, so optimizing the quality of the morphologic and kinetic information yielded by breast MR imaging have great importance. Therefore the technologist must attend to various practical and technical prerequisites: 1) The advantages of 1.5T systems over 0.5T systems, 2) To measure time-intensity curves of cancers accurately, a temporal resolution of about 2 minutes or less is required, 3) To be sensitive to small focal lesions of 5 mm or less and diffuse enhancement, slice thickness should be less than 3 mm. 4) ROI selection: smaller ROI, encompassing 3 to 10 pixels, placed on the brightest areas of the enhancing lesion. 5) Appropriate time of examination in pre-menstrual woman: the contrast media uptake in breast varies according to the phase of the menstrual cycle, and etc.
The sensitivity of breast MRI is higher than 95% for invasive carcinomas but its specificity is 37 to 86% depending on the study, so new imaging sequences are now appearing in an attempt to increase the specificity of MRI, which is one of its main limitations. Of these, diffusion-weighted imaging (DWI) has shown promise for improving the positive predictive value of breast MRI for detection of breast cancer, evaluating tumor response to chemotherapy, and as a noncontract alternative to MR imaging in screening for breast cancer.
An awareness of proper imaging technique and potential pitfalls is critical to achieve accurate image interpretation. When breast MR imaging is performed in the appropriate clinical setting, it is a highly sensitive and reasonably specific method for the detection of breast cancer.

• **Paper ID: 196**

EVALUATION OF MICROCALCIFICATION GROUPS ON MAMMOGRAMS: RADIOLOGIC-PATHOLOGIC CORRELATION

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Groups of microcalcifications are the most frequent recognized features of ductal carcinoma on mammograms. However, heterogeneity (in size, morphology and density) and number of microcalcification groups as well as presence of accompanied soft-tissue density are not considered in BI-RADS descriptors. The study purposes to determine the malignancy risk of the micro calcification groups regarding these characteristics. Also compare the 4th and 5th editions of Breast Imaging Reporting and Data System (BI-RADS) in their interpretation.

Material and Methods:

In a cross sectional study 88 patients with micro calcification groups (age range, 26-80 years; mean, 53.4 years) who had undergone mammographic guided biopsy between March 2013 and March 2014 evaluated. Overall number of microcalcification groups in each patient, number of deposits within each group, group location and heterogeneity in size, density and morphology assessed and subsequently BI-RADS descriptors for 4th and 5th editions recorded separately. Finally, correlation with histopathology was performed.

Results:

The malignant groups composed 53 (60.2%) of 88 cases and were mostly located in upper outer quadrants in 30 (34%) cases and left breast in 49 (55.7%) cases.
The probability of malignancy based on morphologic characteristics was: coarse heterogeneous, eight (32.1%) of 19; amorphous, seven (29%) of 26; fine pleomorphic, 23(85.2%) of 27; and fine linear branching, 15 (93%) of 16.
malignancy risk in Heterogeneous groups estimated 63% in number ,65.2%in density and in morphology 61.6%.
The like hood of mal65.2%ignancy in groups under 10 in number of microclacifications were six (50%) of 12 and in above 10 in number were 47 (61.8%) of 76 also in one group ,59.7% and in several groups was 61.9%.
According to Breast Imaging Reporting and Data System (BI-RADS) 4th edition risk of malignancy in 4a ,4b,4c and 5 are 16.7%,32.4%,66.7% and 88.1% respectively.
Also corresponding to Breast Imaging Reporting and Data System (BI-RADS) 5th edition in 4b,4b and 5 are 30%,82.95 and 100% respectively.

Conclusion:

Breast Imaging Reporting and Data System (BI-RADS) 5th edition could predict more accurately in comparison with Breast Imaging Reporting and Data System (BI-RADS) 4th edition.
Additionally, heterogeneity in size, number and density of microclacifiaction groups as well as numbers of calcium deposits within a group increased like hood of malignancy.

• **Paper ID: 229**

PROVIDE A NOVELTY CAD FOR DIAGNOSTIC OF BREAST CANCER IN THE EARLY STAGE

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Introduction:

Breast cancer is the most common cancer and the leading cause of cancer death among women world-

wide. Early diagnosis of this disease is very necessary and even in some cases can be increases the patient's survival time. In this study have been provided an algorithm that will based on the Co-occurrence matrix in each image of a patient. These images must to be seriated which leads to identify the suspicious areas in each image.

Methods:

To evaluate the performance of the algorithm, the accuracy of its output is matched by the radiologist and the end the good results obtained show that the algorithm has high accuracy. Data collection have been used in this study, including mammograms of patients with diagnosed at any stage of imaging radiologists and pathologists in the case referred to the pathologist's opinion is recorded as the Golden point.

Findings:

Analysis in history of mammograms in this case study have been shown that certitude of radiologist increased if compare of two images of a patient in 15%

Conclusions:

The algorithm presented in this study is a process that is done repeatedly on mammography images to the desired result will be achieve. The provided algorithm indicates that in early mammography images of a patient can be explore some pattern that we can modeled these pattern to a prone changeable area in the breast in next session of imaging.

• **Paper ID: 232**

PROVIDING EFFICIENT ALGORITHM TO DISCOVER HIDDEN PATTERNS IN MAMMOGRAPHY

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Introduction:

Breast cancer is the most common cancer and the leading cause of cancer death among women worldwide. Due to the nature of mammograms that are often complex and detailed interpretation have many details in image so in order to interpret these images, high precision is required. In this study we tried to provide an efficient algorithm comparison between the two images of a patient with high precision serial mammograms done and areas that have been changed in the image to the radiologist shown.

Methods:

To evaluate the performance of the algorithm, the accuracy of its output is matched by the radiologist and the end the good results obtained show that the algorithm has high accuracy. Data collection have been used in this study, including mammograms of patients with diagnosed at any stage of imaging radiologists and pathologists in the case referred to the pathologist's opinion is recorded as the Golden point.

Results:

Analysis in history of mammograms in this case study have been shown that certitude of radiologist increased if compare of two images of a patient in 15%.

Conclusions:

In fact, the proposed algorithm trace the changes in breast tissue using detection of a suspicious area in the breast tracks. The accuracy of comparison of two images in serial mode to one another is 98.4%.it can be very useful and effective in certitude and promptitude

• Paper ID: 64

HYPOXIC ISCHEMIC BRAIN INSULT IN NEWBORN AND INFANT

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HIE affects 1-5/1000 term newborns.25% of these mod – severe injury
0.7-1.2 million asphyxia-related neonatal deaths annually
Significant burden of complications
– Cerebral Pulsy
– Death
23% of neonatal deaths attributed to complications of HIE
6-8% of CP is linked to HIE
Identification and characterization of the severity, extent, location, and prognosis of brain injury:
Electro encephalogram (EEG)
Ultrasonography(US)
Computed tomography (CT)
Magnetic resonance (MR) imaging
Diffusion-weighted MRI
MR spectroscopy
Ultrasonography
Detection of hemorrhage, periventricular leukomalacia (PVL), and hydrocephalus.
Resistive index (RI) and cerebral perfusion
Normally, the RI decreases with increasing gestational age.
Sustained asphyxia with intracranial hemorrhage or diffuse cerebral edema result in increased RI and poor outcome.
Computed tomography
Less sensitive
High water content in the neonatal brain and high protein content of the CSF, result in poor parenchymal contrast resolution.
Radiation exposure.
MRI Findings in the Normal Neonate

- On T1-weighted images, After 37 weeks of gestational age. One third of the length of the posterior limb of the internal capsule should be hyperintense. corresponding to myelination.
- Hypointense signal intensity is normally seen in T2-weighted images.
- Injury to white matter generally results in T1 hypointensity and T2 hyperintensity due to ischemia-induced edema.

Grade of MRI injury

1- Increased signal intensity in the basal ganglia on T1- weighted images
2- Increased signal intensity in the thalamus on T1-weighted images.
3- Absent or decreased signal intensity in the posterior limb of the internal capsule on T1- weighted images (i.e., the "absent posterior limb sign")
4- Restricted water diffusion on diffusion-weighted images

MR spectroscopy

- Biochemical analysis of the "compromised anaerobic" cerebral tissues.
- Elevated lactate and diminished N-acetylaspartate NAA concentrations.
- Elevation of choline relative to creatine,
- lactate-choline ratio of 1 indicates a greater than 95% probability of adverse neurodevelopmental outcome.

• Paper ID: 74

CONGENITAL MALFORMATIONS OF THE TEMPORAL BONE

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Computed tomography is the technique of choice to study the malformations of the auricle, external auditory canal (EAC) and middle ear. Knowledge of the embryology helps to understand which malformations can be found and atresia and stenosis of the EAC are the most frequently found malformations of the outer ear. First Branchial Cleft Anomalies are rare and are best studied using MR. Middle ear malformations can develop in association with or in the

absence of EAC deformities.
Anomalies of the ossicles, facial nerve, oval window, round window, etc., can all be studied in detail with CT.
However, MR is needed for the detection of congenital middle ear cholesteatomas and for cholesteatomas which are caused by congenital middle ear malformations and their resulting bad middle ear aeration. Inner ear malformations normally are not associated with middle and outer ear anomalies and high-resolution MR is the best adapted technique to detect vestibular, cochlear and cochleovestibular nerve malformations. New classifications of the labyrinthine malformations and VIIIth nerve malformations are used and their goal is to warn the surgeon for potential hazards during surgery and especially when cochlear implantation is considered. Finally, the outer, middle and inner ear can be involved together in syndromes and therefore both MR and CT are often required in these patients. In this presentation the embryology and most frequent malformations of the outer, middle and inner ear will be discussed as well as the contemporary imaging techniques that should be used.

• **Paper ID: 77**

INVESTIGATION OF DIFFERENCES BETWEEN FINDINGS OF A RADIOLOGIST AND AN OTOLOGIST REGARDING CT SCAN EXAMINATION OF PATIENTS BEFORE COCHLEAR IMPLANTATION

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Background:

Considering the increasing tendency for cochlear implant surgery, demand for new imaging methods is rising. In the present study, the findings of an otologist and a radiologist regarding the CT evaluation of patients before cochlear implantation were compared.

Methods:

In an observational cross-sectional study, CT images of 80 cochlear implant candidates were separately interpreted by a radiologist and an otologist specialist unaware of the surgery outcome.

Results:

Statistically significant moderate to strong agreement was found between the interpretations of the radiologist and otologist regarding the abnormalities of the ear vestibule of both right and left ears. Also, a significant strong agreement was observed between the radiologist and otologist regarding the final interpretation of CT scans of right ear (Kappa=0.947; P=0.000) and left ear (Kappa=0.947; P=0.000).

Conclusion:

It seems that there is no considerable difference between a radiologist and an otologist regarding interpretation the CT images of patients before cochlear implantation.

• **Paper ID: 154**

ASSOCIATION OF BRAIN MAGNETIC RESONANCE IMAGING (MRI) FINDINGS WITH THE HISTOPATHOLOGIC GRADING OF BRAINSTEM GLIOMA

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Objective:

To determine the association of brainstem glioma's grading with brain MRI findings.

Background:

Brainstem glioma accounts for 10%-20 % of all central nervous system (CNS) lesions in children and about 2% of adult's CNS tumors. Tumor grade determination is important to select the appropriate therapy. Stereotactic biopsy and histopathologic examination is the diagnostic method of choice in order to reveal the tumor's grading. However, tissue sampling from the brainstem is difficult, invasive, and expensive. Also, since the sample size is usually small because of the risk for vital structures to be damaged, there may be insufficient volume of sample for accurate diagnosis. MRI is the radiologic modality of choice, but it may still be misleading.

Patients and Methods:

96 patients with pathologically proven brainstem glioma included in the study. Two expert radiologists reviewed the brain MRI of these patients independently and described the findings. The radiologic manifestations were compared with the pathologic grading using Fuzzy logistic regression model.

Results:

Among 96 patients included in the study, 34 (35.4%) were female and the rest (64.6%) males. There was no significant difference in tumor grading between two genders (P= 0.7). Their mean age was 24.6 years. Tumor grading was not affected by the patient age (P= 0.54). 69.8% of tumors were originated from midbrain, 87.5% involved pons, and 17.7% revealed medullary involvement. Pontine involvement was correlated with low aggressiveness of the glioma. 30% of low grade tumors revealed symmetric growth, while it was seen in just 2.1% of high grade gliomas (P= 0.009). Well-defined margin was noted in 39.6% of low grade tumors versus 6.3% of high grade ones (P= 0.07). 53.1% of low grade and 2.1% of high grade tumors had homogenous appearance. 74 gliomas (77.1%) were hypersignal in T2WI, 17 tumors (17.2%) revealed necrotic foci, and 33 of them (34.3%) were heterogeneously enhanced after contrast administration; All of these three features were significantly more common in high grade tumors. Just one glioma had hemorrhagic foci which was of high grade nature.

Conclusion:

Pontine involvement, symmetric growth, homogeneous appearance, well-defined borders, low- or iso-signal intensity in T2WI, and no or minimal enhancement are in favor of low grade tumors. Whereas necrosis, prominent edema, and heterogeneous enhancement are indicative for more aggressive nature of glioma.

• Paper ID: 155

THE IMPORTANCE OF APPARENT DIFFUSION COEFFICIENT (ADC) MAPS IN DIAGNOSIS OF EARLY CEREBRAL ISCHEMIA

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Rapid and precise identification of tissue that will proceed to infarction has been one of the major challenges of stroke research. The ability to identify tissue at risk of infarction would have great impact on treatment decisions.

By helping Diffusion and Perfusion weighted imaging patients with potentially salvageable tissue, as defined by the diffusion/perfusion (DWI/PWI) mismatch, can be delineated.

The evolution of tissue to infarction is a dynamic process dependent on many physiological factors, including fluctuations in blood pressure, embolic fragmentation, and reperfusion. So these MRI techniques alone do not identify which regions of the penumbra are truly at risk of infarction.

Evidence from multiple previous studies indicate that Apparent Diffusion Coefficient (ADC) ratios were significantly reduced in regions of the penumbra at risk of infarction and the mean ADC ratios were typically 0.75 to 0.90.

Our purpose in this review article is investigating the role of ADC maps in patients with acute ischemic stroke. This is demonstrated in the most important group of acute stroke patients, those presenting less than 6 hours from onset (the accepted time window during which most therapy option might still be available to the treating clinician).

• Paper ID: 164

IS THERE A RELATION BETWEEN SIZE OF CONCHA BULLOSA AND SEVERITY OF PARANASAL SINUSES INFLAMMATION?

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Background:

Paranasal sinuses inflammation is a common and serious problem in the community. Recent developments have shown that nasal septal deviation and concha bullosa can be the underlying sinus inflammation. The aim of this study was to determine the frequency of nasal septal deviation and concha bullosa and its association with sinus inflammation in patients.

Materials & Methods:

In this descriptive-analytical and cross-sectional study, 106 patients with nasal septal deviation and concha bullosa and sinus inflammatory disease in 2014 were studied. After recording the clinical symptoms, age and sex of the patients in the check list, all patients underwent of paranasal sinuses CT scans. Based on CT scan, the frequency of septal deviation, concha bullosa and its variants, sinus inflammation and its severity was determined. Collected data were analyzed by using SPSS-21 statistical software and logistic regression analysis.

Results:

The mean age of the patients was 30.7±5.2 years and 53.8% of them were males and 61.3% were females. 61.3% of patients had concha bullosa, 73.6% nasal septal deviation and 54.9% had inflammation of the paranasal sinuses. Concha bullosa was 63.1% unilateral and 36.9% bilaterally. The most common pattern of sinus involvement in the CT scan, sinus opacification in one or more of the sinuses (42.9%). The most common symptom was headache (73%). A significant association between sinus inflammation and nasal septal deviation, concha bullosa, unilateral concha or large bilateral concha ($P < 0.05$). Deviation of the nasal septum was significantly associated with unilateral concha bullosa (P=0.0002). There was no significant relation between severity of sinusitis and size of concha bullosa.

Discussion & Conclusion:

The results of this study showed that the frequency of concha bullosa and nasal septal deviation was high and was significantly associated with sinus inflammation. There was no significant relation between severity of sinusitis and size of concha bullosa.

• Paper ID: 194

BRAIN MRI FINDINGS IN PATIENTS WITH SEIZURE

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Seizure is one of the most common serious neurological disorder that creates important responsibility for the community. The incidence in the general population is 45 in 100000 and it is likely to occur about 3% during life time. It is a temporary disturbance in brain function that occurs due to abnormal neuronal discharges.
According to the prevalence and involved age range, misdiagnosis may lead to wrong decisions about treatment, impose additional fees and mental harm to the patient. Finding the best way and the most cost effective method of detecting the cause seizures in patients is a great concern for physicians. This study assesses the ability of MRI in diagnosis of probable brain lesions.

Method:

This research was done in 1393 on patients who had been admitted with firs time seizures in neurology clinic. For each patient brain MRI with seizure detection protocol was requested and its results and other necessary information was registered in checklists.

Results:

According to the study that included 62 patients with mean age of 22/7years, there is a meaningful relationship between positive of seizures , type of seizures in each patient and impaired neurological

examination with MRI findings, but no meaningful relationship between age and gender of patients and MRI findings was noticed.

Conclusion:

MRI has almost acceptable role for diagnosis of probable brain lesions.

• **Paper ID: 216**

THE ABILITY OF MRS IN BRAIN LESION

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The MRS open new window to diagnose a follow up treatment for many malignant brain lesion: we talk about the ability of single and multi-voxel MR Spectroscopy for diagnosis of benign or malignant lesion. We compare the result of stereiotaxic biopsy with MR Spectroscopic finding in our study for six years. with discuss about the performance and technique with detail in presentation.

• **Paper ID: 234**

BILATERAL ABNORMALITIES OF THE BASAL GANGLIA AND THALAMI (CASE SERIES REVIEW)

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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.

• **Paper ID: 235**

CEREBRAL VENOUS THROMBOSIS: THE SPECTRUM OF FINDINGS IN MRI

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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.

• Paper ID: 19

TRIPLE-RULE-OUT CT ANGIOGRAPHY, BASIC CONCEPTS AND TECHNICAL CONSIDERATIONS

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The purpose of this educational presentation is reviewing the clinical indications and diagnostic value of triple R/o CT in patients with acute chest pain with especial focus on technical considerations including injection protocols and image acquisition. Image interpretation , radiation dose and also related cases are discussed.

• Paper ID: 40

ONCOLOGIC THERAPY AND HEART COMPLICATION

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AS survival rates increased in childhood and adult with malignancies. It is important to know the Recurrence and complication that may occur after treatment with onchologic medication and Therapeutic radiation.

The most common cardiothoxic side effect is from anthracycline drug that interfere with ejection fraction, which may result several disease as Dilated cardiomyopathy.
Arrhythmia.
Myocarditis.
And pericarditis.
The pathophysiology of antracycline cardiothoxicity remains in controversial ,but its toxic effects are likely secondary to the induction of free radical chain reaction and cells damages,
To cells membranes of myocardiocytes ,which lead to cell death and fibrosis.
Myocardiocytes are susceptible to apoptosis because they are post mitotic and lack they enzymes
That break down free radicals.
Anthracyclines also inhibit DNA repair enzymes block message that control myocardial contractility.
Radiation therapy can also lead to cardiotoxicity when heart or pericardium included in Radiation port. The major cardiovascular side effects of radiation therapy include:
Pericardial disease.
Coronary artery disease.
Valvular disease.
Cardiomyopathy.
Many of these side effects are asymptomatic until late in the course of the disease.
The standard imaging to diagnose these complication include radiography, Echocardiography, CT, and MR imging.MR imaging is the best way to depict abnormality and show effect of radiation.

• Paper ID: 65

ORBITAL TUMORS

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Differential

V: cavernous hemangioma (venous malformation), capillary hemangioma, lymphangioma, venous varix, AVM, hematic cyst.
I: sinusitis (including invasive fungal), cavernous sinus thrombosis, osteomyelitis of orbital bones, infection of ocular adnexa, phlebitis of facial veins, dental infections, Whipple's disease, angiolymphoid hyperplasia with eosinophilia.
T: hematoma, carotid cavernous fistula, foreign body.
A: polyarteritisnodosa, orbital myositis, Wegener granulomatosis
M: thyroid ophthalmopathy.
I: idiopathic orbital inflammatory disease (pseudotumor), sarcoidosis, amyloidosis, sickle cell anemia.
N: schwannoma, neurofibroma, meningioma, lymphoma, histiocytosis X [Letterer-Siwe], leukemia, metastatic carcinoma, retinoblastoma, rhabdomyosarcoma, fibrous dysplasia, paranasal sinus tumors, lacrimal gland tumors.
C: dermoid cysts, teratoma.

Gardner's Syndrome

- Familial adenomatous polyposis combined with extraintestinal manifestations of sebacous cysts, osteomas (particularly of the mandible skull and long bones), and desmoid tumors. The mutation arises in the adenomatous polyposis coli (APC) 5q gene.

Cavernous Hemangioma

- Hamartomas contained within a fibrous capsule with large vascular channels, but no definite feeding vessels.
- Most common benign tumor.
- Peak between 20-40 years.
- Slow growing, but easily enlarge with stress proptosis.
- CT – sharp, well circuscribed, dense mass.
- Intra and extraconal.

Schwannoma

- Arising from any nerve braches within the orbit – most common V1.
- Account for 1-6% of all orbital masses.
- Slow growing, well circumscribed, ovid and homogenous.
- Antoni A (spindle shaped cells), Antoni B (foamy cells).

Lymphoma

- After inflammation and hemangioma this is the third most common cause of proptosis.
- Usually insidious onset, typically presents with proptosis, ptosis, diplopia, motility disorders.
- Of all orbital sites, the lacrimal gland is the most common site involved.
- Commonly will mold itself along the globe margin rather than invade. Bilateral occurrence is common.

Rhabdomyosarcoma

- Most common orbital tumor in children.
- 90% of cases occur before age 16.
- Rapidly progressive but painless exophthalmos, proptosis, and ptosis.
- Arises from primativemesenchymal elements into 4 different types: embryonal, pleomorphic, alveolar (worst prognosis), differentiated (best prognosis).

Dermoid Cyst

- Represent the most common congenital lesion of the orbit (1/3 of all childhood orbital tumors).
- Arise as a sequestration of ectoderm within the suture lines of the orbital bones.
- Commonly observed as a painless mass in the superiotemporal area at the lateral portion of the eyebrow.
  Classified into juxtasutural, sutural and soft tissue types.

Carotid Cavernous Fistula

- Acute or delayed onset of post-traumatic diplopia with proptosis and chemosis.

- Venous flow reversal.
- Orbital presentation is secondary to prominent anterior venous drainage.

Orbital Varix

- May be either congenital or acquired (thrombosis is common).
- Not neoplastic, but simple focal dilation that may be enlarged with increased venous pressure.
- May be associated with intraorbital/ intracranial AVM or simply result from wall weakness.

Capillary Hemangioma

- One third are diagnosed at birth and over 90% are visible by 6 months of age.
- Bony erosion is not observed, although expansion of the walls is possible.
- Telangiectatic vessels typical create strawberry appearance.
- Frequently produce globe displacement and enlarge with crying.

Metastasis to the Orbit

- Accounts for approximately 10% of all orbital neoplasms. (5% hematogenous, 5% from adjacent structures).
- What is the most common tumor to spread to the orbit?
- Breast Cancer (42%).
- Lung Carcinoma (11%).
- Unknown Primary Cancer (11%).
- Prostate (8%).
- Melanoma (5%). Average survival after dx is a dismal 9 months.

In the pediatric population metastatic disease is far less common.
Metastatic neuroblastoma is second only to primary retinoblastoma as the most frequent malignant tumor in childhood.

• Paper ID: 189

ADULT SACROCOCCYGEAL TERATOMA (SCT) COEXISTING WITH SACRAL RIB: A CASE REPORT AND REVIEW THE LITERATURE

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Sacrococcygeal teratoma (SCT) is a common tumor in infant but rare in adults. Adult's teratomas are usually benign and intra- pelvic. Sacral rib is a rare congenital anomaly arising from sacrum and penetrating in pelvic soft tissues. It is usually an incidental radiographic finding including cortex and medulla structures with or without pseudo-articulation. Here, we report a rare case of adult saccroccocygeal teratoma co-exciting with sacral rib and reviewed literature. It is interesting finding out sacral rib with normal rib anatomy because previous studies majorly reported phalanx-like structures. To the best of our knowledge, this is the first report of SCT and sacral rib simultaneously.

• Paper ID: 218

WHOLE BODY MRI BENEFIT & PITFALL

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Whole-body MRI is a noninvasive screening technique that acquires images of the entire body in the coronal plane only using fast magnetic resonance pulse sequences
Whole-body MRI is a powerful method for detection and staging of tumor especially with D.W sequence and can compare to FDG of PET CT .
Whole-body MRI is particularly beneficial for children because there is no exposure to ionizing radiation, making it an ideal imaging modality for serial imaging surveillance.
we discuss about the technique & ability and pitfall of this technique for patient referee to our department for staging or detection of Occult cancer.
with sincerely yours

• **Paper ID: 21**

REVIEW OF COMPONENTS OF THE RADIOLOGY REPORT

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The clinical report is an essential part of every imaging procedure. A radiology report documents the study's important components and the interpreting physician's analysis of the findings; it communicates information to the referring physicians, records that information for future use, and serves as the legal record of the episode of care.
The primary goal of the radiology report is to communicate the imaging procedure's results to the referring physician and/or the patient. The report must be accurate, easily understood, and appropriately thorough. Reports should employ clear, unambiguous language. In this paper we review the components of the radiology report.

• **Paper ID: 35**

LIVER STIFFNESS MEASUREMENT BY POINT SHEAR WAVE ELASTOGRAPHY IN CHRONIC LIVER DISEASES

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Liver fibrosis in the past 20 years' changes from a pure laboratory discipline to practical problem for hepatologists because liver fibrosis and cirrhosis can be reversible and effective antifibrotic therapy will significantly alter the management and prognosis of patients. Liver fibrosis assessment can be done by invasive and noninvasive methods. Liver biopsy is an invasive method and has complications and high interobserver variability. Non-invasive methods include serum biomarkers, MR elastogrphy and ultrasound-based electrography techniques. In this paper we decide to explain different kinds of ultrasound-based electrography techniques in liver fibrosis assessment especially the newest and recently developed technique named point shear wave elastography.

• **Paper ID: 39**

REVIEW OF DIAGNOSTIC ERRORS IN RADIOLOGY

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Radiology is one of the specialties most liable to claims of medical negligence. The etiology of radiological error is multi-factorial. Errors fall into recurrent patterns. Errors arise from poor technique, failures of perception, lack of knowledge and misjudgments. The work of diagnostic radiology consists of the complete detection of all abnormalities in an imaging examination and their accurate diagnosis. Every radiologist should understand the sources of error in diagnostic radiology as well as the elements of negligence that form the basis of malpractice litigation. Error traps need to be uncovered and highlighted, in order to prevent repetition of the same mistakes.
This article focuses on four main reasons why radiologists are sued: observer errors, errors in interpretation, failure to suggest the next appropriate procedure and failure to communicate in a timely and clinically appropriate manner.

• **Paper ID: 45**

ASSESSMENT OF READING ROOM REQUIREMENTS IN DIGITAL RADIOLOGY AND EVALUATION OF READING ROOMS IN NAMAZI,

FAGHIHI AND CHAMRAN HOSPITALS OF SHIRAZ- IRAN.

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Background and Objectives:

Computer workstations have mainly replaced conventional light boxes in radiology reading rooms creating a dramatic change in radiologists' work environment. With these new equipments, come new ergonomics concerns that need to be addressed in order to maintain a productive workspace and prevent work-related musculoskeletal disorders. Therefore, we are encouraged to investigate reading room ergonomics in our major academic hospitals comparing with the recommended guidelines.

Methods:

Best practice of radiology reading room design was defined by literature review and guidelines published by American College of Radiology. Reading rooms of three academic hospitals, Namazi, Faghihi and Chamran, affiliated to Shiraz University of medical sciences were evaluated and results were compared with suggested plans.

Findings:

Reading rooms in Faghihi hospital had the most compliance with the suggested guidelines followed by reading rooms in Chamran hospital. Namazi hospital represented less conformity with guidelines especially for CT reporting rooms.

Conclusion:

Paying close attention to reading room ergonomics is a necessity of modern radiology along with equipment selection. Ambient light should be kept between 20-40 lux and the source for monitor glare should be eliminated by providing non-reflective walls and properly covered windows. Ambient noise should be kept to minimum by relocating the rooms to a more quite area in hospitals and using sound absorbing materials in room configuration. Adjustable air-conditioning system to control room temperature is substantial to decrease fatigue since radiologists spend plenty of time in reading rooms. Chairs and tables should be ergonomically designed to prevent short term and long term adverse effects.

• Paper ID: 140

THE CHARACTERIZATION OF FOCAL LIVER LESIONS ON ULTRASOUND BY SHEARWAVE ELASTOGRAPHY

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A number of pathological processes are accompanied by changes in tissue elasticity. Palpation is still commonly used during surgery for the detection and localization of liver tumors . As a result, research in the use of ultrasound to estimate tissue stiffness has been an active area of research. Shearwave elastography could be useful to differentiate between focal nodular hyperplasia (FNH) from adenoma, focal fatty sparing (FFS) from metastases, HCC from cholangiocarcinoma and so on.
In this paper we decide to explain the usefulness and limitations of shearwave elastography in characterization of focal liver lesions and how it could aid in the characterization of lesions, when uncertainty remains with other imaging techniques.

• Paper ID: 169

SMARTPHONE OR MOBILE PHONE APPLICATION FOR RADIOLOGIC IMAGES

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Using smart phones as a computer or laptop able us to bring radiologic images for all population.

After arranging 12000 images in my personal search machine www.radioogle.ir a team from Sharif technical university request me for a mobile phone application to share my images with general population.
Material and method:
In the first step we release 3000 selected images with a low price in the world. Scientific language is English because there are billions of people in the word instead of 70-80 million Persian language living in Iran or some more in central Asia.
With low price we can sale 100,000 program or information during a night.
Radiologic informatics and images are categorized in brain, vascular, neck, spine, anatomy, physics, MSK, abdomen and pelvis, ENT, orbit and etc.
All our images are saved and collected my daily works in 33 years since 1982 till 2015.

• **Paper ID: 170**

PAREIDOLIA IN GI RADIOLOGY AND IMAGING

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Pareidolia is a psychological phenomenon involving a vague random stimulus often an image or sound being received as significant.
This is a visual or hearing hallucination or imagination but my purpose is not about psychological problem in radiologists mind but an artistic imagination and fake or pseudo image looks like a true image of animal or human face or other things.

Methods:

This is the first time innovation of using pareidolia in imaging and radiology using films or digital images in PACS or radiologic imaging monitors.
Original images are not handled or changed but after or during film readings we use net searches for finding a similar picture using special software to find the right similarities or picturing in our minds.
All radiologic Ultra sonography and specially CT and MRI images are used.

Results:

Radiologist should be an artist and doctor of doctors because her or his imagination should be 3D or even 4D.
I found images looking like a smoking beard man in pelvic floor (printed in IGR, volume 3,Number 2,winter of year 2006), Ant with helmet in axial rectum and pelvic floor, baby clown in coronal pelvic floor, crying baby in axial perineal image, fox of Pinocchio in pelvic floor, a dog face with a hat in pelvic floor, happy human face in stomach, a king in perineum, a valentine sign in bowel loop, skye terrier dog face in pelvic floor, foot palm in ileal looks, a devil face in ileum, pirate face in perineum, dog in formal dress in perineum, monkey face in hiatal hernia and Wilma flinstone of flinstone family cartoon in mesentery.

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• **Paper ID: 173**

SURVEY OF REPETITION'S ABUNDANCE OF RADIOGRAPHY'S IMAGES AND RELATED INGREDIENTS OF IT IN BESAT AND TOHID HOSPITALS OF SANANDAJ ON 1393.

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Abstract:

Survey of repetition's abundance and frequency cause of radiography's stereotype is write off one of basic ingredients in valuation of radiation worker's function and equipment's of every radiology's service. Checking the repetitive images is the sign of

wrong sources and ranges that can be improve. repetitive film cause to imposition of additional expense and growth of unnecessary radiation dose to patients. as for the different statistics of repetitive stereotypes and unconsciousness of its condition in sanandaj radiology's centers. This study designed and accomplished in elected hospitals of this city on 1393.

Method of survey:

This experiment is descriptive_analytic type of sectional practice in tohid and besat hospitals of sanandaj during 12 months.their reason distinguished and registered in related forms, by collection and research of unacceptable and unqualified stereotypes,and data with statistics's software checked and the measure of stereotype's repetition analyzed by break down of reason,body's area and hospital's type.

Detections:

During the study,totally 5574 radiography operated and checked ,abundance of repetitive stereotypes was 138 case that 2.48 percent of them formed from entire stereotypes. the most percents of repetition related to tohid hospital with 3.20 percents and the top of abondance's repetition aspect of reason was relate to KUB with 11.87 percent. and the most percent of repetition was 50.72 among students,53.62 among male genus .and the most one was among patients between the age of 46_60 with 31.88 percent.

Conclusion:

This Survey shows that the repetition's percent of radiography's images is much acceptable rather than similar researches in governmental hospitals of sanandaj city.by adoption of suitable thoughts include personnel teaching that enjoy low experience,ordered qualitive control of x_ray's born system, calibration of ordered equipments,complete supervision on work of tyro students and by undertaking of new radiography's equipment, has great influence on reduction repetitive stereotypes of abundance and increasing the efficiency of radiology's centers.

• Paper ID: 174

REVIEW ARTICLE OF THE STUDIES ON THE RAMSAR

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Objective:

Ramsar in northern Iran is among the world well-Known areas with highest rate of natural radiation .annual exposure rates in areas with elevated levels of natural radiation in ramsar are up to 260 mGy y-1 and average exposure rates about 10 mGy y-1 for a population of about 2000 inhabitants (1) .Natural radiation rates in these areas two hundred times higher than normal background area (2).In some cases, the inhabitants of these areas receive doses much higher than the current ICRP-60 dose limit of 20 mSv y-1 (3)

Materials and Methods:

A search was performed using keywords "Ramsar". The related articles were searched in databases including pubmed and science direct.

Result:

City of Ramsar is an HNLRA, and is a tourist attraction mainly due to its hot spas in Iran . Recent study has shown that the amount of expression of three tumor markers known as carcinoembryonic antigen (CEA), prostate-specific antigen (PSA) and carcino antigen 19-9 (CA19-9) in blood serum of 40 local men of Ramsar was surveyed and compared to 40 men from the city of Noshahr there was a significant difference in the amounts of PSA and CA19-9 markers between the two groups (4). The results obtained from Masoomi et al in 2006 a Strong positive correlation of DNA damage in the cell nucleus is the root of Ramsar . the results displayed high genotoxicity of radioactively contaminated soils. the linear increase in the DNA damage showed that activation of repair enzymes is not triggered by exposure to radiation in HBRA (5). The recent study

performed by Mortazavi et al in2005 a notable radioadaptive response in the residents of high-level natural radiation areas. Results showed that five out of seven inhabitants exhibited a decrease in induced chromosomal aberrations following exposure to a 1.5 Gy challenge dose of gamma radiation(6).Studies on the long- duration effects of high level natural radioactivity on some immunological and cytogenetical parameters, in the Ramsar inhabitants are showed incidence of CD69 expression on TCD4+ stimulated cells and a significant increase of total serum IgE, and also higher incidence of stable and unstable chromosomal aberrations in the HLNRA group compared to the control group with normal background radiation(7). The results obtained from Mortazavi et al in 2014that mean birth weight of the newborns to mothers from HBRAswas 2820.3 ± 654.2 g. and that of the newborns to the mothers from NBRAswas 2925.2 ± 543.2 g. The distinction among the mean weight of the newborns of the mothers from HBRAs and NBRAs was significant. the birth weight may be associated with the ratel of background radiation in the mothers livingarea before and during pregnancy (8).Data from the Ramsar Health Network show that both lung cancer frequency and adjusted lung cancer frequency in one district with the highest incorporated rates of external radiation and radon concentration are lower than those of the other seven districts .It can be derived that lung cancer frequency may indicated a negative relation with natural radon concentration(1).The results of study performed by ShakeriManesh et al in 2015 suggest that exposure to low dosegamma radiation, 50 mGy, at a dose rate as low as 1.4 mGy/h can induce an adaptive response in MCF-10A cells manifested asreduced level of mutation, however only when the challenging doseis 1000 and not 100 mGy. Such response is absent at the survival rate in MCF-10A cell. Moreover, in general, there is no sign of a dose rate effect at the rate of survival and mutation when cells were exposed to a single dose manipulate at the different dose rates (9).

Discussion:

According to the many investigation showed that existence of radiation background absolutely will effect on biological factors such as chromosomal aberrations , expression of tumor markers, DNA damage in the roots of plants , immunological and cytogenetical parameters, birth weight of the newborns, lung cancer. complementary radioepidemiological investigates are necessary to assess the health subsequences of these effects.

• Paper ID: 180

3D PRINTING TECHNOLOGY IN RADIOLOGY

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Three dimensional printing is a rather new technology used in the industry.
In the recent years, this technology is being used in medicine more than before. The imaging modalities (mostly CT scan and MRI) are used as the source of information to produce 3D models.
Applications of the technology include making of educational models (both anatomic and pathologic), pre-surgical planning, fitting of the surgical prostheses, and implantable custom designed implants.
During the past year, the department of radiology in Mashhad University of Medical Sciences has started to use this technology and offer such services to the medical professionals.
In this review, the technology and its applications are discussed. Then some examples of the models will be presented which have changed the surgeon's decision about treatment options.

• Paper ID: 181

RADIOLOGIC REPORT TEXTURE

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1. History or clinical information is an important in future medico legal, method of imaging, result and treatment management.
2. Comparison with previous examinations: this section is important on interpretation and recommendations by radiologists.

3. Technic of examination and need to contrast with radiologist's order. Imaging parameters like MR-sequences, X-Ray dose.
4. Examination quality contain, dose of contrast material, X-Ray penetration and artifacts like in patients' movements.
5. Findings contain description of findings in images like anatomical changes, signal or density changes, shape, size and lesion margins and enhancement patterns also blood flow.
6. Addressing the clinical question; clinical questions should be considering in mind with a clear answer by radiologist, if not the reasons for this should be clearly stated. Diagnosis should be made after differential diagnosis. The best result is a relevant and good pathophysiologic diagnosis. By the best report radiologist cannot make a net diagnosis (100% Negative).
7. Conclusion or final result or impression: should be provide by a compact and clinically related diagnosis.
8. Recommendations: this is for further testing so, treatments and referrals.

Results:

1- radiologic report should be started from clinical findings to a clinical pathophysiologic diagnosis and treatment.
2- a good radiologic diagnosis means a good treatment result.
3- Radiologic report is not specific for 100% clinical wishes. For example, Ultra sound for renal stone is less specific than CT scan, but CT scan is 100% sensitive and specific for this case.
4- length of report (writing or reading) should be used to rapid reading of reports by referrers.
5- language of reporting: better in scientific way just for physicians.
6- clarity and readability of report with short sentences and free text, low confidence modifiers and possibility represents.

Paper ID: 224

INTER-OBSERVER AND INTRA-OBSERVER AGREEMENT IN RADIOLOGICAL EVALUATION OF CHEST CT SCAN RADIOLOGY REPORTS

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Background:

Radiological assessment of chest CT scan is an essential step in management and follow-up of patients while inter- and intra-observer variations limit the accuracy of these assessments.

Objectives:

The aim of this study was to assess the inter- and intra-observer reproducibility of radiological assessment of chest CT scans .

Materials and Methods:

The anonymous chest CT scans images of 10 patients randomly assigned to 20 radiologist Then, the images were randomly reassigned to the radiologists for the second time in a way that each images would be evaluated by two different radiologists. Images were revisited by their first evaluator after two months.

Results:

Inter-observer agreement of the radiology reports based on RSNA system was acceptable for Lungs and large airways and Pleura , but not for mediastinum and hila.

• **Paper ID: 7**

PEDIATRIC KNEE MRI

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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.

• **Paper ID: 50**

INTERVENTIONS TO REDUCE ANXIETY, DISTRESS, AND THE NEED FOR SEDATION IN PEDIATRIC PATIENTS UNDERGOING MAGNETIC RESONANCE IMAGING

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Magnetic Resonance Imaging (MRI) is associated with high levels of anxiety and claustrophobia in patients. This can affect the quality of imaging, as well as increasing examination time, overall leading to reduced diagnostic accuracy for radiologists. MRI is of particular use in pediatric populations because of the lack of ionizing radiation and the superior temporal and spatial resolution of images compared with other modalities. In children particularly, anxiety and distress during MRI are common. Although, Anxiolytics have long been used in order to prevent and reduce anxiety and claustrophobia during MRI examination, they can lead to adverse clinical reactions and often require additional time due to patient preparation and monitoring. Even though, this is the last resort for anxiety reduction, psychological strategies must first be considered. Traditionally, anxiety reduction strategies such as relaxation techniques and hypnotherapy have been used for such purpose. Modern techniques to overcome such issue include cognitive strategies such as Cognitive Behavioral Therapy, mock MRI and a few other methods, which shall be discussed in the presentation.

• **Paper ID: 57**

THE ROLE OF IMAGING IN STAGING OF PEDIATRIC LIVER TUMORS (PRETEXT SYSTEM)

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Malignant tumors of the liver comprise a relatively small percent of the total number of pediatric malignancies. Liver tumors constitute only 1-4% of all solid tumors in children. Two-thirds of these are malignant with hepatoblastoma being the most common. However, these tumors can be a significant cause of morbidity and mortality, and there have been significant therapeutic advances during the past few decades through advances in systemic therapy and surgical treatment. Even in patients with advanced local disease, complete resection is now a possibility because of improvements in liver transplantation techniques. Imaging plays a crucial role in the management of a child with a suspected liver tumor. We will discuss the role of imaging in staging of common malignant tumors of the liver in children.

• **Paper ID: 199**

CHILDHOOD GIANT OMENTAL AND MESENTERIC LIPOMA

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Omental and mesenteric lipomas are very rare benign lesions of mature adipose tissue. They are well-defined, non-invasive and encapsulated masses that can be discovered in asymptomatic patients or may cause variable nonspecific symptoms depending on their size and location.
The omental and mesenteric lipoma has confusing features in ultrasound, however computed tomography (CT) and magnetic resonance (MR) imaging can well characterize and demarcate these lesions.
Though few cases of mesenteric and omental lipomas have been reported in the literature, but due to its large size and childhood presentation, the case we present, can be one of the largest childhood omental and mesenteric lipomas ever reported.
A six-year-old girl presented with slowly progressing abdominal distension and repeated dull abdominal pain for last four years. Abdominal and pelvic CT examination revealed a huge (28cm x 24cm x 10cm and 4 Kg weight) mesenteric and omental lipoma that was resected surgically without any complications.

Paper ID: 200

RADIOGRAPHIC EVALUATION OF UPPER GASTROINTESTINAL TRACT CONGENITAL ANOMALIES IN NEONATES AND INFANTS; TECHNIQUE AND INTERPRETATION

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Objectives:

- To describe the technique of performing conventional contrast studies for suspected upper gastrointestinal tract (GIT) anomalies in infants and neonates.
- To illustrate the conventional radiographic manifestation of common upper GIT anomalies

Background:

Upper GIT anomalies are not uncommon congenital abnormalities.
Affected individuals usually undergo plain radiography and upper GIT contrast studies as the first line imaging investigations mostly in the neonate or infant period.
Fortunately, when appropriately performed and interpreted, these conventional techniques are usually enough for diagnosis and planning surgical treatment.
However modern imaging modalities can provide more precise anatomic details and can be nessecery in specific conditions, but in this article we will focus on the conventional radiographic technique and its findings.

Findings and procedure details:

The radiographically detectable upper GIT anomalies consist of developmental lesions affecting the esophagus, stomach, duodenum and proximal small bowels. The common entities are esophageal atresia (with or without tracheo-esophageal fistula), esophageal webs, vascular rings, gastric outlet atresia/web, duodenal atresia/stenosis, duodenal web, annular pancreas, intestinal malrotation (with or without midgut volvulus) and duplication anomalies.
Radiation exposure and contrast material aspiration are the main concerns regarding the conventional radiographic investigations, which can be minimized with employment of advanced radiographic/fluoroscopic machines, appropriate contrast material, and skilled examiner.

Conclusion:

Upper GIT congenital anomalies are common congenital abnormalities which can be well diagnosed by the conventional radiographic investigations when appropriately performed and interpreted. With employment of advanced machines, appropriate contrast material and skilled examiner, the concern of radiation exposure and risk of contrast aspiration can be considerably minimized.

• Paper ID: 4

USE OF CONTRAST MEDIA, SAFETY AND PERCUSSIONS

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Millions of radiological examinations assisted by intravascular contrast media are conducted each year. Various forms of iodinate and gadolinium-based contrast media have been used to improve medical imaging.
Although it is generally considered to be safe in medical imaging, use of contrast agent occasionally result in adverse events, varying from minor physiological disturbances to rare severe life-threatening situations. Many radiologists do not feel well prepared in handing these incidents, particularly the rare severe reactions. Knowledge and familiarity of radiologists are essential for detection of high risk patients and those who need to receive premedication.
Also radiologists should be familiar with potential renal events, including contrast-induced nephropathy due to administration of iodinate contrast agents and NSF secondary to use of gadolinium-based agents, and with strategies to lower their incidence.
The correct knowledge for safe use of contrast media in general and also during pregnancy and nursing and key concepts that all radiologists should know are summarized in this review.

• Paper ID: 14

PREFRONTAL SPACE RATIO (PFSR): A NOVEL MARKER IN SECOND-TRIMESTER SCREENING FOR TRISOMY 21

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Objective:

To investigate the value of prefrontal space ratio (PFSR) as a novel marker in second-trimester screening for trisomy 21 in a systematic review.

Background:

Ultrasonographic screening for aneuploidy relies on the search for certain structural abnormalities and soft markers. Soft markers are variations in normal anatomy that are more common in aneuploid fetuses than euploid ones but unlikely to be clinically significant and they are often transient.
Some differences have been well determined in the facial features between euploid and aneuploid fetuses. The most remarkable facial markers with acceptable detection rates are the nasal bone and thickness of prenasal skin.
Prefrontal space ratio (PFSR) is a novel marker that is based on two facial characteristics in trisomy 21 which are dorsal displacement of the anterior edge of the maxilla and thickening of the prenasal skin.

Patients and Methods:

The PubMed search engine and four other databases were searched for the keywords "Prefrontal space ratio", "soft marker", "Second-trimester screening", "Trisomy 21", "Down syndrome" and related terms in articles published between January 2010 and September 2015, without language restrictions. Reference list of retrieved articles were also searched. Study data were independently extracted by the two reviewers and disagreement was resolved by consensus. The study quality was assessed by using items from the Quality Assessment of Diagnostic Accuracy Studies tool. Meta-analysis was done on the mean values and the detection rate (DR) of the test at a given false-positive rate (FPR) using random effects modeling.

Results:

Sonek et al. first introduced this marker in an article published in 2012. They retrospectively reconstructed precise midline view of the fetal face by the stored three-dimensional (3D) volumes of fetal faces from 26 trisomy 21 fetuses and 90 euploid fetuses between 15 and 25 weeks of gestation. The mandibulomaxillary (MM) line was drawn between the anterior aspect of the fetal chin and the maxilla and extended in front of the fetal forehead. The PFSR was determined by dividing the following two distances: leading edge of skull to prenasal skin (d1) and prenasal skin to the point where the MM line is intercepted (d2) as shown in figure 1. The PFSR (d2/d1) in trisomy 21 fetuses (mean= 0.36; range: 0-0.81) was significantly lower than in euploid fetuses (mean= 1.48; range: 0.85-2.95) (P< 0.001). There was no significant association between PFSR and gestational age in either trisomy 21 or euploid fetuses.
Yazdi et al. conducted a similar retrospective study published in March 2013 on 91 cases with trisomy 21 and 279 euploid pregnancies between 15 and 40 weeks. PFSR was independent of maternal and gestational age. In the euploid group, the mean PFSR was 0.97±0.29. In fetuses with trisomy 21, the mean PFSR was 0.2±0.38 (P< 0.0001). For 3% and 5% false-positive rates the detection rates were 77% and 83%, respectively.
Chaveeva and colleagues published a same retrospective survey in May 2013. The difference from two previous studies was that they measured the vertical distance between the inferior most end of the skull in the forehead and the skin (D1) and the distance between the skull and the MM line (D2) to calculate PFSR (D1/D2). They included 240 euploid and 45 trisomy 21 pregnancies at 16-24 weeks of gestation. The mean PFSR was 0.463±0.039 in euploid and 0.753±0.136 in trisomy 21 fetuses (P< 0.0001). The detection rate was 100% at a false-positive rate of 5%.

Vos et al. published an article in February 2015 evaluating multiple facial parameters in the second and third trimester in 159 fetuses with Down syndrome and 14-38 weeks of gestation. PFSR was measured in 131 of them and the mean value was 0.34±0.31. The detection rate was 79.9% and it was independent of gestational age.
All studies were retrospective and of high quality. The between study heterogeneity was low. The data made homogeneous by correction of Chaveeva study results in the manner of other ones with a little difference acceptance. As mentioned previously PFSR is independent of gestational age so its heterogeneity in these studies could not confound the analysis. Overall sample volume was 293 fetuses with trisomy 21 and 609 euploid fetuses. The calculated pooled mean PFSR was 0.302 and 1.124 in trisomy 21 and euploid fetuses, respectively. It was significantly lower in trisomy 21 fetuses compared to euploid ones (P< 0.0001). The pooled detection rate (DR) was 84.3% at a false-positive rate (FPR) of 5%.

Conclusion:

The PFSR was found to be significantly smaller in fetuses with trisomy 21 than in euploid fetuses with a high reproducibility and independency of gestational age. It appears to be a simple and effective marker in second trimester screening for trisomy 21 with an acceptable detection rate and false-positive rate.

• **Paper ID: 15**

ARE PLACENTAL LOCATION AND FETAL GENDER RELATED?

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Objectives:

Prenatal gender discernment is done for gender-linked diseases and parental curiosity, so early and accurate determination is important. In Ultrasound examination factors such as Fetal position and oligohydramnios can obscure gender determination and some abnormalities of the phallus can make gender determination difficult. It is suggested that Placental Location and Fetal Gender are related. We conducted a study to examine this relationship.
Patients and Methods: In a general hospital, a single board-certified radiologist performed ultrasound examination of 90 pregnant women from November 2014 to November 2015 in their first trimester and assessed the position of placenta. Women with twin pregnancy were excluded from the study. The gender of babies confirmed after birth.

Results:

In 68.9% of boys, placentas were right located (right lateral, right anterolateral, right posterolateral, right fundal) and in 31.1% of boys, placentas were left located (left lateral, left anterolateral, left posterolateral, left fundal) whereas in 40% of girls, placentas were right located and in 60% of girls, placentas were left located. Relationship between Placental Location and Fetal Gender was significant, statistically (P value equals 0.0107).

Conclusion:

Prenatal gender discernment is important and Relationship between Placental Location and Fetal Gender is significant, statistically (P value equals 0.0107). Although there is a tendency for placentas to be right sided in boys and vice versa, there has been too much overlap to differentiate reliably between boys and girls on basis of placental location in ultrasound exam in the individual mother.

• **Paper ID: 17**

GESTATIONAL TROPHOBLASTIC DISEASE (GTD) VS. RETAINED PRODUCTS OF CONCEPTION (RPC) ON IMAGING

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Distinguish Gestational trophoblastic disease (GTD) accurately from retained products of conception (RPC) can be difficult. GTD refers to abnormal proliferation of trophoblastic tissue, and encompasses a wide spectrum of diseases, including hydatidiform

mole (complete mole and partial mole), invasive mole, choriocarcinoma, placental site trophoblastic tumor and Epithelioid trophoblastic tumor. RPC is the persistence of placental and/or fetal tissue in the uterus after delivery, termination of pregnancy or abortion. Clinical differentiation between GTD and RPC is often difficult in reproductive-aged women with irregular vaginal bleeding and an elevated β-HCG titer and requires correlation of the clinical presentation, the β-HCG titer and pattern, and the sonographic appearance of the uterine contents. The appearance of GTD has described on sonography, computed tomography, magnetic resonance imaging, and angiography. RPC is the main differential diagnosis for GTD.
Familiarity with the imaging appearances of GTD and RPC is necessary to avoid misinterpretation and imaging findings are useful in limiting the differential diagnosis. To achieve this goal, this review contains educational figures to learn and review imaging appearance of GTD and RPC for general radiologists.

• **Paper ID: 24**

UTERINE ARTERY PULSATILITY INDEX (UA PI): A VALUABLE MARKER FOR PREDICTION OF SEVERE EARLY PRE-ECLAMPSIA IN THE FIRST-TRIMESTER SCREENING

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Objective:

To investigate the value of first-trimester uterine artery Doppler measurements for prediction of early (before 34 weeks) and late pre-eclampsia development in a review article.

Background:

Impaired placentation is a known etiology for early onset pre-eclampsia. By timely detection of high risk pregnancies in the 12 weeks of gestation and subsequent administration of low-dose asprin since that time, the prevalence of this complication along with intrauterine growth restriction (IUGR) or stillbirth can substantially reduce about 50%.
There are three main components for the risk classification for developing early pre-eclampsia which are maternal characteristics and history, maternal serum biomarkers including PlGF, PAPP-A and AFP, and also some biophysical markers such as maternal mean arterial blood pressure and uterine artery pulsatility index (UA PI).

Patients and Methods:

The PubMed search engine and two other databases were searched for the keywords "uterine artery", "Doppler", "pre-eclampsia", "early-onset", "first-trimester" and related terms in articles published between January 2005 and September 2015, without language restrictions. Reference list of retrieved articles were also searched.

Results:

The addition of UA PI to maternal demographics, biomarkers and mean arterial blood pressure increases the detection rate of high risk pregnancies for developing early pre-eclampsia about 10%. Using all the parameters together, the detection rate may approach 85-90% with a false positive rate of 5%. Whereas history based risk stratification just detect 50% of high risk women at a false positive rate of 10%. Approximately 20% of screen positive patients will develop pregnancy hypertension eventually. The results are not as strong for the prediction of late-onset pre-eclampsia using first-trimester screening.

Conclusion:

The uterine artery Doppler data suggest that early pre-eclampsia is strongly associated with defective invasion of the spiral arteries, in contrast to the findings in late pre-eclampsia which may be a consequence of placental deterioration at term. This parameter will permit the identification of women at the highest risk for severe early pre-eclampsia and facilitate the early use of antiplatelet prophylaxis. This method of screening is far superior to the traditional approach, which relies entirely on maternal history.

• Paper ID: 27

COMPARISON OF DIFFERENT FIRST-TRIMESTER SCREENING STRATEGIES FOR DETECTING TRISOMY 21 FETUSES

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Objective:

To investigate the detection rate (DR) and false positive rate (FPR) of different first-trimester screening strategies and determination of the best practice in a review article.

Background:

All pregnancies have 2%-3% risk of birth defects while only 10% of them are due to chromosomal abnormalities. Trisomies consist 71% of all aneuploidies and among them trisomy 21 is the most common (53% of trisomies).
In 1970s, maternal age was the only tool for determining high risk pregnancies. In 1980s, maternal serum biochemistry and ultrasonographic examination in the second trimester were added to the maternal age. Similarly, with advances in technology and better quality ultrasound machines, nuchal translucency (NT) thickness along with maternal serum free β-HCG and PAPP-A measurements in the first trimester added values to the work in 1990s. Since 2000, several additional ultrasonographic markers in the first trimester has been introduced and also recently cell-free DNA (cfDNA) or Harmony test is suggested as a new method.
The main purpose of these attempts is to increase the detection rate (DR) and decrease the false positive rate (FPR) for recognizing aneuploid fetuses.

Materials and Methods:

We retrieved the English articles about first trimester screening published between January 1990 and February 2015 searching PubMed and other databases. Reference list of retrieved articles were also searched.

Results:

There were three main protocols suggested for the first-trimester screening. They included one-stage screening, two-stage screening (contingent policy), and a new recommendation which we called it the modern contingent policy.
In one-stage screening the combined test, consists of maternal age, NT thickness, fetal heart rate (FHR), and maternal serum free β-hCG and PAPP-A, along with all or each of additional ultrasonographic markers, including nasal bone (NB), fronto-maxillary facial (FMF) angle, tricuspid valve (TV) flow, ductus venosus (DV) flow, and recently described ductus venosus pulsatility index for vein (DV-PIV), are used for risk stratification. Incorporation of each of these markers will increase the DR (93-96%) and decrease the FPR (2.5%) compared with the combined test alone (DR= 90%, FPR= 5%), but actually they are time consuming and require highly skilled radiologist to be determined.
In contingent policy, the primary risk is determined by combined test. The high risk pregnancies, consist 1.3% of all pregnancies and 82% of aneuploidies, should undergo chorionic villus sampling (CVS), while in low risk pregnancies (86.7% of all pregnancies and 4% of aneuploidies) second-trimester anomaly scan is recommended. In the intermediate risk pregnancies (12% of all pregnancies and 14% of aneuploidies), detailed ultrasound for additional markers will be done to calculate an adjusted risk. The new risk will put the pregnancy in the either low or high risk category. The results in this approach are comparable with those from the one-stage protocol with a lesser cost, but it should be emphasized that this strategy may be better to be used in the setting of one-stop clinic for assessment of fetal risk (OSCAR), i.e. the final risk is determined in the same visit.
The modern contingent policy, which is now just available in specialist centers and unlikely to be used universally in first-line screening, was emerged in 2013 and 2014. Combined test along with DV-PIV, and maternal serum PlGF and AFP are used to assess the initial risk. If the pregnancy is of intermediate risk (11% of pregnancies) the cfDNA test is done. Patients with positive result will undergo CVS like

the high risk group, while second-trimester screening is the only recommendation for negative results. In this approach the DR reaches 98% at a FPR of 0.1%.

Kagan et al. in the study published in January 2015 suggested a protocol similar to the modern contingent policy but without inclusion of maternal serum biomarkers. They used the maternal age, NT thickness, and DV-PIV for the initial risk stratification and cfDNA test in intermediate risk pregnancies. The results were not too much different from those of modern contingent policy (DR= 96%, FPR= 0.8%).

Conclusion:
Currently, the most accepted and popular method for first-trimester screening is the contingent policy, especially if the OSCAR is practical. In the settings that non-determination of additional ultrasound markers may lead to time loss and the patient may come back after 14 weeks of gestation for reassessment, it is reasonable to investigate these markers in the first visit so they may be used to calculate the adjusted risk if the pregnancy is categorized in the intermediate risk group in the initial risk stratification.

• Paper ID: 53

DOPPLER IN INFERTILITY

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Infertility is defined as failure to conceive a desired pregnancy after 12 months of unprotected intercourse.
Approximately 10% of married couples are infertile. Males and females are equally affected. Common causes of Female Infertility are: Polycystic ovarian syndrome, tubal diseases, endometriosis, Müllerian duct anomalies, Pelvic inflammatory disease, uterine masses, adenomyosis and follicular and ovulation abnormalities.
We want to review Doppler evaluation role in some causes of female infertility like uterine perfusion and vascularity, uterine focal lesions, uterine congenital anomalies and ovulation. We focused on Uterine Biophysical Profile and Uterine Scoring System for Reproduction (USSR) which is based on:

1- Mid cycle endometrial thickness in greatest AP dimension
2- Endometrial layering
3- Blood flow within zone 3 of endometrium using color Doppler
4- Myometrial blood flow(internal to the arcuate vessels)
5- Uterine artery blood flow (PI)
6- Homogeneous myometrial echogenicity
7- Myometrial contractions causing a wave like motion of the endometrium

We review the doppler pattern of polyp (solitary feeding vessel), Submucosal leiomyomas (peripheral flow) and adenomyoma (typical spoke-wheel radial pattern).
We will discuss Doppler pattern of multiple ovarian follicles, dominant follicle and mid cycle ovulation.

• Paper ID: 82

WOMEN PELVIC PAIN, ULTRASOUND DIFFERNCIAL DIAGNOSIS

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Pelvic pain is a major problem in women. It has got multiple causes and each of these causes has got their own diagnostic and treatment methods. One has to be very careful as far as the diagnosis of causes of pelvic pain in women is concerned. Ultrasound with its newer modalities and techniques (gray scale, 2D, 3D, 4D, Doppler, color Doppler)
can help in most the cases and it is able to differentiate most of them from each other.

• Paper ID: 97

COMPARISON OF ULTRASONOGRAPHY AND MAGNETIC RESONANCE IMAGING IN DIAGNOSING FETAL ABNORMALITIES

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Due to an increase in the factors affecting the incidence of fetal abnormalities in pregnancy, general evaluation of fetus during pregnancy is important. Magnetic Resonance Imaging(MRI) and Ultrasonography (USG) are diagnostic methods to study the fetus. The aim of this study is to determine diagnostic differentiation of MRI and USG.

Methods and materials:

We reviewed 10 published articles to characterize differentiation of fetal USG and MRI by researching PubMed, SID, Springer databases in articles published 2000-2010 using keywords "fetal magnetic resonance imaging" and "fetal ultrasonography"

Result:

Ultrasonography is the imaging modality of choice for pregnancy evaluation due to its relatively low cost, real time capability, safety, operator comfort and experience. Three-dimensional/four dimensional ultrasonography has been successfully used for detection of fetal structural anomalies involving the central nervous system, face, limbs, thorax and spine. Although USG is the primary method in fetal imaging, in situations where it cannot give sufficient information about the fetus, such as maternal obesity, Oligohydramnios and engagement of the fetal head, Magnetic Resonance Imaging helps us by providing more specific information. Fetal MRI proves useful, especially where ultrasound (due to draw backs such as shadowing by pelvic bones) is unable to be completely diagnostic. Some advantages of fetal MRI over USG are the good texture of contrast, greater study area and independence of the operators. Limitation of fetal MRI include the lack of availability of equipment and radiology expertise, higher cost and longer time to perform an examination.

Conclusion:

Magnetic resonance imaging and ultrasound are both helpful methods for fetal physical screening. Fetal MRI assumes a complementary role for USG. Fetal MRI can be informative when prenatal USG is inadequate and doubtful.

• Paper ID: 184

ENDOMETRIOSIS IMAGING:

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Endometriosis is defined as the presence of endometrial tissue outside the uterine cavity.
It is mainly found in the abdominal cavity, most commonly on the surface of the ovaries.
It is an estrogen – dependent disease and is estimated to occur in 10% of the female population , almost exclusively in women of reproductive age.
The most common symptoms are dysmenorrhea dyspareunia, pelvic pain, and infertility –although it may also be asymptomatic.
Laparoscopy is the gold standard for the diagnosis of pelvic endometriosis.
MRI is helpful in determining the extent of deep infiltrating endometriosis, especially when laparoscopic inspection is limited by adhesions.
In this article we will focus on the diagnosis and preoperative assessment of endometriosis using US - CT - MR imaging.

• Paper ID: 208

CT SCAN AND MRI ACCURACY IN DIFFERENTIATING BETWEEN BENIGN AND MALIGNANT OVARIAN MASSES

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Background:

The majority of ovarian masses are benign, but diagnosis is difficult because some benign lesions such as bizarre endometrioma look like malignant ovari-

an lesions and also some ovarian malignancies such as endometrioid carcinoma of ovaries have similar imaging features for benign endometrioma . Characterization of an ovarian mass is of the utmost importance in the preoperative evaluation of an ovarian neoplasm. Imaging techniques provide a noninvasive approach for this purpose. Although ovarian tumors have similar clinical and radiologic features, but several imaging criteria's could me use to differentiation between benign and malignant ovarian tumors and predominant or specific imaging features may be present in some types of ovarian tumors.
The present study was performed to compare the validity of the diagnosis made upon imaging approaches by CT scan or MRI to that provided by pathological test as the gold standard.

Methods:

In the present study 16 patients with unilateral or bilateral ovarian masses were evaluated using magnetic resonance imaging (MRI) or computed tomography (CT) scan. A binary diagnosis (malignant or benign) was made for each mass based on the morphologic features including the size and appearance (solid, cystic, or both) of the neoplasm, thickness of wall and septa, fat component, internal hemorrhage, intra cystic papillary projection or vegetation, solid component or septal enhancement, T1- weighted signal intensity, peripheral adhesion or invasion to surrounding tissues, peritoneal or omental seeding, ascites and the presence of comorbidities. The patients underwent a surgical operation followed by pathological assessment of the neoplastic samples.

Results:

A total of 21 masses were evaluated. On the basis of the imaging criteria 10 masses were diagnosed as benign and 11 as malignant. Pathological assessment of the same masses showed that 9 of them were benign and 12 were malignant. The sensitivity, specificity, and predictive power of positive result of the imaging studies for detecting malignant and benign masses were 100%, 83.3%, and 81.8% respectively. The McNemar test revealed that the imaging tests are comparable to pathological test in differentiating between benign and malignant masses of the adnexa ($P > 0.05$).

Conclusion:

Imaging techniques, in particular the MRI approach can be reliably used to reach a preoperative diagnosis about the malignant or benign nature of ovarian neoplasms.

• Paper ID: 213

THERAPEUTIC EFFECT OF HYSTEROSALPINGOGRAPHY ON INFERTILITY: PREVALENCE OF SPONTANEOUS PREGNANCY WITHIN 3-6 MONTHS AFTER PERFORMING HSG FOR INFERTILE WOMEN

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To investigate the prevalence of spontaneous pregnancy within 3-6 months after performing hysterosalpingography (HSG) for infertile women.

Method & Materials:

This was a cross sectional retrospective study carried out among infertile patients who underwent HSG at Royan Institute, Tehran, Iran, between May 2014 and September 2014. All infertile 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. There was a follow-up phone call to each patient to obtain information if pregnancy was occurred within 3-6 months after performing HSG. Demographic information, HSG findings and prevalence of spontaneous pregnancy were analyzed with SPSS18 software using descriptive statistics.

Results:

Total number of 214 infertile women underwent HSG during the study period. Ten women were out of reach and we were unable to follow up their pregnancy, so they were excluded from the investigation. Finally, 204 patients enrolled in this study. Patients aged 30/37 years in average and the duration of infer-

tility was 4.48 years among them. %74.51 of women was infertile primarily and other %25.49 of cases had secondary infertility. Totally, 43 women (%21.07) got pregnant spontaneously within 6 months after undergoing HSG in our imaging department. Additionally, %68.8 of these pregnancies (N=27) had been occurred early before 3 months following HSG! Other 15 cases (%31.2) got pregnant until 6 months after HSG.

Conclusion:

Our study demonstrated that fertility rate increases following performing HSG for infertile women. Therefore, HSG may have therapeutic effect on female infertility.

• **Paper ID: 26**

URTICARIA OF THE COLON

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A characteristic mucosal pattern of a mosaic or polygonal nature was first described in a patient with uricaria. However similar radiographic pattern in barium enema has been observed including obstructing Carcinoma Coecal Valvulus , ischemia ,Crohn's colonic ileus and benign colonic obstructions
A radiographic pattern of the colonic 1nucosa consisting of sharply out lined discrete polygonal areas which has been attributed to presence of urticaria but also described as flat reticulated discrete plaques or pattern of the skin of a leopard or giraffe.

Bark and Millman were the first to describe this phenomenon in a patient who died of myocarditis due to hypersensitivity phenomena involving heart and colon.
The discrete plaques in the colonic mucosa noted on barium enema at autopsy corresponded to focal areas of submucosal edema.
Urticaria of colon is not only seen as complication of allergic reactions (urticaria) but also may represent reticular mosaic pattern of submucosal edema in colonic ileus , enterocolitis Coecal volvulus , obstructing Carcinoma ,herpes ,ischemic Colitis and Crohn's Disease.
Barium enema of six different patients with Ca of sigmoid colon, history of herpes, colonic ileus crohn's disease h/o of Parkinson disease and finally patient with history of ischemic colitis will be presented.

• Paper ID: 191

EVALUATION OF ANATOMIC VARIATIONS OF THE RENAL ARTERY IN 253 LIVING KIDNEY DONORS USING CT-ANGIOGRAPHY

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Background/Objectives:

Determination of the anatomic variations of the renal artery in living kidney donor candidates is a critical step to avoiding problems threatening surgery process and maybe patient safety. Current study was conducted to evaluating of renal artery anomalies in 253 living kidney donors using CT-angiography technique.

Patients and Methods:

Briefly contrast enhanced scans were obtained by SOMATOM Sensation 16 CT-system (Siemens, Germany) using collimation of 0.75 mm with a pitch up to 2. Then data were converted into the 3D images using combination of 3D applications i.e. volume rendering and maximum intensity projection (MIP).

Results:

Results indicated that 115 out of 253 (45.5%) donors had renal artery anomalies including accessory artery (30.4%), early branching artery (9.1%), and both anomalies simultaneously (Accessory artery and early branching artery) (5.9%). Accessory renal artery subtypes consisted of cranial (5.1%), caudal (8.7%), middle (18.7%), and various subtype simultaneously (4%). Additionally, mean of cross-sectional and longitudinal diameters of the accessory renal artery were 3.27 mm, and 41.47 mm respectively. There were no significant difference between frequency of the renal artery anomalies in right and left kidney (36.5% vs. 47.1%, P=0.59) and between frequency of the renal artery anomalies in female and male (P=0.07)

Conclusions:

our findings indicated a prevalence of 45.5% for anatomic variations in living kidney donor candidates which were majorly middle accessory renal artery anomaly.

• **Paper ID: 6**

AN INTRATESTICULAR ARTERIOVENOUS MALFORMATION DIAGNOSED INCIDENTALLY DURING ULTRASOUND EXAMINATION OF SCROTUM

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A fifteen-year old boy presented to our radiology department for ultrasound examination of scrotum due to recent scrotal trauma. The patient was otherwise healthy with no remarkable past medical history. He mentioned recurrent scrotal trauma during martial sports which had not been more evaluated. Physical examination revealed normal sized, intra scrotal testicles with no evidence of palpable lesion or varicocele. Gray-scale ultrasound images demonstrated a well-defined, 6.5-mm-diameter hypoechoic round lesion in right testicle. Color Doppler ultrasound showed several enlarged tortuous small vessels including arteries and veins in the lesion. Measurements revealed peak systolic velocities ranging 8-12 cm/s, end diastolic velocities of 5-8 cm/s, and resistive indices of 0.23-0.41. A mean flow velocity of 3 cm/s in the venous part of the lesion was detected. No reversal of the venous flow was detected during Valsalva maneuver. A draining vein was also demonstrated. (Figure 1, 2) Other ultrasound findings were unremarkable. Intra testicular arteriovenous shunting (AVM), intra testicular varicocele, and intra testicular hemangioma were considered as differential diagnoses according to the imaging findings.
Intratesticular varicocele is seen as twisting hypoechoic tubular structures within testicular parenchyma. Color Doppler ultrasound reveals venous flow within the tubular structures. Hemangiomas are usually characterized by testicular enlargement with or without tenderness. Gray scale ultrasound usually shows a focal, well-circumscribed hypoechoic lesion with calcifications, and color Doppler ultrasound patterns may show variations among different types of hemangiomas including a low resistance pattern probably demonstrating arteriovenous shunting. Massive vascularity within the lesion with high peak systolic, end-diastolic velocities, and a low resistance index can be seen in both AVM and hemangioma. Therefore, differentiation between Intratesticular AVM and hemangioma on ultrasound is challenging. However, demonstration of a draining vein is characteristic for an AVM as was in our case. (1, 2)
Considering the aforementioned evidences, an intra testicular AVM was diagnosed in our patient. No intervention was performed considering the small size of the lesion and the patient's age. The patient was discharged with recommendation for regular control ultrasound examinations.
Intra testicular AVM is an extremely rare malformation. AVM of the spermatic cord and testis are rare benign lesions containing tangles of dilated arteries and veins without intervening capillaries. They usually present as painless paratesticular mass or as incidental finding during evaluation of infertility or trauma. However, they can rarely present with recurrent acute scrotal pain. (1, 2)
Our case represents typical ultrasound findings of intratesticular AVM, and reminds us that it is important to keep this diagnosis in mind, in cases of intratesticular vascular lesions.

• **Paper ID: 36**

IATROGENIC UTERINE VASCULAR LESIONS: DIAGNOSIS WITH ULTRASOUND AND TREATMENT WITH TRANS CATHETER EMBOLIZATION

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Background:

Uterine vascular lesions are considered as a rare complication of gynecologic and obstetric procedures,

occurrence of uterine vascular lesions such as pseudo aneurysms, acquired arteriovenous malformation, arteriovenous fistula and direct vessel ruptures seems to be more frequently than it has been mentioned in the literatures or previously thought. The delayed diagnosis of this situation may result in life-threatening hemorrhage.

Case:

A 32-years old woman underwent cesarean section at 40 weeks of gestation presented with life-threatening postcoital vaginal bleeding 3 months after cesarean delivery, Doppler US and angiography revealed a uterine artery pseudoaneurym .a 50 years old woman presented sudden painless massive uterine bleeding 29 days after hysteroscopic myomectomy ,Doppler US and angiogram revealed pseudoaneurysm.a 20 year old woman presented with 97 days after medical abortion, Doppler US and angiogram revealed an AVM. All patients were treated successfully with uterine artery embolization.

Conclusion:

Uterine vascular lesions should be considered as a differential diagnosis in postoperative hemorrhage. We would like to emphasize Doppler US as a primary screening modality and also describe trans catheter embolization as a good treatment option for these conditions.

• Paper ID: 61

THE RELATIONSHIP BETWEEN ANDROGENETIC ALOPECIA AND CAROTID INTIMA MEDIA THICKNESS (CIMT) IN FEMALES

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Introduction:

Androgenetic alopecia is the most common cause of hair loss after puberty which comorbid disease are being increased including metabolic syndrome, cardiovascular diseases. The aim of this study was to evaluate the relationship between intima media thickness of carotid artery in women with androgenetic alopecia.

Materials and Methods:

54 patients were enrolled in this study. patients in case group had androgenetic alopecia and control group were healthy and demographic information such as age, weight, height, type androgenic alopecia, age at onset, duration of the conflict, family history of androgenetic alopecia, associated systemic disease, systemic or topical treatment of patients were asked and carotid intima media thickness was measured by ultrasound then the variables were analyzed with t test and Mann-Whitney between the two groups.

Results:

Of 54 patients, 27 patients were in case group and 27 in control group with a mean age of 28.8 ± 6.6 and 28.1 ± 6.7 years respectively. The results of this study did not show any significant relation between alopecia and CIMT, although the results indicate higher CIMT in patients with alopecia and also the relationship between CIMT and the onset of disease, grade alopecia or pattern alopecia did not found significant. (P.V was more than 0.05)

Conclusion:

The results of this study did not show significant relationship between alopecia and CIMT, although the results indicate higher CIMT in patients with alopecia and also the relationship between CIMT and the onset of disease, grade alopecia or pattern alopecia did not found significant.

• Paper ID: 83

ARTERIAL INTERVENTIONAL PROCEDURES FOR CONTROLLING GI BLEEDING

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When a patient came with G.I. bleeding, it is crucial to first stabilize the patient with IV fluid. Then either

endoscopy or colonoscopy must be done for the patient, depending on the site of bleeding. If endoscopy and colonoscopy were failed to control or stop bleeding, then interventional radiologic procedures can be helpful.
First CT angiography can be done for the patient. CT angiography is a good modality for assessing the site of bleeding. Also the cause of bleeding such as tumor or diverticulum or pseudo aneurysm or … can be seen. Then angiographic intervention can be planned.
For interventional radiologic procedures superior Mesenteric artery and inferior mesenteric artery, r celiac trunk should be catheterized, signs of bleeding must be searched by contrast injection. If site of bleeding can be characterized (such as a pseudo-aneurysm or extravasation), then if possible, super selective embolization with either solid or liquid permanent or temporary embolic agent should be done.
If it is difficult to super selectively catheterize the site of bleeding, then we can proceed to infusion of vasopressin into the stem of the artery of bleeding site. If there is any contraindication for injection of vasopressin, then catheter induced vasospasm can be done for the patient.
Each of these interventional procedures have advantages, disadvantages and complications that are reviewed in this article.

• **Paper ID: 112**

REVIEW - ROLE OF INTERVENTIONAL RADIOLOGY IN MANAGEMENT OF HEPATOCELLULAR CARCINOMA (HCC), A REVIEW OF THE RECENT ADVANCES IN TREATMENT, THE EVIDENCE AND GLOBAL TRENDS

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Hepatocellular carcinoma (HCC) is the commonest type (>90%) of liver malignancy. It is most commonly secondary to viral hepatitis or cirrhosis. Over the last two decades' significant progress has been made globally in the interventional radiological methods of HCC management.
Purpose:
Various interventional therapies are now available for the management of HCC. The aim of this review paper is to present an overview of all the available methods of treatment as well as the available evidence in the literature with the latest advances in the pioneering HCC treatment centers worldwide.
Key points:
Transabdominal ultrasound is the mainstream method of surveillance for patients at risk of developing HCC. Contrast enhanced ultrasound and MRI are used to characterize lesions visible on plain ultrasonography.
The Eastern Cooperative Oncology Group performance status (ECOG PS) and either of Child-Pugh grade score or Model for End-stage Liver Disease (MELD) score are used in virtually all staging systems. The Barcelona Clinic Liver Cancer (BCLC) staging system is the most commonly used system for guiding general management of HCC lesions; While the Hong Kong Liver Cancer (HKLC) staging system is developing and being validated in multiple subgroups of patients. The Milan criteria is the global standard for transplantation but some extended inclusion criteria are being explored.
In conjunction with Resection/Transplantation or during patients' work-up for early stage patients Percutaneous Ethanol Injection (PEI) or Radiofrequency Ablation (RFA) are commonly used. Recently High-Intensity Focused Ultrasound (HIFU) and Stereotactic Body Radiation Therapy (SBRT) are gaining in popularity. Trans arterial Embolization Trans arterial Chemo-Embolization (TACE) is commonly used for patients with intermediate stage of HCC.
We have finally given an overview of the work currently done in our center in Tehran University of Medical Sciences.

• **Paper ID: 130**

A SYSTEMATIC REVIEW: COMPARISON INTRAVASCULAR ULTRASOUND AND(IVUS) ANGIOGRAPHY

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Background:

IVUS is one medical imaging technique such as angiography, semi-invasive X-ray angiography, but in contrast to the method used. Due to limited resources studies worked out in this regard the importance of choosing the right way IVUS and angiography imaging in the evaluation of cross-sectional imaging of vessels and determine the correct procedure was done according to the circumstances.

Patients and Methods:

By visiting the website Pubmed google scular and enter the keyword intravascular ultrasound. IVUS. Angiography. The relevant articles regarding the work and the study were about 6 papers and expert review and compare them.

Results:

Based on studies and research by various groups on IVUS and coronary angiography was performed It has been proven that in some cases these two imaging techniques similar results and in some cases have shown opposite results It is doubtful that the selection of appropriate imaging methods to follow.

Conclusions:

IVUS and angiography to evaluate and compare the two together fixatives this is that in most cases than angiography, IVUS is preferable Such as determining the volume of plaque in artery walls and severity of arterial lumen narrowing. Although IVUS has its own disadvantages of being expensive and time-consuming and much more. But always this ratio is not constant and in some cases, angiography, IVUS appears more useful and reliable than the accurate determination of these require further study and research.

• **Paper ID: 145**

ANATOMICAL VARIATION OF CELIAC AXIS, SUPERIOR MESENTERIC ARTERY AND HEPATIC ARTERY: EVALUATION WITH MULTIDETECTOR COMPUTED TOMOGRAPHY ANGIOGRAM

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Background:

The celiac axis, superior mesenteric artery (SMA) and hepatic artery are the most important abdominal vessels due to their vascularization field. Variable anatomy of these vessels had been described in earlier studies. The aim of our study was to evaluate the prevalence of different anatomical variation of celiac axis, SMA, hepatic artery and its branches with multidetector computed tomography (MDCT) angiography of upper abdomen arteries.

Material and methods:

MDCT of 505 kidney donor and traumatic patients that referred to MDCT unit at Alzahra hospital in Isfahan from 2011 to 2014 were retrospectively evaluated. Exclusion criteria were history of abdominal vascular surgery and hepatic or pancreatic surgery. CT images of patient were obtained with 64 row MDCT scanner and anatomical variations were analyzed.

Result:

A total of 321 (63.6%) of 505 patients had normal anatomy and 184 (37.4%) patients had variant types. The most common type of variation was origin of right hepatic artery (RHA) from SMA (9.5%) and the next common variation was the origin of left hepatic artery (LHA) from left gastric artery. Buhler arc was identified in 2 patients. Separated splenic artery and common hepatic artery (CHA) from aorta were seen in 9 patients. Trifurcation of CHA into gastroduodenal artery, RHA, and LHA was detected in 9 patients. 27 patients had two types of variation and 5 patients had 3 types of variation.

Conclusion:

Anatomical arterial variations are common findings in MDCT angiography of upper abdomen. MDCT can be used for detection of these variations and prepares more information about vascular variations that are important in surgical and radiological interventional planning.

• Paper ID: 158

COMPARISON OF CAROTID INTIMA-MEDIA THICKNESS IN HYPERTENSIVE PATIENTS AND CONTROL GROUP

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Abstract Background:

Hypertension, probably, is the most common public health problem among developed countries. Rapid diagnosis and effective treatment of Hypertension has not truly stopped the rapid rate of mortality and morbidity, caused by Hypertension. Vascular wall changes are one of the most important and mortal complications of hyper tension. Ultrasound was used for the evaluation of this vessel wall disorder by assessing the thickness of the intima and media layer.

Objective:

The objective of this study was to compare the Carotid intima Media Thickness in hypertensive patients and the control group. Methods: In a case control study, 43 patients with documented primary hypertension and 43 healthy subjects were assessed as control. Their Hypertension was controlled by administration of drugs. The mean age was 53.9 years. The intima media thickness of internal and common carotid and outer vessel diameter were assessed by one radiologist.

Results:

Intima Media Thickness in all carotid arteries in the case group was more than that of the controls. It was found that there was no difference between length of having hypertension and mean Intima Media Thickness in the hypertensive, except the right internal carotid.

Conclusion:

The present study found that the mean Intima Media Thickness of all carotid arteries in hypertensive was more than that of the controls. Moreover, the duration of the hypertension can accelerate the atherosclerosis process in hypertensive patients.

• Paper ID: 159

SUCCESSFUL STREPTOKINASE THERAPY IN RECURRENT EXTENSIVE DEEP VEIN THROMBOSIS ASSOCIATED WITH INFERIOR VENA CAVA AGENESIS; AN EXTREMELY RARE CASE REPORT

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Agenesis of inferior vena cava is a rare anomaly associated with deep vein thrombosis, particularly in young people. There are many therapeutic protocols for treatment of IVC agenesis patients complicated with deep vein thrombosis such as continuous heparin therapy but many challenging issue remain
we present a 40 years old male case ,admitted with pain, edema and swelling in right lower extremity two weeks after laparoscopic cholecystectomy.doppler sonography showed that deep vein thrombosis in illeofemoral vein . Heparin (80u/Kg bollouse dose and 18 u/Kg maintenance dose) was prescribed for10 days with warfarin and symptomatology was resolved. Despite of treatment with oral anticoagulant. he discharged after 2 weeks and returned with pain, swelling in left lower extremity one week later. in doppler sonography reported acute deep vein throm-

bosis in left illeofemoral vein and chronic deep vein thrombosis in right illeofemoral vein and suspected to IVC agenesis. Plasma protein C and S, factor V, anti-thrombin III, anti-phospholipids and anti- cardiolipin antibodies were within normal values. CT angiography was shown IVC agenesis and other findings. He was treated with heparin but do not response. Then he treated with streptokinase. Symptom resolved after treatment with SK. life - long treatment with oral anticoagulant was recommended. Conclusion; in the case of agenesis of IVC, SK therapy might be helpful although a prospective cohort study or a RCT are needed. Further study on the role of imaging include CT scan or ultrasound about the diagnosis and treatment follow up of these cases is suggested

• **Paper ID: 165**

DIFFICULT AND COMPLICATED VENOUS ACCESS OR HEMODIALYSIS

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A functional and patent vascular access in the main issue for hemodialysis patients.
The best and ideal for a venous access is permanent AV fistula which is created by vascular surgery in many cases this AV shunt cannot be created, because of shortage of good vessels or stenosis of major veins like subclavian artery or SVC.
In these cases, hemodialysis can be performed by insertion of temporary blood access.
There are two types of temporary venous access including non-tunneled and tunneled catheters.
Procedure of insertion of temporary venous catheters; many patients referred to interventional radiology ward are difficult cases for insertion.

We divide these difficult cases to:

1- Patients with prolonged insertion of catheters who show chronic obstruction of collateral veins.
2- Patients with acute venous obstruction by thrombosis or inappropriate previous insertion.

To diagnose the problem, we should do a contrast study. We should ask which of the lumens is not working and contrast should be injected through that lumens.

There are two reasons to change the catheter:
1- Infection: the patient has history of chills and fever during hemodialysis.
The catheter should be removed and tip of catheter should be sent to bacteriology for catheter.
2- Nonfunctional double lumen can be due to as malplaced and retracted tubes which are mostly in obese patients and old patients there are mostly retracted from SVC to brachiocephalic veins where have not enough space to be functional .

B:) Fibrin sheet around the catheter:

Contrast study reveals contrast exiting the lumen.
A narrow space and not scatter in the SVC

C:) stricture of the great veins including the IJV , brachiocephalic veins and SVC (figure ..)

There are associated with significant collection formation.

D:) Tip of that catheters in Azyas vein.

This type of malposition is because the catheter is guided to azygos when the SVC port has been occluded and guide wire is pushed with blind approach.

In the matter of infection, the catheter will be discontinuous and antibiotics are started.
Longley IV ceftriaxon and then cefexin 5mg/kg po/day and then reinsertion by a difficult site of fixation, for example near the site of entrance to IJV strictures.
It is mostly see because the study has been performed with incorrect technique mostly without image guide and intimal laceration starts the creation of stenosis.
Firstly, the clot is formed and fibrosis and sclerosis will be formed.
Most of the stricture site is at the level of junction of IJV &SV.
In these cases, after venography and finding the site of stricture are arterial sheet will be passed before the stricture and by use of angioplasty catheters the strictures will be passed and dilated by angioplasty balloon, then the double lumen will be inserted.
We are not worry about clot detachment because the

clots are organized and fully attaches to venous wall. Care should be done not to pass a wrong way and we should be sure the guide wire tip is in left atrium or IDC.

In the time of SVC syndrome, a big SVC stent may be deployed.

Interventional radiologist should do his or her best to reinsert the double lumen via neck or subclavian approach right and left side should eb approach.

If it is not possible to pass the wire from upward, we should puncture the femoral vein and approach by a long sheet directed to right atrium and try to pass the wire from below to the right or left IJV and snare the wire and then balloon the tract.

Of course double lumen then will be inserted from upward.

If there were no way to pass the catheter from upward , then transhepatic double lumen into the right hepatic vein or translumbar approach will be done .\

Transfemoral double lumen is only for transit dialysis and interventional radiologist most be always recommend patient to seek for renal transplantation before having all the veins occluded .

• **Paper ID: 8**

CHEST TUBERCULOSIS: A RADIOLOGIC NEW LOOK AT THE NATURAL HISTORY OF AN OLD DISEASE

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Background:

Humans have evolved alongside infectious diseases for millennia. Among the infectious diseases, tuberculosis has been proved to be responsible for human deaths since prehistoric era. Late in seventies or early eighties of the last century, tuberculosis had been estimated to be eradicated in a few years! The estimation was wrong: and infectious diseases still pose a tremendous threat to the world population. In 2010, there were more than 7.7 million incident cases of TB, So, TB has the potential to 'develop frequency rates with the status of the "big killer" again' as we live through the twenty-first century.
Therefore, it must be relevant to pay attention to tuberculosis, and search for its possible fingerprints, in all imaging records, especially when looking at a chest radiograph.

Methods:

the author has re-evaluated all chest radiographs: in the Sarv Medical Imaging center which have been referred by tuberculosis control center of Isfahan, and also Bamdad respiratory research center of Isfahan, seeking for tuberculosis patients.
Results: In a 3-year period of recording, a total of 29 proved cases of active pulmonary tuberculosis were found, consisting of 18 women and 11 men, aging 19 to 76 years.
Many inactive primary infections as exhibited by old granulomas, and some radiographs of cured tuberculosis have also been observed and will be presented here to complete the series of imaging findings. The chest radiographs were categorized as:
Accidentally found primary infections (Gohn,s complex).
Progressive primary infection.
Miliary TB
Secondary TB
Rathke's complex
Bronchiectasis after TB
Lung destruction after TB
The representative chest imaging for each category will be presented.

Discussion:

The main clues to attract attention to tuberculosis will be discussed.

• **Paper ID: 23**

HIGH-RESOLUTION COMPUTED TOMOGRAPHY (HRCT) FINDINGS IN ORGANIZING PNEUMONIA (OP): A REVIEW ARTICLE AND PICTORIAL ESSAY

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Objective:

To investigate different imaging manifestations of organizing pneumonia (OP) on high-resolution computed tomography (HRCT) in a review of articles along with a pictorial presentation.

Background:

Cryptogenic organizing pneumonia (COP) continues to be considered as an acute/subacute idiopathic interstitial pneumonia (IIP) because of its idiopathic nature and the tendency on occasions to be confused with other forms of IIP, especially when it progresses to fibrosis.

Since the description of "cryptogenic organizing pneumonia" in 1983 by Davison et al. and the subsequent report on "bronchiolitis obliterans organizing pneumonia" by Epler et al., there have been several studies about the imaging features of organizing pneumonia. In this essay we review different radiologic findings of organizing pneumonia (OP) on HRCT described in original articles with a pictorial presentation of each of these manifestations.

Materials and Methods:

The PubMed search engine and four other databases were searched for the keywords "interstitial lung disease", "cryptogenic organizing pneumonia", "bronchiolitis obliterans organizing pneumonia", "lung HRCT", and related terms in articles published between January 1980 and September 2015, without language restrictions. Reference list of retrieved articles were also searched. Thirty-one original articles, three review articles, and one guideline were selected. All the papers were of good to intermediate quality.

Results:

Consolidation has been implicated as the most common pattern of COP in the majority of studies. It was seen in 79%-95% of patients, alone or as part of a mixed pattern. The consolidations were usually bilateral and asymmetric.

Areas of ground-glass attenuation were present in 60%-90% of patients. Usually, they were seen as part of a mixed pattern, bilateral, and random in distribution.

The perilobular pattern is defined as polygonal opacities bordering the interlobular septa. Ujita et al. observed this pattern in 57% of their patients. It may occur in all lung zones, with a predominance in middle and lower zones.

The reversed halo sign was described as central ground-glass opacity surrounded by denser consolidation of crescent (forming more than three fourths of a circle) or ring (forming a complete circle) shape with at least 2 mm in thickness. Kim et al. reported reverse-halo sign in 19% of patients with COP.

Nodular opacities (1-10 mm in diameter) were seen in 15-50% of patients. These were randomly distributed but more numerous along the bronchovascular bundles, and usually part of a mixed pattern and bilateral.

Parenchymal bands are opacities that extend in a radial manner along the line of a bronchus toward the pleura and are intimately related to bronchi. It has been suggested that these lines may represent involvement of the more proximal airways.

Bronchial wall thickening and dilatation were seen on HRCT in most patients with extensive consolidation and are usually restricted to these areas. These are nonspecific findings.

Mediastinal lymphadenopathy (nodes >1 cm in short-axis diameter) were observed in 19%-27% of patients, most in the hilar (stage 10), lower paratracheal (stage 4) and subcarinal (stage 7) regions.

Small amounts of pleural effusion were present in 0%-35% of patients. They were commonly bilateral and more frequent in immunocompetent patients.

Lee et al. reported that 73% of patients had residual disease on follow-up CT scans. The most common findings on HRCT were ground-glass opacities (observed in 73% of patients), followed by reticulation (observed in 50% of patients). Among the patients with residual disease, 63% showed a pattern of lung abnormalities most similar to that of fibrotic non-specific interstitial pneumonia (NSIP).

Acute fibrinous and organizing pneumonia (AFOP) has been described as a histologic pattern of lung injury associated with either an acute or subacute clinical presentation, similar to diffuse alveolar damage (DAD) and OP. AFOP is characterized histologically by fibrin "balls" and OP within the alveolar spaces and does not meet the criteria for either DAD or OP.

Conclusion:

There are various HRCT manifestations for COP. These findings in a patient with non-specific clinical symptoms and non-responsive to antibiotics may be suggestive of COP; in such cases lung biopsy may be deferred. Radiologic resolution of abnormalities correlates well with clinical improvement under adequate steroid treatment.

• Paper ID: 25

ULTRA LOW-DOSE CT SCAN (ULDCT): A POTENTIAL ALTERNATIVE METHOD FOR LUNG CANCER SCREENING AND METASTASIS ASSESSMENT

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Objective:

To investigate the value of ultralow-dose CT scan (ULDCT) as an alternative method for standard-dose and low-dose CT scan for lung cancer screening and metastasis work-up in a review article.

Background:

In the recent years some novel techniques of computed tomographic image reconstruction are developed by the pioneer companies in the radiology technology. The final goal of all of these techniques is to increase the signal to noise ratio (SNR) and decrease the patient radiation exposure. They range from a simple filter back projection (FBP) to the newer iterative reconstructions which consist of adaptive statistical iterative reconstruction (ASIR) and the most recent one called model-based iterative reconstruction (MBIR).
Actually, they are named differently by each manufacturer but the main idea is almost similar. For example, one commercially available MBIR protocol (Veo, GE Healthcare) has shown an impressive ability to reduce noise and improve contrast and spatial resolution. The technique cleared by the U.S. Food and Drug Administration (FDA) in 2011. This protocol is called Iterative model reconstruction (IMR) by Philips, sinogram-affirmed iterative reconstruction (SAFIRE) by Siemens and adaptive iterative dose reduction 3D (AIDR 3D) by Toshiba.

Materials and Methods:

We perused the published papers from January 2011 to August 2015 and presented the value and limitations of these novel techniques in a review article.

Results:

Several studies have been conducted in this field and the results are really promising, but there may be some trade-offs with respect to quantitative analysis that warrant further investigation.
Yamada et al. compared three protocols, i.e. LDCT with FBP, ULDCT with FBP and ULDCT with MBIR. They reported blotchy pixelated appearance on all ULDCT with MBIR but subjective image noise and nodule detection rate was not significantly different from LDCT- FBP and was much superior to ULDCT- FBP.
Katsura et al. reported a 78.1% decrease in dose-length product (DLP) compared with the low-dose CT. No significant differences were observed between the low-dose ASIR and the ultralow-dose MBIR for overall nodule (solid or part-solid), and ground-glass opacity detection in sensitivity.
Kim et al. compared three protocols, i.e. low-dose CT (120 kVp and 30 mAs) and two ultralow-dose CT protocols (protocol A, 100 kVp and 20 mAs; protocol B, 80 kVp and 30 mAs) with image reconstruction using SAFIRE. They found no statistically significant difference in the values afforded by the three CT protocols.

Conclusion:

Ultralow-dose lung CT scan (ULDCT) with new emerging iterative reconstruction methods particularly MBIR may be used for lung cancer screening and metastasis work-up with comparable sensitivity and specificity to low-dose and even standard-dose lung CT scan. These techniques permit vastly lower radiation dose exposure, as low as 0.2 mSv in the lungs, which is comparable with that of a simple chest x-ray.

• Paper ID: 32

CHARACTERISTICS OF MEDIASTINAL LYMPHADENOPATHY IN CHILDREN WITH TUBERCULOSIS BASED ON CT SCANNING

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Objective:

To highlight location and various patterns of hilar &mediastinal nodal involvement in pediatric chest tuberculosis based on computed tomography scans of chest.

Methods:

This was a retrospective study consisting of 75 patients aged less than 17 years, who diagnosed tuberculosis in Masih-e- Daneshvari hospital between the years of 2010 to 2014. These patients had chest CT. CT of these patients was reviewed for determination of location site, matting, conglomeration and calcification of nodes along with associated parenchymal involvement &pleural effusion.

Results:

Enlargement of mediastinal or hilar lymph nodes was found in 71/75 patients (94.6%), with the most common locations being lower paratracheal 58/71(81.6%), upper paratracheal 49/71(69%), hilar 38/71(53.5%) and subcarinal 34/71(48%). The nodes were conglomerate in 37/71(52.1%)% and discrete in 34/71(47.9%). In addition, perinodal fat was obscured in 53/71(74.6%) of patients. Calcification was found in 5/71(7%). Associated parenchymal abnormality and pleural effusion were found in 57/75(76%) and 14/75(18.6%) respectively.

Conclusion:

Pulmonary Tuberculosis predominates in children. Chest CT may be supportive in diagnosis of TB in children with characteristic lymphadenopathy.Tubercular nodes have varied locations but the most common location was lower paratracheal.

• Paper ID: 58

A RARE CASE OF RETROPECTORAL HYDATID CYST

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A 40-year-old male presented with a swelling over right side of his chest. He had experienced the swelling during the past year and he also mentioned that the swelling was gradually increase in size. The patient had no associated symptom. No history of trauma was declared. In physical examination a non-tender soft bulging in depth of right pectoralis major muscle without any skin manifestation (e.g. erythema or warmness) was noticeable.
Ultrasound study showed a heterogeneous hypoechoic mass lesion in the depth of right pectoralis muscles with no vascularity. Following contrast enhanced thorax CT scan showed a multicystic mass lesion beneath the right pectoralis major and minor muscles. The patient underwent a surgery for resection of the mass. Surgical findings were multiple daughter cysts in the site of bulging. Histopatholgic study also revealed Hydatid cyst.
Formation of hydatid cysts in soft tissue organs is unusual. Hydatid cyst of chest wall may present as swelling confusable with tumors, hematoma or breast pathologies. This case reveals that hydatid cyst should be considered in differential diagnoses of any chest wall swelling.

• Paper ID: 79

COMPARISON OF CHEST TOMOSYNTHESIS AND CHEST RADIOGRAPHY FOR DETECTION OF PULMONARY DISEASES

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objectives:

Chest radiography is the most common imaging technique for the diagnosis of pulmonary diseases

tomosynthesis has evolved from conventional tomography and solves many of the problems associated with tomography.the aim of this review was to compare chest tomosynthesis and radiography for detection pulmonary diseases.

Method:

Methods: We reviewed published literature to identify tomosynthesis and chest studies reporting comparison of them. we conducted a literature search on PubMed in papers published between 2009 and 2015 by using keywords tomosynthesis", "pulmonary diseases "and "chest radiography ". Results: in first study define that in tomosynthesis, the LLF for the smallest nodules (≤4 mm) was 0.39, and it increased with an increase in size to an LLF for the largest nodules (>8 mm) of 0.83. The LLF for radiography was small, except for the largest nodules, for which it was 0.52. In the second study has been done the accuracies of DTs and radiography in depicting mycobacterial disease were 97% and 89% respectively, for observer 1 (p=0.039) and 99% and 93% for abserver2 (p=0.031). Conclusion: our study defines that detection of pulmonary diseases by performance of chest tomosynthesis is better. The problems of lowsensitivity and specificity associated with chest radiographic examinations have been solved by the use of tomosynthesis.sensitivity and specificity associated with chest radiographic examinations have been solved by the use of tomosynthesissensitivity and specificity associated with chest radiographic examinations have been solved by the use of tomosynthesis .llf=lesion localization fraction.DTs=digital tomosynthesis

•PaperID:129

LOW-DOSE COMPUTED TOMOGRAPHY (LDCT): A PROMISING METHOD FOR LUNG CANCER SCREENING

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To investigate the value of chest low-dose computed tomography (LDCT) and its recommended application in the high risk population for lung cancer screening in a systematic review of guidelines.

Background:

Lung cancer has the most annual burden than any other cancer. It has been the most common cancer worldwide, both in incidence and mortality since universal tobacco smoking began. Since symptoms of this disease commonly manifest in higher stages, screening in order to early detection is advocated. The screening test should be easily available, with acceptable cost versus benefit and detection rate. There are mainly three suggested screening methods for lung cancer in the literature, that are simple chest X-ray, sputum test, and chest low-dose computed tomography.

Material and Methods:

The PubMed search engine and three other databases were searched for the keywords "Lung cancer screening", "guideline", "low- dose computed tomography", and related terms and guidelines published between January 2000 and September 2015, without language restrictions were retrieved. Reference list of the guidelines were also searched. Study data were extracted by the two reviewers independently and disagreement was resolved by consensus. The study quality was assessed by using items from the Quality Assessment of Diagnostic Accuracy Studies tool. Meta-analysis was done to calculate the sensitivity and specificity of LDCT in lung cancer detection and its reduction rate in lung cancer mortality using random effects modeling.

Results:

Among nine retrieved guidelines, eight were of good quality which were recommendations from American Cancer Society (ACS), U.S. Preventive Services Task Force (USPSTF), American College of Chest

Physicians (ACCP), American College of Radiology (ACR), National Comprehensive Cancer Network (NCCN), American Association for Thoracic Surgery (AATS), and American Lung Association (ALA), American Academy of Family Practice (AAFP).
All the guidelines but the AAFP recommend chest LDCT as the choice method for screening and declare that other methods may not reduce the mortality rate from lung cancer. AAFP implicates that till now, evidence is not sufficient to recommend for or against screening. Seven (87.5%) guidelines that suggest screening by LDCT agree on smoking history of equal and more than 30 pack year who either currently smokes or have quit within the past 15 years as the definite indication for screening. They mention that screening should be started at 55 years old in this population. Two guidelines (i.e. NCCN and AATS) recommend screening in equal or more than 20 pack year history of smoking if there is an additional risk factor or comorbidity and in these population the screening should be begun by the age of 50.
Majority of guidelines were based on four grand studies (two cohorts and two retrospective) with a total 2788 citations, the biggest one was National Lung Screening Trial (NLST). Data from these studies showed a sensitivity of 91.4% (SD= 4.56) and specificity of 72.1% (SD= 5.28) for LDCT with a 17.3% (SD= 2.1) reduction in lung cancer mortality after long term follow-up.

Conclusion:

There was a controversy regarding cost and benefit of LDCT for lung cancer screening before NLST trial. NLST lightened up the true effectiveness of low dose CT in detecting lung cancer patients in American society in 2011. Since then, other studies have validated NLST's results in early detection of this cancer. Since this disease is the leading cause of cancer death worldwide, we recommend low dose CT (LDCT) as a promising screening method for lung cancer based on our review.

•PaperID:137

PARATRACHEAL AIR CYSTS: CHARACTERISTICS ON MULTIDETECTOR COMPUTED TOMOGRAPHY SCAN IN THE GENERAL POPULATION

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Background:

Paratracheal air cysts (PTACs) are extraluminal collections of air mostly located adjacent to the right of the trachea at the level of the thoracic inlet. Although, PTACs are usually asymptomatic, the lesions do occasionally cause complications such as chronic cough, difficult intubation, and right-sided recurrent laryngeal nerve palsy. The purpose of the present study was to demonstrate the appearance, and prevalence of PTACs through retrospective review of multidetector computes tomography (MDCT) of the neck.

Methods:

In a cross sectional study, a total of 2026 chest and neck MDCT scans of patients that referred to MDCT unit at Alzahra hospital in Isfahan from 2008 to 2014 were reviewed. Exclusion criteria were history of thoracic surgery, history of tracheostomy or tracheal intubation, and presence of tracheal lesions. PTACs were evaluated for size, and the presence of visible communication with the trachea. Patient demographics of age, and sex were also collected.

Results:

Of the 2026 patients evaluated, 217 (10.7%) had PTACs. 203(93.5%) of them were found on the right and 193(88.9%) were located at the level of the thoracic inlet. 184 (84%) patients had one PTAC, 27 (12%) had two PTACs, and 6 (4%) had three PTACs. Ages of the patients ranged from 6 to 91 years. In 83 (38.4%) of the patients, a direct communication with the trachea was seen. Sizes of the PTACs ranged from 1 mm to 13 mm with mean ± SD of 3.89±2.72 mm. PTACs were < 5 mm, 5-10 mm, and > 10 mm, in 165 (76%), 42 (20%), and 10 (4%) of the patients, respectively. PTACs which had communication with trachea, were significantly larger than the cysts without communication (p value= 0.01).

Conclusion:

PTAC is a common finding on CT examinations of the neck that occur in an expectable location. The exact pathogenesis of PTAC is unclear but presence of these cysts in a wide age range may suggest congenital and acquired causes.

• Paper ID: 143

BREAST GRANULOCYTIC SARCOMA IN A FEMALE WITH HISTORY OF COMPLETELY REMITTED CHRONIC MYELOGENOUS LEUKEMIA

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A 36-year-old woman presented to our hospital with chief complaint of right breast lump of two month's duration. The mass was painless but caused discomfort for the patient. The patient had also detected a change in skin color to red, overlying the right breast, several weeks before admission. The patient denied any history of trauma, fever, recent unintentional weight loss, loss of appetite, or discharge from the nipple. Her past medical history was remarkable for chronic myelogenous leukemia diagnosed 7 years ago and was treated with chemotherapy. The patient was in complete hematologic remission at presentation. Family history and laboratory data were unremarkable.

Physical examination showed well-defined, non-tender mass in the right breast measuring about 8×10 cm. The mass was hard in consistency, and fixed to the underlying structures. The skin overlying the mass was red. There was no nipple retraction or discharge. There was no palpable axillary, inguinal, popliteal, or supraclavicular lymph nodes. Ultrasound examination revealed a well-defined markedly hypoechoic lesion measuring about 8 cm in diameter without obvious calcification. A chest multidetector computed tomography (MDCT) with IV contrast was ordered for further evaluation. MDCT revealed an enhanced large soft tissue mass (thin arrow) measuring about 10×8×10 cm in the right chest wall with pleural invasion (fat arrow) and destruction of adjacent ribs. (Figure 1, 2) MDCT also showed skin thickening and changes in fibro glandular tissue density of the right breast. Subsequently, an ultrasound-guided transcutaneous biopsy was planned and biopsy was taken with a 16-gauge coaxial biopsy needle. The results of histopathologic study revealed myeloid sarcoma. Finally, the diagnosis of isolated granulocytic sarcoma of the breast was made and the patient was referred to oncologist for further evaluation and treatment.

Granulocytic sarcoma (GS) is a rare extra medullary tumor contains primitive myeloid cells. GSs are rare lesions with a prevalence of about 3-4.7% in chronic myeloproliferative disorders. Chloroma, myeloblastoma, extra medullary leukemia, and myeloid sarcoma are the synonyms of granulocytic sarcoma. The tumor is an unusual complication of acute and chronic myeloid leukemia and may appear at any time during the course of the leukemia. The tumor can involve any organ through spreading from bone marrow to blood. Our patient represents a case of granulocytic sarcoma who presented with a painless lump in the breast and was diagnosed when she was referred for ultrasound-guided biopsy.

Our case represents clinical and radiologic manifestation of breast granulocytic sarcoma as an extremely rare tumor. It is essential for radiologist to consider breast granulocytic sarcoma as a differential diagnosis of breast lumps especially in patients with a suspicious history of leukemia.

• Paper ID: 163

PATTERN AND DISTRIBUTION OF TUBERCULOUS HILAR AND MEDIASTINAL LYMPHADENOPATHY ASSOCIATED WITH HIV/AIDS INFECTION BY SPIRAL CT SCAN

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Background:

Opportunistic infections are important burden in HIV/AIDS patients. Tuberculosis is one of the most common and important instances especially in endemic countries. CT scan is the current gold standard for characterizing mediastinal lymphadenopathy that might suggest tuberculosis especially in the absence of other laboratory or imaging clues. No previous study has described the CT findings of tuberculous mediastinal lymphadenopathy in the presence of HIV/AIDS co-infection. Hence, this study was carried out to determine the pattern and distribution of tuberculous hilar and mediastinal lymphadenopathy associated with HIV/AIDS infection by spiral CT scan.

Materials and methods:

In this observational cross-sectional study, 52 consecutive patients with proved pulmonary tuberculosis associated with HIV/AIDS were enrolled. Then, their spiral CT scans were reviewed retrospectively.

Results:

Fifty-two patients (mean age of 40.2 ± 9.7 years) including 49 males and 3 females were studied. The hilar and mediastinal lymphadenopathy was seen in 28 patients (53.8%). The highest mediastinal, right upper paratracheal, left upper paratracheal, prevascular and retrotracheal, right lower paratracheal, left lower paratracheal, subaortic, paraaortic, subcarinal, para-esophageal, pulmonary ligament, right hilar, and left hilar lymphadenopathy were involved in 5.8%, 15.4%, 7.7%, 11.5%, 44.2%, 28.8%, 21.2%, 19.2%, 38.5%, 13.5%, 5.8%, 23.1%, and 19.2%, respectively. The number of stations involved by enlarged lymph nodes was less than 4 in 78.8% of patients, between 5 and 8 in 19.2%, and 13 in one case (1.9%). The age and sex were not related to involvement of each station according to chi-square and independent-sample-t tests ($P > 0.05$). Also the T-cell count ≥ 200/mm3 had higher prevalence in patients with hilar and mediastinal lymphadenopathy but showed no significant difference among various stations based on chi-square test ($P > 0.05$).

Conclusions:

According to our results the most common station for lymphadenopathy in HIV/AIDS infected patients was the right lower paratrachea followed by the subcarina, the left lower paratrachea and the right hila. Multifocal involvement is common. T-cell count had not influence on the distribution of mediastinal tuberculous lymphadenopathy associated with HIV/AIDS infection.

• Paper ID: 177

CORRELATION OF CT PULMONARY ARTERY OBSTRUCTION INDEX WITH BLOOD GAS VALUES IN ACUTE PTE IN PATIENTS REFERRED TO MODARRES HOSPITAL

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Background:

Since hypoxemia is one of thrombolytic therapy indication in PTE(Pulmonary Thromboemboli), the correlation between CT pulmonary artery obstruction index and hypoxemia was evaluated in this study.

Patients and Methods:

35 patients with approved PTE with helical CT pulmonary angiography and selected as being free of underlying cardiopulmonary disease were studied. The severity was assessed by the pulmonary artery obstruction index, defined as Σ (n × d), where n is the number of segmental arteries occluded and d is the degree of obstruction. Spearman's rank correlation coefficients were used to assess the correlation between the index of arterial obstruction and arterial partial pressure of oxygen (PaO2); arterial partial pressure of carbon dioxide (PaCO2); and arterial oxygen saturation (SaO2).
The level of significance was set at 95% ($p = 0.05$).

Results:

A significant correlation was observed between the obstruction index and PaO2 ($p = 0.05$), PaCO2 (p

=0.05), and SaO2 (p =0.05). Using cutoff values for the pulmonary artery obstruction index of 40%, 50%, 60%, and 70%, we observed that PaCO2 significantly between above and below
the 40%, 50% and 60% cutoffs. PaO2 differed significantly for the cutoff values of 60% and 70%. The same was observed for SaO2 at 60% and 70% .

Conclusion:

In patients with acute pulmonary embolism but no other underlying cardiopulmonary
disease, the severity of the pulmonary arterial tree obstruction assessed using the
CT obstruction index is significantly correlated to the blood gas values. A PaCO2 value of 28 mm Hg or less is highly suggestive of an obstruction index of more than 50% of the arterial bed.

• Paper ID: 5

COMPARISON OF BONE WINDOW AND GENERAL WINDOW IN ABDOMINAL AND PELVIC CT SCAN TO DETECT BONE LESIONS

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Objectives:

Evaluation of diagnostic potency increase of various bone lesions and final diagnosis alteration in abdominal and pelvic CT scan with the addition of bone window to general window.

Methods:

698 non-traumatic patients were randomly selected and their abdominal and pelvic CT scans were evaluated in a PACS system by two radiologists and one resident by consensus. After the initial interpretation, all CTs were reevaluated using bone window by the same radiologists. Differences in detectability and characterization of abnormal findings in the final diagnosis were subjected to statistical evaluation.

Results:

Bone lesions were detected in 226 patients (32.37%) according to general window findings. This is in contrast to bone window settings, where 304 patients (43.55%) were diagnosed to have bone lesions (76/698; $P < 0.001$). Detectability and characterization of abnormality in 10.88 % of patients were improved; from which the final diagnosis of 5.44% of patients was affected significantly. Applying bone window settings required 21.63 extra seconds on average relative to the case when only general window is considered.

Conclusions:

Using level and bone window settings in soft-copy interpretation of abdominal and pelvic CT scan resulted in significant change of final diagnosis.

• Paper ID: 37

IMAGING OF SKIN AND SOFT TISSUE FOREIGN BODIES

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Foreign bodies may commonly penetrate or get trapped inside the skin or superficial soft tissues. Imaging modalities are central in diagnosis of such foreign bodies, determining the number of foreign objects, their depth in tissue, as well as their proximity to vital organs, all of which play a role in assessment for risks and benefits of surgical excision. Foreign bodies also complicate diagnostic assessments aimed at other purposes. Magnetic resonance imaging (MRI) might need to be withheld in case of suspicion for metallic foreign bodies. In contrast, many non-metallic foreign bodies (especially wooden or glass foreign bodies) might be missed by routine imaging modalities and may complicate future procedures aim at the involved organs. We provide a summary of the utility and limitations of imaging modalities for diagnosis of foreign bodies, as well as capabilities, limitations and contraindications of using various imaging modalities in patients with skin or soft tissue foreign bodies.

• Paper ID: 48

HOW MRI CAN DIFFERENTIATE BONE MARROW DISORDERS

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MRI is the best non-invasive method to evaluate bone marrow and differentiate fatty marrow from hematopoietic marrow.
The following article is a review on MRI techniques of bone marrow, normal anatomy and physiology of bone marrow, distribution of normal marrow, normal

variations, and classifications of abnormal MRI findings into specific pathologic disorder groups (marrow reconversion disorders, marrow replacement disorders, myeloid depletion disorders and myelofibrosis).
This article is also aimed on how to differentiate the above disorders.

• **Paper ID: 54**

EVALUATING THE ACCURACY OF ULTRASOUND IN THE DIAGNOSIS OF TENDON LACERATIONS OF THE HAND AND WRIST

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Objectives:

Hand injuries are one of the most common presentations of patients referring to emergency department following trauma. Diagnosis of tendon injuries is an essential part in evaluation of these patients. Although thorough history and physical examination often predict the tendon injury, in some patients with partial tendon rupture the organ function is preserved. Also some patients can not cooperate for examination.

Method:

A hundred and twelve patients presenting to the emergency department of our academic trauma center were enrolled in the study. All patients complained of penetrating trauma in the volar aspect of hand or wrist and were candidates for exploratory surgery and underwent diagnostic ultrasonography to evaluate tendon rupture before the surgery.

Results:

We found a specificity of 99.4% and sensitivity of 100% for ultrasound in the diagnosis of tendon rupture in traumas to volar aspect of hand and wrist. Physical examination had a sensitivity of 83.3% and specificity of 99.4% for this diagnosis.
Average time of study was 48.3 minutes for ultrasonographic examination and 345.7 minutes for surgery (including the time that patient had to wait in the operating room list).

Conclusion:

Ultrasound can be a reliable modality to evaluate tendon injury in patients presenting to the emergency department with penetrating trauma of volar aspect of hand and wrist. Using this modality obviates the need for a mere diagnostic surgical exploration and decreases the morbidity for patients and disease burden for health care systems.

• **Paper ID: 55**

IS BEDSIDE ULTRASOUND A RELIABLE METHOD FOR DETECTING SOFT TISSUE FOREIGN BODIES IN UPPER EXTREMITY PENETRATING TRAUMA PATIENTS?

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Background:

Detection of foreign bodies trapped in the soft tissue is a diagnostic problem in patients with penetrating trauma referring to the emergency department. In spite of increasing advances in imaging modalities,

detection of foreign bodies trapped in the subcutaneous tissue is still problematic. Among the methods available for the detection of foreign bodies, radiography is the most accessible modality, but it can only diagnose radiopaque objects. CT scan has some limitations including cost and radiation. MRI is very expensive and is not always available. Ultrasound is an easy, inexpensive and accessible method and has no radiation risk. It also provides simultaneous imaging and is bed side available and effective, especially in detection of radiolucent foreign bodies.

Objectives:

So the new clinical question is that: "Is bedside ultrasound a reliable method for detecting soft tissue foreign bodies in upper extremity penetrating trauma patients?"

Patients and Methods:

112 patients with penetrating trauma of volar surface of hand and wrist were enrolled in this study. All patients were clinically suspicious of tendon injury that made them be candidates for diagnostic surgical exploration. Before the surgery, the patients signed a consent form and then a thorough ultrasonography was performed to evaluate the presence of any foreign bodies. The results were then compared with the records of radiography as well as clinical reports of emergency physician and surgeon.

Results:

Among 112 patients under study, foreign body was detected in 21 patients through clinical examination or surgery, out of which 18 (85.71%) cases were detected by ultrasonography; whereas, radiography was able to detect 16 cases (76.19%). False positive results reported one case (1.1%) in ultrasonography and 0 (0%) in radiography.

Conclusions:

Ultrasonography seems to be a safe and cost effective method to evaluate foreign bodies, especially radiolucent objects, in patients with penetrating trauma and suspicious of foreign bodies that may remain undiagnosed in radiography. Availability of bedside ultrasound for emergency physicians is an important issue, since it is not possible to access the radiologist at any time of the day and night. On the other hand, treatment of patients in emergency department is a cost-effective way, as it reduces the number of surgical explorations that are merely diagnostic and it is also time and cost-consuming for therapeutic system.

• Paper ID: 85

MSK SHOULDER JOINT

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Musculo-skeletal ultrasound is the modality with high accuracy rates in diagnosis of different joints, muscles and ligaments. X-ray and CT has got limited results. MRI is the best and gold standard modality for musculo-skeletal diagnosis, but it has got its own limitations such as non-availability, high cost and scanning during different movements not possible. Musculo-skeletal ultrasound is the modality of choice for all joints, muscles and ligaments and is easy to perform, cheap, available and scanning during movements are possible. It is also patient friendly modality.
Should joint is one of the most important joints of the body and how we can look to it and what MSK can do is discussed in details.

• Paper ID: 89

FOREFOOT RADIOLOGIC ASSESSMENT BEFORE FOREFOOT SURGERY. WHAT IS EXPECTATION OF ORTHOPEDIC FOOT SURGEON.

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Foot surgery is a new sub-specialty in the field of orthopedic surgery. In Iran at the moment a few surgeons are practicing as dedicated foot surgeon. It is very important our radiologists in Iran to be familiar with the practice of foot surgery and gradually we really need some musculoskeletal foot radiologists as this part of orthopedics are improving in this country.

Hallux valgus surgery is the most common forefoot surgery and in this presentation I describe radiographic protocol for hallux valgus assessment before surgery.
Hallux valgus x-ray series: protocol

1- AP (weight bearing)
*severity of deformity {HV angle +IMT angle)
2- AP (non-weight): occasionally useful because it can be compared to intra-operative x-rays?
3- lateral (weight bearing)
*information on the alignment of the 1st ray+ quality of the 1st MTP joint.
4- Sesamoid (axial) view: occasionally useful for sesamoid-metatarsal joint.
Oblique views are rarely useful.

PaperID: 222

OSTEOMYELITIS IN DIABETIC FOOT

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Objectives:

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

1) Recognize MRI appearance of osteomyelitis in diabetic foot
2) Differentiate osteomyelitis and osteoarthropathy in diabetic foot
3) Recognize the role of Imaging techniques in this regard

Presentation summary:

There is an approximately 25% chance of ulcer and 50% chance of infection in foot
in diabetic patients and considering the incidence of diabetes and difficulty of treatment and complications of osteomyelitis ,early diagnosis is crucial.
Another important complication in foot in diabetic people is osteoarthropathy.
Osteomyelitis and osteoarthropathy have many similar imaging findings but it is very important to differentiate them because they have completely different treatments. So In this presentation we suggest an easy algorithm for diagnosis of osteomyelitis in diabetic foot and explain its complications and imaging findings ,then we discuss the imaging findings of diabetic osteoarthropathy and how to differentiate these two pathologies.

• Paper ID: 28

ROLE OF MRI IN ENDOMETRIOSIS

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Endometriosis relates to ectopic endometrial organs and stroma outside the uterine hole.One way to diagnose endometriosis is used transvaginal sonography. Most patients do not like this method. The use of magnetic resonance imaging methods in diagnosis of endometriosis is very important. In this review, the importance of diagnosis and magnetic resonance imaging sequences and which sequences will be required and helpful will be discussed.

• Paper ID: 73

IMPROVEMENT OF SIGNAL AND CONTRAST EFFICIENCY OF T2-WEIGHTED TURBO SPIN ECHO SEQUENCE BY APPLYING DRIVEN EQUILIBRIUM PULSE IN MR EXAMINATION OF KNEE JOINT ON LOW FIELD MRI

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Background/Objectives:

Driven equilibrium pulse technique are applied to MR imaging to extend the possibilities of manipulating image contrasts in pulse sequences with a high repetition time. The aim of our study was to determine the effect of a driven equilibrium pulse (DRIVE) combined with a standard T2-weighted turbo spin echo sequence in MR imaging of the knee joint on low field MRI.

Patients and Methods:

32 patients were examined in our Imaging center by a low field open MRI (Superstar 0.35T,Neusoft company ,China).

MRI protocol including:

T1-weighted TSE ,thickness 4 mm ,field of view 17cm, TR/TE 440/18 ms, matrix 256x256. T2-weighted TSE with and without DRIVE pulse, thickness 4mm, field of view 17cm,TR/TE 3600/120 for standard T2 and 3100/110 for DRIVE T2 sequence ,matrix 256x256. Coronal STIR ,thickness 4mm , field of view 18cm ,TR/TI/TE 2000/110/20,matrix 224x224. Axial T2-weighted, thickness 4mm ,field of view 17cm,TR/TE 3200/120,matrix 256x224. Two musculoskeletal radiologists were reviewed all images. Results: SNR was significantly higher on images acquired with DRIVE pulse. CNR was significantly improved between meniscus and fluid, cartilage and subchondral bone, cartilage and meniscus and cartilage and fluid on images acquired with DRIVE pulse.

Conclusions:

Combination of a DRIVE pulse into a standard T2-weighted TSE sequence increase SNR and CNR and leads to an increase in diagnostic value in the MR imaging of the knee joint on low field MRI.

• Paper ID: 80

COMPARISON OF MAGNETIC RESONANCE IMAGING AND MAMMOGRAPHY IN BREAST CANCER DETECTION

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Objectives:

Breast cancer is the most common malignant disease occurring in women worldwide. Early detection and diagnosis of breast cancer are essential for successful treatment. Mammography is the current clinical standard for breast cancer screening. Recent studies indi-

cate that breast Magnetic Resonance imaging (MRI) is highly sensitive and can detect breast cancers not seen on mammography, particularly in women at increased risk.in this article we tried to compare MRI and mammography for detecting of breast cancer.

Patients and methods:

We reviewed published literature to identify multimodality breast cancer screening studies reporting the sensitivity of mammography and MRI. we conducted a literature search on PubMed and SID in papers published between 2009 and 2015 by using keywords "MRI" , "breast cancer" and "mammography".

Results:

Studies show that MRI had a high sensitivity for the detection of invasive cancers detected, while mammography used more to find carcinoma in situ tumors that are micro calcification. We conducted on expert literature review on the value of breast MRI in diagnosing and staging breast cancer, as well as the future potentials of new MRI technologies.

Conclusion:

Evidence from published trials of multimodality breast cancer screening identified no statistically significant correlation between mammography and MRI. Sensitivity of MRI plus mammography is significantly higher than of MRI or mammography alone.

• Paper ID: 109

QUANTITATIVE MRI OF SPINAL CORD

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The development of new quantitative MRI (qMRI) techniques, which are more sensitive to change in underlying tissue microstructure and metabolism, is providing insights into the pathogenesis of a growing number of neurological diseases, and is showing promise for studying potential biomarkers of disease progression.

Most commonly used spinal cord qMRI techniques (mainly in the research setting)

- Diffusion-weighted imaging is sensitive to microstructural tissue damage, including axonal orientation and demyelination.
- Magnetization transfer imaging provides information on the structural integrity of the spinal cord and is most often used to derive information regarding myelination status.
- Functional MRI measures neuronal activity by detecting associated changes in blood flow.
- MR spectroscopy is sensitive to metabolic changes occurring in pathology that reflect important underlying biological mechanisms.
- Volumetric imaging offers the possibility of calculating atrophy measurements, which give information about axonal loss, especially when repeated over time.

Diffusion Tensor Imaging

The DTI model can be used to derive indices that quantitatively describe the directional diffusivity of extracellular water within white matter tracts. Data from animal studies have suggested that DTI-derived indices reflect underlying tissue structure. In particular, in animal models, such as experimental allergic encephalomyelitis (EAE), demyelination within white matter tracts leads to an increase in radial diffusivity (RD), while axonal loss is expected to cause a reduction in axial diffusivity (AD). However, the situation is more complicated in human diseases, and it is likely that both demyelination and axonal loss influence both RD and AD; furthermore, changes in RD can be observed in animal models even in the absence of myelin changes.

FA, RD, AD, and MD can be measured within the spinal cord using regions of interest (ROIs), which can be drawn on the basis of the user's anatomical knowledge or can be measured within tracts, which are reconstructed using fiber-tracking (FT) algorithms. Probabilistic tractography algorithms allow the user to obtain an estimate of white matter connectivity within the spinal cord, which may be affected as a consequence of disease.

Q-space analysis

Q-space analysis is an alternative analysis technique

for diffusion-weighted imaging data in which the probability density function (PDF) for molecular diffusion is estimated without the need to assume a Gaussian shape

Proton Magnetic Resonance Spectroscopy

Proton magnetic resonance spectroscopy (MRS) is a powerful tool that allows quantification of metabolite concentrations from human tissue in vivo. Reliable quantification of metabolites from the spinal cord using 1.5 T scanners has been limited to a few metabolites, namely N-acetylaspartate (NAA), choline (Cho), and creatine (Cr).

Magnetization Transfer Imaging

Magnetization transfer imaging is based on the interaction between hydrogen protons bound to macromolecules, such as those associated with lipids and lipoproteins, and the free protons normally imaged by MRI.

MTR, obtained by magnetization transfer imaging, can be used as an indirect marker of demyelination and possibly axonal loss. In patients with MS, high-resolution magnetization transfers measurements from the spinal cord have demonstrated that it is possible to assess tissue damage, including demyelination (and possibly axonal loss) of specific spinal pathways, with good accuracy.

Now a day several modalities are available for the evaluation of epileptic patient, such as: positron emission Tomography (PET); single photon emission computed tomography (SPECT); magnetic resonance imaging (MRI); computed tomography (CT). The investigate and treatment of patients with epilepsy has been revolutionized in the last decade with the advent of Magnetic resonance imaging. The principle role of magnetic resonance imaging is in the definition of structural abnormalities that underly seizure disorders.

Magnetic resonance spectroscopy (MRS) is one of the oldest types of magnetic resonance study. This technique has the ability to evaluate the chemical composition of the brain. Magnetic resonance spectroscopy is a promising tool in evaluating this patients, and offers increased sensitivity to detect temporal pathology that is not obvious on structural magnetic resonance imaging and has the ability to detect relevant metabolites changes in patients with temporal lobe epilepsy. The clinical aims of magnetic resonance spectroscopy in seizure disorders are to help identify, localize, and characterize epileptogenic foci and identify the seizure onset zone.

In this study, we aimed to review the usefulness, sensitivity and findings of magnetic resonance spectroscopy in patients with temporal lobe epilepsy.

• **Paper ID: 122**

MAGNETIC RESONANCE SPECTROSCOPY IN TEMPORAL LOBE EPILEPSY

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Abstract

Epilepsy is a chronic progressive neurological disorder that affects 1% of the world population with an incidence of 70 per 100,000 per year. The prevalence of epilepsy has significant medical, social, and economic implications both for the individual and for society. The diagnosis of epilepsy should be made as early as possible to give a best chance for treatment success and presurgical evaluation.

• **Paper ID: 123**

CONVERGING FMRI AND DTI FINDINGS TO DETECT SPECIFIC LANGUAGE PATHWAYS

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In the realm of medical imaging techniques, MRI is one of the choices that can be used to detect both structural and functional disorders and diseases of the brain. One of these disorders is Dyslexia which is a condition that makes it difficult for someone to read and spell. The study of human brain connectivity falls under three categories: structural, functional and effective connectivity. Dyslexia is highly related to functional and structural connectivity of brain. The functional MRI as a non-invasive technique produc-

es detailed brain images showing the location of MR signals changes associated with brain activities. Also diffusion tensor imaging (DTI) tractography as a new neuroimaging technique is used for virtual dissection of fiber tracts in the living brain to measure white matter structural changes in dyslexia. This study as a descriptive-analytical research is to investigate the specific language pathways and connections that deal with language and its disabilities like Dyslexia, converging fMRI and DTI information together. The results showed that the structural and functional connectivity abnormalities, providing by converging evidences, are related to inferior frontal gyrus in children with dyslexia.

• **Paper ID: 131**

MAGNETIC RESONANCE IMAGING OF CENTRAL NERVOUS SYSTEM AND PARANASAL SINUSES IN MULTIPLE SCLEROSIS PATIENTS: FINDINGS FROM A SURVEY OF CLINICAL RECORDS IN KERMANSHAH PROVINCE

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Objective:

Multiple sclerosis (MS) is the most common demyelinating disease of the central nervous system. More than 5.2 million people across the world are afflicted with MS and magnetic resonance imaging (MRI) is the most valuable investigative technique in the diagnosis of MS. This study has been prepared with the purpose of determine the MRI findings in the central nervous system and paranasal sinuses in the patients' population with multiple sclerosis of Kermanshah province during 2004-2014.

Patients and Methods:

This study is a cross-sectional descriptive-analytic one which was conducted on 294 patients admitted to the neurology ward of hospital during a 10-year interval (2004-2014) and diagnosed to be afflicted with MS. Different features including: early clinical signs, distribution pattern of MS plaque, demographic features and the presence or absence of sinusitis was investigated. Following collection of data, they were analysed as frequency tables and summarizing percent by use of SPSS16 software programme.

Results:

The maximal frequency of MS was in patients with demographic married, %59.5 housekeepers 50.2% and high school diploma 28.2%. MRI test in 94.9% of patients reported as signed. the most and the least anatomical sites afflicted with plaque lesions were white matter surrounding the ventricles (77.50%) and basal ganglia (1.7%). there was a significant statistical relationship between the anatomical site involved with the patients' age and occupation, respectively as follows (Pjob=0.006, Page=0.036). there is a relationship between the early clinical manifestations of the patient and the family history of affliction with MS (P=0.036).

Conclusion:

Considering the climatic circumstances, there are no gross differences from the standpoint of frequency of multiple sclerosis disease, age distribution and sex, and distribution pattern of lesions in CNS compared to other studies. Observing sinusitis in patients afflicted with MS is suggestive of their random association.

• **Paper ID: 136**

THE APPLICATIONS OF MULTIMODALITY MRI IN CEREBRAL NERVOUS SYSTEM (CNS) TUMOR IMAGING

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Intracranial tumors are a significant health problem. The annual incidence of primary and secondary cen-

tral nervous system neoplasms ranges from 10 to 17 per 100,000 persons.
The goals and requirements for brain tumor imaging are multiple and complex. They involve providing a diagnosis and differential diagnosis, as well as accurate grading of tumors. Also neuroimaging is an essential part of the decision-making process for therapy and precise planning of surgical intervention. Before neurosurgery intervention, neuroimaging can accurately define the location and delineation the lesion. Neuroimaging can also aid in radiotherapy planning by precisely defining the lesion margins. Additionally, it should be use to follow therapeutic intervention and possible side effect.
Recent years new techniques in MRI is emerging such as: DWI, DTI, PWI, MRS and FMRI. So multimodality MR imaging make it possible to define CNS neoplasms. Novel MRI techniques evaluate changes at the microvascular, hemodynamic and cellular levels of brain tumors. In addition to structural changes they also evaluate changes at the metabolic and biochemical levels. Incorporation of these techniques into the diagnostic protocol allows us to obtain detailed information about tumors.
The purpose of this review article is to detect the importance and applications of multimodality MR imaging in diagnosis and grading of intracranial neoplasms and also showing the usefulness of these techniques in therapeutic monitoring.

• **Paper ID: 139**

APPLICATIONS OF TIME-RESOLVED MRA (TR-MRA) IN BRAIN

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For 3D imaging with magnetic resonance angiography (MRA) of the cerebral 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). 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 gadolinium in comparison to conventional contrast enhanced MRA (CE-MRA).
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 brain 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 hypervascularized tumors and some other applications that explain in following review article.
Now a day, 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 Time-Resolved MRA (TR-MRA) and review the importance of this technique applications in brain vasculature.

• **Paper ID: 147**

THE IMPORTANCE OF DOUBLE INVERSION RECOVERY (DIR) SEQUENCE IN MULTIPLE SCLEROSIS (MS) IMAGING

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Multiple sclerosis (MS) is an inflammatory demyelinating disease of the central nervous system in young adults, predominantly affecting the white matter, but also the grey matter. Accurate identification and localization of cortical lesions in patients with known or suspected MS is important.
Magnetic resonance imaging (MRI) is the most sensitive paraclinical method in the detection of MS lesion. Using conventional MRI techniques such as fluid-attenuated inversion recovery (FLAIR) and T2-weighted sequences, MS lesions are frequently and typically detected in certain anatomical regions, such as the periventricular, juxtacortical and infratentorial white matter. However, despite the histopathological abundance of cortical lesions in MS patients, the sensitivity of MRI in the detection of cortical lesions remains rather low.
The aim of this review article is detecting MS lesions with double inversion recovery (DIR) and considering the appropriateness of a stand-alone DIR sequence in MS imaging.
Because of higher lesion-white matter contrast, the DIR images show a higher number of lesions compared with the FLAIR and the T2w and also Gray-white matter differentiation was better with DIR. The higher sensitivity is also significant for the infratentorial region and lesions with only poor contrast on T2-weighted images. DIR brain imaging have the highest sensitivity in the detection of cortical and mixed white matter - grey matter lesions, compared with FLAIR and T2 sequences. In addition, the lesions obtained with DIR images were more easily visualized.

• **Paper ID: 149**

THE DIAGNOSTIC VALUE OF SUSCEPTIBILITY-WEIGHTED IMAGING(SWI) IN CEREBROVASCULAR STROKES (CVS)

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Abstract:
Susceptibility-weighted imaging (SWI) is a new neuroimaging technique that offers information about any tissue that has a different susceptibility from its surrounding structures, such as deoxygenated blood, hemosiderin, ferritin, and calcium, to generate a unique contrast, different from that of proton density, T1, T2, and T2*.
Cerebrovascular ischemia leads to acute infarct with or without hemorrhage. In recent years, diffusion-weighted imaging (DWI), perfusion-weighted imaging (PWI), and MR angiography (MRA) have been incorporated in the initial assessment of acute stroke. Studies have shown that SWI is more sensitive in detecting hemorrhage as early as 6 hours and thus allows facile visualization of hemorrhagic transformation within an infarct.
With the advent of parallel imaging and the greater availability of clinical 3T MR images, it is now possible to image the entire brain with SWI in roughly 4 minutes. SWI, as a complementary sequence, can provide additional information by the following: 1) detecting a hemorrhagic component within the region of infarction, further helping to distinguish ischemic and hemorrhagic stroke; 2) demonstrating areas of hypoperfusion and directing the necessity of PWI; 3) detecting acute thromboemboli that occlude arteries; and 4) predicting the probability of potential hemorrhagic transformation before thrombolytic treatment by counting the number of microbleeds.
The following review article discuss about importance and application of SWI in cerebro-vascular stroke. In conclusion, because of SWI provide additional clinically useful information that likely be incorporated into the routine diagnostic imaging evaluation.

• **Paper ID: 150**

THE USE OF SUSCEPTIBILITY WEIGHTED IMAGING FOR ASSESSMENT OF ABNORMAL CRANIAL VESSELS: A CASE REPORT

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Susceptibility weighted imaging is a high spatial resolution three dimensional gradient echo magnetic resonance imaging technique with phase post processing that accentuates the paramagnetic properties of blood products. In particular, susceptibility based magnetic resonance imaging techniques are valuable tools for depiction of in vivo brain parenchymal veins.
We report a patient with abnormal veins in parietal region, in whom susceptibility weighted imaging showed more depiction of abnormal vein and respective venous drainage compared to Time of Flight (TOF) magnetic resonance venography and routine brain sequences.
Conventional cranial T1 and T2 weighted images showed no abnormality. Time of Flight magnetic resonance venography and post contrast T1 weighted images only showed the main abnormal vein draining to the superior sagittal sinus. SWI images depicted small vein branches draining to the respective vein in addition to the main abnormal vein.
susceptibility weighted imaging is a valuable technique for depiction of small abnormal vessels and we suggest using of this pulse sequence in assessment of all clinical cases with abnormal cranial vessels.

• **Paper ID: 157**

MR IMAGING OF BONE MARROW

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Bone marrow is a complex organ containing undifferentiated cells from which the various constituents of blood originate. Under the control of hormones, cytokines and growth factor, normal marrow is susceptible to infection, medications, radiation and neoplasms. While histopathologic examination is the primary means for evaluating bone marrow abnormality often occur during medical imaging.
Magnetic resonance (MR) imaging has become preferred over other imaging modalities in evaluating disease in the bone marrow. It is a noninvasive technique that complements bone marrow biopsies by sampling a large volume of bone marrow and by providing information that aids the diagnosis, staging, and follow-up of hematologic malignancies.
The MRI appearance of the bone marrow is determined by the relative amount of protein, water, fat, and cells within the marrow and depends on the pulse sequence on which it is being evaluated. Because the bone marrow is a dynamic organ that changes continuously from birth through life, the MR appearance of the bone marrow varies with age.
Routine MRI provides useful evaluation of the bone marrow, but non routine MRI pulse sequences are increasingly being used to evaluate bone marrow pathology. An understanding of MRI pulse sequences and the normal and age-related appearances of bone marrow is important for the practicing radiologist.

• **Paper ID: 167**

PULSE SEQUENCES AND TECHNICAL CONSIDERATION RELATED TO APPLICATION OF CONTRAST AGENT

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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 categorized according to the contrast agent mechanism: changes in proton density,relax- ivity, magnetic susceptibility and resonant frequency shift. Applications in morphologicalimaging, magnetic resonance angiography, dynamic imaging and cell labelling are described. The importance of optimising 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 im-

aging following the admin-istration 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 tumor function. Finally, the combination of novel MRI pulse sequences together with the recent develop-ments in targeted contrast agents discussed in the paper are discussed.

• **Paper ID: 13**

MR COLONOGRAPHY

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MR colonography is new technique in diagnostic that can be detect of lesions in colorectal region. This article reviews the current status and research directions in MR colonography compares these methods.

• Paper ID: 81

AN OVERVIEW OF THE PRINCIPLES OF RADIATION PROTECTION IN RADIOLOGY CENTERS IN TEHRAN

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Background:

For decades, the use of radiation as a laboratory tool for the diagnosis and treatment of diseases passed so that the use of it is inevitable. In this context, maintaining the health of people working with radiation and observing the basic principles of radiation protection are determined by the relevant agencies, is very important. This study tries to evaluate compliance with established standards of radiation protection in radiology centers in Tehran.

Methods:

This study was reviewed and the relevant articles of the 2008 and 2015, using key words such as radiation protection, radiological and Tehran has been done.
Results: The results showed some centers lack the gonads and hood protection shield for the lead. The lack of air conditioning, the use of radiation warning signs and mark the area, from other cases that were not respected by the number of centers. The results showed that the principles of radiation protection, less than fifty percent.

Conclusions:

Giving priority to assess all radiology centers by Physict specializing in the center of important and practical steps to implement the principles of radiation protection. According to the findings, radiology centers, radiation protection measures are organized by radiation workers are not respected and less than half of radiographers protective measures to comply desirable. Monitoring authorities, holding classes and awareness of radiation protection and introduce more people to radiation, can be an effective step in order to get less and principles of radiation protection against it.

• Paper ID: 146

BIOLOGICAL EFFECTS OF CHRONIC LOW DOSE NATURAL RADIATION ON INHABITANTS OF THESE AREAS

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The residents of the world's high background natural radiation areas (HBNRAs), such as Ramsar (in Iran), Guarapari (in Brazil), Orissa and Kerala (in India) and Yangjiang (in China) have lived in these areas for generations under extraordinary radiation fields. The annual effective radiation dose from natural and man-made sources for the world's population is about 3 mSv, which includes exposure to alpha radiation from radon and its progeny nuclides. Nearly 80% of this dose (2.4 mSv) comes from natural background radiation, although levels of natural radiation can vary greatly.
Despite the fact that considering LNT and ALARA, public health in High Background Radiation Areas (HBRAs) is best served by relocating the inhabitants, the residents' health seems unaffected and relocation is upsetting to the residents. On the other hand, the life span of HBRA residents also appears no different than that in residents of nearby NBRAs. Surprisingly, some studies performed on cancer rate in these areas, shows that the highest lung cancer mortality rate was in areas where the radon levels were normal, while the lowest lung cancer mortality rate was in areas where the highest concentrations of radon in the dwellings were found.
There were no differences in laboratory tests of the immune systems, and no noted differences in hematological alterations between these two groups (HBRAs and NBRAs) of people.
The failure of earlier epidemiological studies to report any substantial increase in cancer incidence in HBNRAs has raised some controversy regarding the validity of the linear no-threshold hypothesis.
This suggests that adaptive response might be induced by chronic exposure to natural background radiation as opposed to acute exposure.
There are a lot of questions about effects of ioniz-

ing radiation; maybe Radio adaptive response proves positive effects of low radiation doses.

This paper reviews some of the most recent studies of HBNRAs.

• **Paper ID: 168**

REVIEW: COMPARISON OF TWO METHODS OF QUANTITATIVE ULTRASOUND (QUS) AND DUAL X-RAY ABSORPTIOMETRY (DXA) IN BONE DENSITOMETRY

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Background/Objectives:
Osteoporosis is a common disease of bone that characterized by Reduction of bone density and the following changes to its structure. Among postmenopausal women after age 50 due to complications from osteoporosis Followed by osteoporosis about (40% according to studies) are at risk of fractures, especially hip fractures. Among the various methods available to carry out densitometry, DXA method is the gold standard, and considering that in results between the two methods, DXA and QUS, in a number of studies, there isn't a good match, in this study with the aim of advantages and disadvantages of each method Becomes necessary.

Patients and Methods:

In the first study of related to Tehran (89), 49 women were examined densitometry by DEXA method Then, with the heels of both feet QUS consent for these patients is done.
In the second study related to Tehran (82), 151 healthy women aged 20 to 72 years old among healthy individuals were randomly selected. The samples in the heel with QUS method and DXA in femoral neck were measured.
In the third study in Turkey (2001), One hundred and twenty-three patients (39 male, 84 female) with osteoporosis and suspected of having osteoporosis were included in this study. SOS and BUA were measured and BMD was measured by DEXA.

Results:

QUS has a reliable sensitivity in diagnosis of osteopenia and osteoporosis and this method can be used as screening. Also QUS than DXA also more sensitive to the main indicators of fertility. QUS parameters such as DEXA cannot predict osteoporosis.

Conclusion:

It seems that we cannot used fingers QUS method instead DXA for diagnosis of osteoporosis, but it could be used as a screening method.

• **Paper ID: 91**

THE USE OF A CONTRAST AGENT FOR ADHESIONOLYSIS IN RACZ TECHNIQUE IN CAUDAL NEUROPLASTY

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Caudal epidural neuroplasty may be defined as inserting an epidural catheter through the caudal space and injecting a combination of local anesthetic steroid, hypertonic saline, and hyaluronidase.
Racz and Holubec in 1989 reported the first use of epidural hypertonic saline to facilitate lysis of adhesion. Then Racz introduced the Racz catheter, with less risk of shearing, obstructing, and migration.

Indications:

Failed back surgery syndrome
Epidural fibrosis
Lumbar radiculopathy
Spinal stenosis
Lateral recess stenosis
Back pain and radiculopathy
Herniated discs
Radicular neuropathic pain
Post radiation neuropathy
Post meningitis epidural scarring

Contraindication:

Infection
Coagulopahies
Unstabe lumbar spine
Inability to lie in prone position
Aracnoiditis

Procedure:

Intravenous access is established for administration of intravenous sedatives during the injection of solutions via the catheter.
Awide area of skin is then prepared with antiseptic solution so that all the landmarks can be palpated aseptically.
Contralateral frm the symptomatic side, 1 inch fram the midline and 2 inches fram the sacral hiatus on the gloteal mound, the skin is infiltratedwith a 25 gauge with local anesthetic. an amount less than 0.125-0.25ml is needed for a 1cm wheal. leave the needle used for skin infiltration in that position.
Insert a 15 gauge RX needle toward the inferior lateral angle of sacral cornua , approximately at a 45 degree angle to the skin , through the sacrococcygeal membrane into the caudal epidural space. A “loss of resistance” will occur while the needle enters the caudal space.
Verify the position of the needle within the caudal space with fluoroscopy under posteroanterior and lateral views.
Needle position should be confirmed by fluoroscopy in both anteroposterior and lateral views.
After negative results on aspiration for blood and cerebrospinal fluid, 3 to 5 mL of a water-soluble contrast medium such as iohexol or metrizamide is slowly injected through the previously placed epidural needle under fluo¬roscopic guidance.
The operator should check closely for any evidence of contrast medium in the epidu¬ral venous plexus, which would suggest intravenous place¬ment of the needle or subdural or subarachnoid placement and which appears as a more concentrated centrally located density. As the epidural space fills with contrast medium, a Christmas tree shape will appear as the con¬trast medium surrounds the perineural structures. Defects in this classic Christmas tree appearance are indicative of epidural perineural adhesions.
In the case of epidural adhesions, the dye will not spread over the involved nerve roots, forming a “filling defect” image.
After confirming that the tip of the needle is within the caudal space, insert a stainless-steel, fluoropolymer-coated spiral tipped RACZ catheter through the needle.
The catheter should be placed in the anterior epidural space and it should be confirmed under lateral vision in C-arm image.
After negative aspiration, inject 5-10ml of contrast material through the catheter. If the tip of catheter is within a vein or venous plexus, one should reposition the tip of the catheter.
If one suspect dura puncture, administer contrast solusion again to view if the tip of the catheter is

within the subarachnoid space. the contrast material will suddenly fade if the catheter is within the subarachnoid space.

After negative aspiration inject a combination of 9 ml of 0.25% bupivacaine, 40mg triamcinolone and 1500 units of hyaluronidase. Wait for 30minutes after the first injection, then inject 10ml of 10% hypertonic saline slowly for 30 minutes with an infusion pump. A triple-antibiotic ointment is placed on the wound and is covered by a bandage.

• **Paper ID: 99**

HYSTEROSONOGRAPHY ADVANTAGES OVER OTHER DIAGNOSTIC METHODS

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Objectives:

Infertility is a major problem in society that could cause irreparable effects on the family club. There are several ways to infertility diagnosis among which hysterosonography, Hysterosalpingography (HSG), laparoscopy and hysteroscopy can be named. The aim of this study is to find the safest available way to examine the fallopian tubes.

Patients and Methods:

In this study, those essays from 1380 to 1392 relevant to the mentioned subjects were evaluated and pub med, SID and google scholar were used as information tools.

Results:

Hysterosonography, HSG, hysteroscopy and laparoscopy methods are performed to examine the uterus and the fallopian tubes and to assess the primary and secondary infertilities. Since blockage of the fallopian tubes or clamminess of the uterus reduces the chance of fertility, we should acknowledge the status of tubes by using one of the methods mentioned above. According to the evaluation of the available essays, we found that each of the methods HSG (risk of X-ray and contrast agent side), hysteroscopy (invasive procedure and requires anesthesia), laparoscopy (invasive procedure) all have side effects, but the complications of hysterosonography which are relatively lower are negligible.

Conclusion:

Hysterosonography is an accurate, easy, affordable and non-invasive way to check the fallopian tubes compared to other diagnostic methods.

• **Paper ID: 108**

COMPRESSION OF DIGITAL BREAST TOMOSYNTHESIS WITH FULL-FIELD DIGITAL MAMMOGRAPHY IN RADIATION DOSE

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Purpose:

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.

Materials and 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.

• Paper ID: 132

EVALUATION OF AWARENESS RADIOLOGY TECHNOLOGISTS IN KERMANSHAH HOSPITALS ABOUT OF DIGITAL RADIOLOGY AND RELATED SYSTEMS

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Background & Objectives:

The significant progress that has occurred in the area of information technology, Caused the analog radiology replaced by the digital radiology. The aim of this study is evaluation of awareness of radiology technologists in Kermanshah hospitals about of digital radiology and related systems.

Patients and Methods:

This study is an observational study that has been done On 82 technologists working in hospitals in Kermanshah. The questionnaire was consisted of 17 questions regarding digital radiography and staff demographic data. The data is analyzed by using of the SPSS22 and methods consist of Pearson correlation coefficient, the test compares the means of two independent groups and one way Anova test. The level of significance tests was considered 0.05%.

Results:

Among the 82 technologists, 66/53% female and 34/46% were male. In this study, the participants' knowledge in the areas of acquaintance to concept of digital radiography and cognition of digital systems, acquaintance to applications and benefits of digital radiography systems, acquaintance to cognition and application of PACS systems was (28.04%, 54.88%, 23.17%) respectively. Between the knowledge and qualification, gender, work experience, a there was no significant relationship.

Conclusion:

The results showed, the majority of technologists information is very superficial
in the field of digital radiography. Since application of this systems is needful experience and the continuing education programs for the staff, should be given the necessary training to technologists working.

• Paper ID: 135

THE ASSESSMENT AWARENESS OF MEDICAL STUDENTS ABOUT THE RADIATION

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Background/Objectives:

Many of patients and staff are concerned about radiation exposure and risks related to their health. Medical students need to have some information about radiation. This study aims to assessment the knowledge of medical affiliated students of Hamadan University about the radiation.

Patients and Methods:

A questionnaire based cross-sectional study (with ten

questions about radiation) was prepared and were responded by 100 of medical students of Hamadan University, in order to evaluation the awareness of medical affiliated student. The data obtained from this questionnaire were analyzed by use of SPSS 16 software.

Results:

The partnership rate of medical affiliated students was 93.3% and the mean of knowledge about radiation for men and women was 71.98% and 77.67%, respectively (in total 74.82%).
There was a significant difference between the awareness of radiation between the male and female students ($P < 0.05$) it also was significant difference between awareness and the study field.

Conclusions:

many of medical student have the sufficient information about radiation and radiation protection. More education and comprehensive programs about radiation and radiation protection principles are recommended.

• Paper ID: 138

REVIEW OF THE CAUSES OF REPETITION OF RADIOGRAPHS AT THE RADIOLOGY CENTERS IN IRAN FROM 1378 TO 1391

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Background:

Prevalence and causes repetition of radiographic images that in addition to costs and the time factor is an increase in unnecessary radiation dose to patients and staff, introduction of quality control is considered to implement the program. According to different reports on the repetition of radiographic images in the country this study was to investigate the prevalence and causes of the abandonment of them.

Patients and Methods:

The research was conducted by review. By entering key words radiography repetition, the repetition of radiography, the reason of repetition of radiography, search for articles in SID and Google scholar databases was performed. Among the 23 articles found in this area 9 article for the purpose, timeframe and procedures were examined in more detail.

Results:

The findings of several articles around the country about the reasons for repetition of radiographs show that three of the factors involved in repetition of them are false radiation factor, incorrect techniques and patient movements, as well as parts of the skull, pelvis and sinuses were the most repeated requests. Radiation worker with the patient when the opposite sex is likely to be repeated, as well as expertise in radiation workers is relatively high.

Conclusion:

Despite repeated errors in the radiographic images is normal and unavoidable but it should be tried to reduce the error and repetition to the minimum. Training courses for workers, the use of new digital radiography equipment, regular calibration of the equipment and experienced staff can dramatically reduce these problems.

• Paper ID: 141

REVIEW OF THE MAIN CAUSE OF DISTORTION IN MRI IMAGES

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Magnetic Resonance Imaging (MRI (is the method that uses from magnetic properties of body and produces image. The basic principle of MRI is on the basis that nuclei of some elements, when placed in strong magnetic field, placed by magnetic force in one direction. MRI excels in some places and has

weakness in some other directions compared to other tools in medical physics. In this research have been investigated weak points of this method. Based on studies on 120 cases that have done MRI, it shows that, inevitable motions such as breathing, heart rate and Prystalsysm and ... that come from fear of closed environment or prolongation of MRI examination and as a result fatigue, often causes distortion of the image and create the artifacts that this amount is equal to 77.5% of all patients. That is a large percentage.

• **Paper ID: 152**

COMPARISON BETWEEN DIGITAL BREAST TOMOSYNTHESIS (DBT) VERSUS FULL-FIELD DIGITAL MAMMOGRAPHY (FFDM)

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Digital breast tomosynthesis (DBT) is expected to overcome some inherent limitations of mammography clinical performance caused by overlapping of normal and pathological tissues. The main purpose of these researches is to compare breast cancer and calcification visibility in Digital breast tomosynthesis (DBT) to cancer visibility in Full Filed digital mammography (FFDM).This work reports the final results of some clinical studies involving diagnostic population.

The study done in Italy (Gisella Gennaro and etal) enrolled 200 consenting women who had at least one breast lesion discovered by ultrasound,They underwent tomosynthesis in one view [mediolateral oblique (MLO)] of both breasts at a dose comparable to that of standard screen-film mammography in two views [craniocaudal (CC) and MLO] and (ROC) analysis was performed. Clinical performance of DBT compared with that of FFDM was evaluated in terms of the difference between areas under ROC curves (AUCs) for BIRADS scores.

Second study (Marco Bertolini and etal) of a commercial full field digital mammographic system versus tomosynthesis mode was evaluated in terms of the image signal difference to noise ratio (SDNR). A contrast detail phantom was obtained embedding 1 cm Plexiglas,including 49 holes of different diameter and depth,between two layers containing a breast-simulating material. The phantom was exposed with the details plane perpendicular to the X-ray beam using the manufacturer's standard clinical breast acquisition parameters.

In the third study (M. Lee Spangler) One hundred paired examinations were performed utilizing FFDM and digital breast tomosynthesis. Twenty biopsy-proven cancers, 40 biopsyproven benign calcifications, and 40 randomly selected negative screening studies were retrospectively reviewed by five radiologists in a crossed multireader multimodal observer performance study. Data collected included the presence of calcifications and forced BI-RADS scores. Receiver operator curve analysis using BI-RADS was performed.

R :in first study that was in Italy Overall clinical performance with DBTand FFDM for malignant versus all other cases was not significantly different (AUCs 0.851 vs 0.836,p=0.645). The lower limit of the 95% CI or the difference between DBT and FFDM AUCs was −4.9%.

In the second study SDNR in the digital breast tomosynthesis (DBT) images was higher than that of the full-field digitalmammography (FFDM) for 38 out of 49 details incomplex background conditions. The relative SDNR results for DBT and FFDM images showed a dependence on the diameter of the details considered,but overall the results was not significantly different.

In the third study Overall calcification detection sensitivity was higher for FFDM (0.84% [95% CI, 0.79–0.88%]) than for digital breast tomosynthesis (0.75% [95% CI, 0.70–0.80%]). In the cancer cohort, 75 (76%) of 99 interpretations identified calcification in both modes. Of those, a BI-RADS score less than or equal to 2 was rendered in three (4%) and nine (12%) cases with FFDM and digital breast tomosynthesis, respectively. In the benign cohort, 123 (62%) of 200 interpretations identified calcifications in both modes. There was no significant difference in the nonparametric computed area under the receiver operating characteristic curves (AUC) using the BI-RADS scores (FFDM, AUC = 0.76 and SD = 0.03; digital breast tomosynthesis, AUC = 0.72 and SD = 0.04)

Conclusion:

Clinical performance of tomosynthesis at the same total dose as standard screen-film mammography is not much inferior to digital mammography and diagnostic performance as measured by area under the curve using BI-RADS was not significantly different.

• **Paper ID: 187**

THE SURVEY OF KNOWLEDGE LEVEL,THEORY AND FUNCTION RAY_WORKER'S RADIOLOGY IN SANANDAJ CITY ABOUT RAY_ PROTECTION ON 1393

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Introduction:

Accomplishment of radiography's exams is usage for distinguishing different sickness and has potential dangers for patients and ray workers in radiology's parts where as these dangers will reduce by heed of protection thoughts.
The goal of this survey is appointment of knowledge level and ray worker's function in radiology's parts of Sanandaj city in ground of rule's protection against rays.

Method:

This research is descriptive analytic form of sectional and by usage of 30 questions of one questionnaire that is fill out between all ray workers of radiology's centers in Sanandaj city. this questionnaire includes demographics' information and questions relate to knowledge balance, attitude and ray worker's function about radiation protection. The information of supplemental questionnaire by usage of spss18 software, descriptive statistic includes mean score and standard deviation hill, knowledge balance, function, ray_ worker's attitude is analyzed with genus and educational evidence and record of service.

Results:

Rate of communion's ray_workers was 94.16 percent and average and standard deviation and privilege relate to awareness,attitude and their function in protection against to r was in sequence of 11.43±1.592,16.59±2.12,20.56±2.725,average and standard deviation of age and history of ray_workers was in sequence of 9.96±6.931,34.19±7.25.

Conclusion:

The results of this survey showed that radiation protection knowledge with ground of survey's subject was decreased by growth of age and low of educational evidence and there's a direct relation between ray worker's awareness with their function of ray's protection.

• **Paper ID: 201**

KNOWLEDGE ASSESSMENT OF RADIOGRAPHERS IN INTRAVENOUS CONTRAST MEDIA IN CHOSEN RADIOLOGY CENTERS IN KHUZESTAN

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Today using contrast media in order to diagnose different tissues in radiology section has found a vast range of applications. Thus application of safe procedures and protocols in usage of contrast media to prevent dangerous reactions seems to be of great necessity. That is why in this study we aimed to evaluate the safety of intravenous administration of contrast media in the radiology sections of hospital Centers of Khuzestan
This is a descriptive and cross sectional study. Data were gathered using questionnaires derived from articles and international standard guidelines such as (ESURE, RCR) in six areas including: drugs, protocols, find high risk ills, reaction undesirable, universal instruction and facilities.
Results showed that the level of staff awareness of injection protocols and there is no significant gender-related. In contrast drugs detected a significant

relationship with the level of education so that the educational level of the subjects Vjvddard.bh was above the level of awareness. Also seen as more significant relationship between work experience and recognition in the contrast agents of the pain. The results turned out to be junk. In between the knowledge of radiology personnel in identifying high-risk patients, there is a significant relationship with the age of radiation workers. At the end of this study, it was found that between the radiology staff awareness of global guidelines on the degree of contrast material with no significant relationship. Given the importance of the subject and the information obtained should be factors in the safety of patients in hospitals, radiology centers injection veil in the province through the effective communication of instructions on the use of contrast media injection unit and provide the required process equipment improve patient safety and supervision implemented by the relevant authorities.

• **Paper ID: 209**

QUALITY CONTROL OF CONVENTIONAL RADIOLOGY DEVICES IN SELECTED HOSPITALS OF KHUZESTAN PROVINCE, IRAN

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Introduction:

Quality control techniques used to test the components of the radiological system and verify that the equipment is operating satisfactorily. In this study, quality control (QC) assessment of conventional radiology devices was performed in frequently visited radiology centers of Khuzestan province, Iran.

Materials and Methods:

Fifteen conventional radiology devices were examined, based on the protocol proposed in Report No. 77 by the Institute of Physics and Engineering in Medicine (IPEM). Ten standard QC tests, including voltage accuracy and reproducibility, exposure time accuracy and reproducibility, tube output linearity (time and milliampere), filtration (half-value layer), tube output (70 kV at FSD =100 cm), tube output reproducibility and beam alignment were performed and assessed. All measurements were performed, using Barracuda multi-purpose detector.

Results:

The reproducibility of voltage, exposure time and dose output, as well as output linearity, met the standard criteria in all devices. However, in 60% of the units, the results of the beam alignment test were poor. We also found that 66.7% of the studied units offer services to more than 18,000 patients annually or 50 patients per day.

Conclusion:

Despite the fact that radiological devices in Khuzestan province are relatively old with high workload, the obtained results showed that these devices met the standard criteria. This may be mainly related to proper after-sale services, provided by the companies. Although these services may be expensive for radiology centers, the costs may be significantly reduced if QC is defined as a routine procedure performed by qualified medical physicists or radiation safety officers.

• **Paper ID: 228**

EVALUATION OF RADIOLOGY DEPARTMENT'S AWARENESS ABOUT ADVANTAGES AND DISADVANTAGES OF DIGITAL AND ANALOGUE RADIOLOGY

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Introduction:

The aim of this study is radiology staff informed about the advantages and disadvantages of digital and analog radiography systems.

Method:

The study was conducted in 1393 , in Hamadan university affiliated hospitals..
At this cross-sectional study, 118 radiographers of Hamadan university affiliated hospitals, was conducted by simple random sampling method.
The gathered data was presented using descriptive statistics tests in SPSS software.

Results:

118 (%100) of employees have participated in this study (%51 women and %49 men) .
the radiographer information about the questions 1 and 4 were excellent and all staff have the correct answer. On the question of 11 and 12, only 6 out of 118 have correct answers. Question 16 was the only question that has not correct answer.

Discussion:

By the results of this study we can conclude that with the vast improvements in the field of digital X-ray technology in hospitals, the information of workers in these sectors is very low.
Because these devices are functioning properly requires experience and continuing education personnel, it should be trained the radiographers

• Paper ID: 92

THE USE OF SHIELD IN CT, USEFUL OR HARMFUL?

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CT Scan is one of the essential and important equipment in each hospital. There are a large number of different scan's protocols that technologists have to know and use them. Many times they have unstable or sensitive patients that need to cover their organs by protector shields. There are many articles about protection in radiology and technologist and radiologists know them. In radiology, they protect other organs by covering them by shileds and then expose the x-ray in the same direction. They don't know anything about the property of protector shields in CT. The X-ray tube is rotated in CT scanners and its position is changed each sub second. There is an important question that is shield useful for protecting other part of body in each scan. What happened in Brain scan, when we cover the abdomen and x-ray fanbeam is expoused form posterior (behind the table). Is useful this method of protective shield?

• Paper ID: 96

DETERMINATION OF THE OPTIMUM X-RAY DOSE OF LINEAR ACCELERATORS FOR THE LYMPHOCYTE SUPPRESSION IN BLOOD USED FOR BONE MARROW TRANSPLANTATION

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Introduction:

Today, CO-60 devices are utilizing for the suppression of the lymphocytes in the prevention of graft-versus-host disease (GVHD). Due to problems such as radioactive source age, problems in source replacement and protection risks, we are looking to replace linear accelerator (Linac) for this objective.
However, since the x-ray spectrum of the Linac is different compared to CO-60 device, careful determination of the x-ray dose is required.

Materials and methods:

Firstly, venous blood of the right-handed people with blood group O+ was diluted with hanks buffer then it was passed on ficole for isolation of the mononuclear cells. The isolated cells were centrifuged and cultured exposed to different radiation doses of Linac in the sterile condition. The proliferative responses after being washed twice. The samples were of exposed cells were examined with MTT Assay in comparison with the control.

Results:

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.

Discussion and conclusion:

Two important points in the exposure of blood and blood product by linear accelerator is to determine the appropriate dose of lymphocyte suppression without damage to other blood cells and the other is designing

an appropriate exposure manner. In this research we found that accelerator with specific exposure condition is a suitable alternative for the use in bone marrow transplant

•PaperID:101

X-RAY PROTECTION WITH CERIUM OXIDE NANO-PARTICLES

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Purpose:

Nanostructured materials are defined as those materials whose structural elements have dimensions in the 1–100 nm range. Due to their very small size, these materials can present novel chemical and physical properties. In fact, some properties of nanostructured materials are attractive for radiological protection applications, especially in the design of lighter and lead-free aprons for individual protection.
Since Unwanted exposures to high-energy or ionizing radiation can be hazardous to health significant research efforts have been focused toward designing efficient protection.
Cost-effective and flexible shielding Nano materials for protection against radiation encountered in various industries.
Discussed within this paper are recent data which support the premise that certain nanotechnology may improve the radiation resistance.

Material and methods:

In the second research(jimmie colon and etal) the ability of rare earth cerium oxide (CeO2) nanoparticles to confer radioprotection against epithelium was examined,The pretreatment of normal human cells (CRL 1541) with varying concentrations of CeO2 nanoparticles 24 hours before single-dose radiation exposure conferred protection from radiation-induced cell death by reducing the amount of reactive oxygen species produced and increasing the expression of superoxide dismutase 2 (SOD2), in a dose-dependent manner.
Another study that was done with Adam Briggs and etal reveal a significant decrease in the radioprotection efficacy for cells exposed to CeO2 nanoparticles and irradiated with 10 MV and 150 kVp X-rays.
The cerium oxide nanoparticle sample was synthesized at the Institute for Superconducting 90 and Electronic Materials (Wollongong, NSW, Australia) using a spray pyrolysis technique.
Another study was done with tarnuzzer and etal was about The ability of engineered cerium oxide nanoparticles to confer radioprotection on human cells of radiation therapy.
Human normal and tumor cells were treated with nanoceria and irradiated, and cell survival was measured.

Results:

In the end of, these studies that was done with jimmie colon and etal, they suggest that CeO2 nanoparticles protect the epithelium against radiation-induced damage by acting as free-radical scavengers and increasing the production of SOD2 before radiation insult.
The results in This study (adam briggs and etal) highlights an interesting phenomenon that must be considered if radiation protection drugs for use in radiotherapy are developed based on CeO2 nanoparticles.
The work presented in this review article will address the effectiveness of cerium oxide nanoparticles in radioprotection in a variety of cells and in animal models during radiation exposure which will encourage the development of innovative and new approaches to radiation protection, using nanotechnology.
Tarnuzzer and etals results show that Treatment of normal cells conferred almost 99% protection from radiationinduced cell death, whereas the same concentration showed almost no protection of tumor cells with engineered cerium oxide nano structures.

•PaperID:128

A COMPARATIVE SURVEY OF THE AWARENESS LEVEL OF WORKING DOCTORS AND MEDICAL STUDENTS IN HAMADAN PROVINCE CONCERNING MEDICAL RESPONSE AND PREPAREDNESS IN NUCLEAR ACCIDENTS

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Background:

As a result of ever-increasing use of nuclear technology in various fields, increasing the awareness for coping with nuclear and radiation accidents as a part of the care education becomes a requirement. The objective of this study is survey of the awareness level of working doctors and medical students in Hamadan province concerning medical response and preparedness in nuclear accidents.

Patients and Methods:

In this descriptive cross-sectional study, the awareness levels of 132 working doctors and medical students of Hamadan were compared by use of a researcher-made questionnaire consisting of two parts. The data concerned were analyzed utilizing SPSS 16 software, the descriptive statistics, and Chi square correlation test and/or Fisher exact test.

Results:

In this study, 49% of working doctors and 51.9% of students were male. The doctors' awareness regarding the consequences of a nuclear accident and acquaintance with special therapeutic protocol for the nuclear injured was significantly more than that of the students. None of them had significantly attended any training courses and both groups considered attending specialty training courses for acquaintance with nuclear accidents as necessary.

Conclusion:

Considering the results of this study, the awareness level of working doctors and medical students regarding medical response and preparedness in nuclear accidents is not acceptable. Therefore, inclusion of topics related to radiation accidents in the syllabus of medical students and, as well, planning for continuous education of working doctors appears to be necessary.

• Paper ID: 160

STUDY OF ENTRANCE SKIN DOSE OF UROGRAPHY PATIENTS IN TABRIZ

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Background/Objectives:

Kidney imaging with contrast media is one of the important diagnostic methods in kidney patients. Regarding to high incidence of this disease in Tabriz and importance of kidney in health and survival of person, study of patients referred to radiology center in Tabriz performed.

Patients and Methods:

Characteristics of the number, sex, age, symptoms, and the number of radiographs of clients in the questionnaire were collected and recorded. Entrance skin dose of patients admitted to 29 Bahman hospital was calculated from the data for 22 months.

Results:

About 80% of patients were male with a mean age of 42 years and weighing 87 kg. Presenting more than 90% of patients with kidney stones and hydronephrosis, the number of radiographs was between 5 and 8. The calculated entrance skin dose was variable Between 504 and 776 m Rontgen.

Conclusions:

The entrance skin dose of patients at kidney imaging with contrast media in accordance to high exposure factors and number of radiographs is high. Therefore, radiation protection, especially in the gonads of young men and women is recommended.

• Paper ID: 166

EVALUATION OF VARIOUS ASPECTS OF OCCUPATIONAL BURNOUT IN RADIOLOGY WORKERS IN HAMADAN UNIVERSITY AFFILIATED HOSPITALS

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Introduction:

Burnout is a syndrome of emotional exhaustion, depersonalization, and reduced sense of personal accomplishment and job performance is one of the major causes of the decline. Syndrome in jobs that deal directly with people more than other professions may be observed. This study was designed to investigate various aspects of occupational burnout in radiology workers at Hamadan University affiliated hospitals.

Method:

At this cross-sectional study, 95 radiographers of Hamadan university affiliated hospitals, was conducted by simple random sampling method. The Maslach Burnout Inventory was used to evaluate the occupational burnout among radiology workers. The reliability of this test is 0.76. The gathered data was presented using descriptive statistics tests in SPSS software.

Results:

The results of this study showed that the employees had high levels of emotional exhaustion. There was a significant relation between the emotional exhaustion and depersonalization levels. Also there was a significant relation between the job experience and the emotional exhaustion. There was an inverse significant correlation between depersonalization and age.

Discussion:

High emotional exhaustion in employees compared to other studies is a significant concern. The mean overall score gained by radiology workers of Hamadan university affiliated hospitals showed a High prevalence of occupational burnout in comparison to the other similar studies.

• **Paper ID: 219**

RADIATION DOSE OF OPERATOR AND PATIENT BY USING SINGLE CATHETER AND DOUBLE CATHETER IN TRANSRADIAL CORONARY ANGIOGRAPHY

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Introduction:

One of the important factors for reducing radiation dose is reduction of fluoroscopy time in coronary angiography. By using single catheter may cause to reduce radiation time and radiation exposure. The aim of this study ,to compare the radiation doses during CA procedures TRA access method using two types of single and double catheter

Method and Materials:

We randomized 74 Patients (single=37, double=37). In this study Radiation dose of patient and Operator measured in Transradial coronary Angiography and compare them by using single and double catheter. We measured SD,DAP,FT factors and operator dose And results were compared with
Them.

Rsults:

Mean SD and DAP of patient by using single catheter were 229.15 mGy and 1736.31µGym2, while by double catheters(Judkins) were 238.6 mGy and 1728.8 µGym2. Mean FT in single and double Catheter was 2.9 and 3.77 min respectively.(p=.64)
Mean Operator dose were 34.83 µsv in single catheter 31.85 µsv in double(Judkins catheter).(p=.72)

Conclusion:

Patient and operator dose in Coronary Angiography with single catheter are the same as using double catheters.

• Paper ID: 105

INVESTIGATE THE EFFECTIVENESS OF SHIELDING (LEAD - BISMUTH - DRFS) IN CT SCAN EXAMINATION; A REVIEW STUDY

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Background:

Given the importance of absorption dose in CT scan, evaluate efficiency of the Shield is important. The purpose of this review study, carried out in 2015 was to investigate the effectiveness of lead shielding during CT scan examinations.

Patients and Methods:

The first study which was carried out in UK, applying an anthropomorphic phantom, TLD chips were used to measure the approximate dose to the thyroid with and without the application of a standard lead thyroid shield.
The second study which was done in cheongju University Korea, Researchers using a new dose reduction fiber sheet (DRFS) with commercially available, the radiation dose was measured five times from the center of the polymethyl methacrylate head phantom to calculate an average value using a CT ionization chamber.
And third study that is carried out in UK, Dose measurements were made with no shielding, with lead aprons and with the new shield around the abdomen and pelvis in order in order to Determination of absorption dose reduction and Shield performance.

Results:

findings of the first study showed variation of the shielding effectiveness with scanning technique. The lead shield significantly reduced the thyroid dose by 46-58% at the surface of the thyroid and by 37-44% at depth of 1 cm. within the thyroid tissue.
In the second study findings showed that the new DRFS shields could reduce dosages further than to the previous conventional shield.
The results of third study recommended that patient shielding should be used for all chest CT scans.

Conclusions:

The results of the review showed that Shielding in many examination of CT scan Very useful for patients. This study has proved that for many scanning techniques, shielding the radiosensitive important organs will significantly reduce the dose from radiation.

• Paper ID: 198

THE COMPARISON OF ABSORBED DOSE RATE OF PATIENTS IN MIN DOSE, PROSPECTIVE AND RETROSPECTIVE PROTOCOLS OF DUAL SOURCE 128 SLICES CARDIAC CTA SCANNERS

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In this study, the absorbed dose rate of patients in mentioned protocols is evaluated and compared according to variants like BMI, Heart rate and also the technologist.

• **Paper ID: 106**

EFFECT OF THYROID SHIELDING AND LEAD GLASSES ON PATIENT ANDERGOING INTERVENTIONAL CARDIOLOGY

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Purpose:

To evaluate dose reduction to the thyroid and eyes by lead shielding in patients undergoing interventional cardiology procedures.

Methods and Materials:

A randomized patient study was undertaken to evaluate the dose reduction by thyroid and eye lead shields and assess their practicality in a clinical setting. 64 patients attending for Coronary Angiography (CA) and Percutaneous Transluminal Coronary Angioplasty (PTCA) into 2 groups a) over Thyroid and eye Shield and b) under Thyroid and eye Lead Shield. Two thermoluminescent dosimeters (TLDs) were placed over and under the thyroid and eye Shield (1 on each side) at constant positions on each patient. A thyroid lead shield (Pb eq. 0.5 mm) was placed around the neck and an eye shield was placed over the eyes of the patients. The total dose-area-product (DAP) value, number of image was taken and fluoroscopy time were recorded for all patients.

Results:

Mean fluoroscopy time was 2.54 and 7.26 min, mean DAP value was 17.90 and 49.33 Gy.cm2 and mean number of image was 2325 and 6537.6 for CA and PTCA respectively. For the mean thyroid and eyes doses, significantly different ($p < 0.001$) between the over shielded and under shielded groups were observed. The reductions in the organ-equivalent doses in the eyes and thyroid were 44 % (0.587 mSv), 52 % (0.641 mSv), respectively.

Conclusion:

Thyroid and eye shielding with lead are inexpensive, easy to apply, and widely available at cardiology departments. and when not obscuring the field of view, should be used routinely.

• **Paper ID: 113**

CANCEROUS LESION DIAGNOSIS OF BREAST THERMOGRAPHIC IMAGES USING CHAOTIC INDEXES

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Today, Breast Cancer is known as one of the most common diseases among women. Nevertheless, if it is diagnosed in early stage, it may be treatable. Breast thermal imaging is a non-invasive, rapid, low cost, non-contact and painless method which have the potential of earlier detection of breast disease. In this paper, new approaches for calculation of chaotic indexes in breast thermographic images have been proposed. By the proposed approaches, abnormal lesion can be detectable. On the other hand, Cancer is usually recognized as a chaotic and poorly regulated growth. The malignant tumors have more irregular boundary than that of the benign ones and measuring the irregularity of object boundaries can be used as a criterion for classification based on their related shapes. Therefore, recognition of chaos in medical images can lead to early detection of breast cancers. Fractal dimension, mean Lyapunov exponent and K-S entropy are the selected features for determination of the rate of contour boundary irregularities of images. Experimental results confirm the claims

that chaotic analysis of breast thermograms using the proposed methods is capable in classifying different classes of breast lesions with high accuracy.

• Paper ID: 114

SKIN CANCER DIAGNOSIS BASED ON NONLINEAR ANALYSIS OF DERMOSCOPIC IMAGES

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Abstract:

Measuring the contour boundary irregularities of skin lesion is an important factor for early diagnosis of malignant melanoma. Although the malignant melanoma is known as the most dangerous form of skin cancer, its early stage diagnosis would be helpful for treatment process. Several methods have been used for this feature extraction. In this paper, chaotic indexes are employed for determination of the skin boundary irregularity degrees. Cancer is usually recognized as a chaotic and uncontrolled growth of cells. The malignant tumor divides itself into a chaotic form, and quickly invades other cellular tissues. It is generally admitted that boundary irregularity associated with biomedical images may be due to the chaotic behavior of nonlinear systems. As such, measuring contour irregularity of images can serve as an index for distinction between malignant melanomas and benign moles. In this study, the largest of Lyapunov exponents and Kolmogorov-Sinai entropy are selected as the chaotic indexes for distinguishing between the regular and irregular contour boundary image as well as classifying the skin lesion images to melanoma and mole categories. Moreover, experiments on a set of dermoscopic images yielded a sensitivity of 100% and a specificity of 92.5% providing remarkable diagnosis accuracy compared to other related similar works.

• Paper ID: 212

ASSESSMENT OF THE TRANSLATION ACCURACY OF THE FIRST ONLINE ENCYCLOPEDIA OF MEDICAL PHYSICS AND MULTILINGUAL DICTIONARY OF TERMS, EMITEL

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Introduction:

EMITEL is one of the online educational projects that were founded in 2003 by the European Federation of Organizations in Medical Physics (EFOMP) and in 2006 during world congress of medical physics and biomedical engineering, its responsibility was accepted by the International Organization of Medical Physics (IOMP). EMITEL is the first online multilingual encyclopedia and dictionary of medical physics currently included 29 languages, and Persian is one of those.

The communication between an accurate translation of words and translated words that are commonly used in the area of expertise of that scientific community has always been a problem for Persian-speaking translators. This research is the first assessment of English to Persian part of the EMITEL. Therefore, the main purpose of this study was to investigate the translation accuracy of words translated from English to Persian in the EMITEL website.

Material and Methods:

Thirteen keywords have been selected to search the whole database of the EMITEL. Searching by keywords was due to lack of access to the database containing all the words. These keywords were: Dose, Radiation, Image, Radiotherapy, Imaging, Ultrasound, Protection, MRI, Radiobiology, CT-scan, PET, Film and Detector. A number of 500 words

were studied. this evaluation was based on "accurate translation" and "common translation".

Result:

Some words like Build up dose, Dose tolerance, Time fractionation and … were transliterated. Some other words like Functional MRI, Film crystal, Lead Protection and … were incorrectly translated. The third category of errors includes misspelled translated words like Tomography, Cine MRI, and …. All these words were corrected and reported to the IOMP and Iranian Association of Medical Physicists (IAMP).

Conclusion:

EMITEL is a new website that has not been passed more than four years since the creation of its new version. It seems the lack of updating words in English to Persian section is the origin of incorrect translations and misspelling. On the other hand, translators of the English-Persian part are mainly specialist in nuclear physics not in medical physics field I think this part should not be included in the text

• **Paper ID: 90**

DETERMINATION OF THE OPTIMUM X-RAY DOSE OF LINEAR ACCELERATORS FOR THE LYMPHOCYTE SUPPRESSION IN BLOOD USED FOR BONE MARROW TRANSPLANTATION

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Introduction:

Today, CO-60 devices are utilizing for the suppression of the lymphocytes in the prevention of graft-versus-host disease (GVHD). Due to problems such as radioactive source age, problems in source replacement and protection risks, we are looking to replace linear accelerator (Linac) for this objective. However, since the x-ray spectrum of the Linac is different compared to CO-60 device, careful determination of the x-ray dose is required.

Materials and methods:

Firstly, venous blood of the right-handed people with blood group O+ was diluted with hanks buffer then it was passed on ficole for isolation of the mononuclear cells. The isolated cells were centrifuged and cultured exposed to different radiation doses of Linac in the sterile condition. The proliferative responses after being washed twice. The samples were of exposed cells were examined with MTT Assay in comparison with the control.

Results:

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.
Discussion and conclusion: Two important points in the exposure of blood and blood product by linear accelerator is to determine the appropriate dose of lymphocyte suppression without damage to other blood cells and the other is designing an appropriate exposure manner. The linear accelerator for these two purposes and finally the use in bone marrow transplant is very good replacement.

• **Paper ID: 202**

THE EFFECTS OF COMBINED TREATMENT WITH IONIZING RADIATION AND RADACHLORIN MEDIATED PHOTODYNAMIC THERAPY ON MCF7 BREAST CANCER CELLS

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This study was undertaken to examine the effects of radachlorin as a sensitizer in both photodynamic and radiation therapy on MCF-7 human breast cancer cells line. Another purpose was to assess the effectiveness of radiotherapy in combination with photodynamic therapy.
The cells were incubated with radachlorin and were then exposed, in the independent treatment groups, to red visible light (660nm), at two energy density (6 and 12 j/cm^2) and 2 Gy X-ray ionizing radiation. In addition, combination effects of these modalities were evaluated. The percentage of the cell survival was investigated using the MTT assay and survival fraction was evaluated by colony assay.
The results demonstrated that radachlorin had no significant cytotoxic effects but it had a strong cytotoxic effect in the presence of light on mcf-7 cells. light

and radachlorin reduced the percent of cell survival up to45%. Despite, radachlorin could not act as a radiosensitizer. Using radachlorin with the combination of radiotherapy and photodynamic therapy resulted in a significant cell death in comparison to the control group. A 96% inhibition of MCF7 growth was obtained when light and x-ray were combined at present of radachlorin.

Radachlorin can be considered as a sensitive drug to light on breast cancer cell line but no as a sensitive agent to ionizing radiation.as a result of our study, combination of radiation and photodynamic therapy could be worth approach for breast cancer treatment. it appears that we can reduce the adverse effects of treatments without reducing the efficacy of therapy.

• **Paper ID: 162**

PET AND PET/CT SHIELDING REQUIREMENTS

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Positron emission tomography(PET) has been available in a number of centers for more than 20 years, but its use was not widespread until about 5 years ago. The power of PET resides in its ability to capture physiology and thereby obtain crucial diagnostic information unavailable from high-resolution pictures of the anatomy. The recent explosion of interest in PET as a diagnostic imaging modality originates from three factors: powerful radiotracers, coincidence detection, and study reimbursement.
PET/CT is growing in use in the fields of Cardiology & Neurology because of Better Spatial Resolution and quantitation and it is Potential for labeling of biological compounds with positron emitters including 11C,13N,15O, 18F.
The shielding of positron emission tomography and PET/CT (computed tomography)facilities presents special challenges. The 0.511 MeV annihilation photons associated with positron decay are much higher energy than other diagnostic radiations.
As a result, barrier shielding may be required in floors and ceilings as well as adjacent walls. Since the patient becomes the radioactive source after the radiopharmaceutical has been administered, one has to consider the entire time that the subject remains in the clinic.
Meeting the regulatory limits for uncontrolled areas can be an expensive proposition. Careful planning with the equipment vendor, facility architect, and a qualified medical physicist is necessary to produce a cost- effective design while maintaining radiation safety standards.
In this paper we present Introduction to Radiation Protection in PET/CT, PET/CT Technology, methods for estimating the shielding requirements for PET and PET/CT facilities, Facility design, Protective Equipment, Personal & Work place monitoring, Staff and Public Doses, Transport Safety, Source Security & Dealing with waste.
There are some pictures below about PET room design and dose estimating of PET procedures.

MAMMOGRAPHY BIRADS LEXICON 5TH EDITION, IN IRAN

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BI-RADS is designed to standardize breast imaging report and to facilitate communication between radiologists and clinicians. It also reduces confusion in breast imaging interpretation. Outcome monitoring, quality assessment and future research all will be easier by using this lexicon. Nowadays this is commonly used in many parts of the world including our country Iran. Although we should be loyal to the BIRADS lexicon, it is mandatory to adopt it according to our country circumstances. This article is a summary of the BI-RADS 2013 version for mammography, an updated version of the 2003 and its practical pitfalls in Iran will be discussed. The reporting system should be concise and organized by using the following structures: indication for examination, succinct description of the overall breast composition, clear description of any important findings, and comparison to previous examination, if deemed appropriate by the interpreting physician, assessment and management. These items are discussed in details.

PREGNANCY ASSOCIATED BREAST CANCER (PABC): DIFFICULTIES IN DIAGNOSIS BY IMAGING MODALITIES

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Objective:

To evaluate the radiological findings of pregnancy associated breast cancer (PABC) and discuss the difficulties in diagnosis by imaging modalities.
Methods : In a retrospective review we evaluate the mammographic and sonographic features of 40 patients who were diagnosed with PABC during the previous 8 years .Sonography was performed for all patients and both mammography and sonography were performed for 22 patients .The age of the patients ranged between 25 and 44 years.

Results:

Mammography revealed positive findings in 16 cases. Mammographic findings included masses (m=10) ,masses with calcifications (n=2), calcifications alone (n=2), skin thickening (n=2) and asymmetric density (n=2).The most common sonographic findings was a hypo echoic mass with heterogeneous echogenicity and irregular margin (n=22).Prallel orientation was detected in 10 cases ,posterior acoustic enhancement in 10 cases and cystic component in 8 patients .Sonographic findings if a solid mass with posterior acoustic enhancement ,parallel orientation and cystic component were somewhat different from the appearance of non-PABC.

Conclusion:

Ultrasound is an excellent imaging method for diagnosis of PABC.
However when the imaging results are suspicious, a biopsy should be performed to obtain a pathologic diagnosis. PABC is often advanced at diagnosis

MAMMOGRAPHY ASSESSMENT CATEGORY IV & V

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BIRADS 4 and 5 in mammography: definition and management

BIRADS 4:

This category is reserved for findings that do not have the classic appearance of malignancy but are suffiently suspicious to justify a recommendation for biopsy. The ceiling for category 3 assessment is a 2% likelihood of malignancy and the floor for category 5 assessment is 95%,so category 4 assessments cover the wide range of likelihood of malignancy in between.
Thus almost all recommendations for breast inter-

ventional procedures will come from assessments made using this category. By subdividing category 4 into 4A ,4B and 4C, as recommended in Guideline chapter and using the cut points indicated therein , it is hoped that patients and referring clinicians will more readily make informed decisions on the ultimate course of action.

BIRADS 5:

These assesssments carry a very high probability (≥ 95%) of malignancy. This category initially was established to involove lesions for which 1-stage surgical treatment was considered without preliminary biopsy, in an era when preoperative wire localization was the primary breast interventional procedure. Nowadays, given the widespread acceptance of imaging-guided percutaneous biopsy, 1-stage surgery is rarely, if ever, performed. Rather, current oncologic management almost always involves tissue diagnosis of malignancy via percutaneous tissue sampling to facilitate treatment options, such as when sentinel node biopsy is included in surgical management... When neoadjuvant chemotherapy is administrated prior to the surgery.

BENEFITS AND ROLES OF DIGITAL BREAST - TOMOSYNTHESIS

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Breast tomosynthesis, also known as 3-dimensional (3D) mammography, approved by the FDA in February 2011, is a technology that reduces effects of tissue superimposition. Clinical studies have estimated reductions in screening recall rates of 15% to 40%.
Higher cancer detection rates have been demonstrated which in some studies were 40% higher for invasive cancers and 27% higher for all cancers.
Better lesion-margin analysis and more accurate lesion location have also been reported.
In a tomosynthesis scan, the x-ray tube head moves over the breast, acquiring 15 low-dose images over a 15-degree arc to produce a dataset that is then reconstructed into thin, 1-mm slices for the entire thickness of the breast. These images are viewed on a diagnostic workstation individually or in cine format. The 3D images are designed to reveal the inner architecture of the breast free of interference from superimposed tissue above and below the slice of interest. As currently required by the FDA, a screening examination includes both the 3D dataset and the conventional 2D images. While the breast is still in compression, the 2D image is acquired immediately after the 3D sweep resulted in combo images.
A lower recall rate, higher positive predictive value for a biopsy recommendation, higher cancer detection rates, fewer biopsies, and improved radiologist confidence are expected to result from the use of this technology.
Breast tomosynthesis should be valuable in both screening mammography and diagnostic mammography.
It is promising that, this new breast imaging technique will make breast cancers easier to see in dense breast tissue and will make breast screening more comfortable.

IMAGING OF INVASIVE BREAST CANCER, WITH RESPECT TO ITS HISTOLOGY AND MOLECULAR PRESENTATION

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Breast cancer is a highly heterogeneous disease, with a variety of morphologic and clinical manifestations, which results in a range of responses to treatment.
Recently, targeted therapy based on the genetic, hormonal or immunohistochemical (IHC) subtypes of breast cancer has been used. Therefore, the examination of IHC subtypes using breast cancer tissue is actively performed.
An immunohistochemical determination of the Estrogen Receptor (ER), Progesterone Receptor (PR), Human Epidermal Growth Factor Receptor 2 (HER2), and Ki67 are used to define these subtypes. Using DNA microarray-expression profiling techniques, we can use a hierarchical clustering method to identify four distinct molecular subtypes:
1) Luminal A (ER and/or PR positive, HER2 negative);
2) Luminal B (ER and/or PR positive, HER2 positive or Ki67>14%);

3) Human epidermal growth factor receptor 2 (HER2) - enriched (HER2 amplified, ER and PR negative);
and 4) triple negative (ER, PR, and HER2 negative) subtypes.
Prognosis and survival are different according to these subtypes.
Luminal tumors are associated with the most favorable prognoses, while HER2-overexpressing and triple negative tumors are associated with the worst prognosis.
Due to these different prognoses and treatment strategies, prior knowledge of molecular subtypes is essential to managing breast cancer patients. Thus, the relationship between biomarkers and imaging features is important, because imaging findings can predict molecular features.
Several reports show a correlation between clinical, pathological, and radiologic features of these molecular subtypes, which will be discussed.

BREAST DENSITY ARE YOU INFORMED?

Abbas Honarbakhsh, MD

Breast density may be one of the strongest predicators of the failure of mammography to detect cancer, according to an educational session presented at the 2014 Radiological Society of North America (RSNA) conference in December.
The topic of breast density was a prominent on at the meeting.
And many healthcare providers are beginning to look beyond just using traditional mammography to assess whether or not a woman has breast cancer.
The push for additional screening is becoming prevalent, and many states are enacting laws that require women to be notified if they have dense breast tissue and what that means of the ability to accurately fined cancer.
Breast density – the ratio of fat to fibro glandular tissue in the breast – is characterized into one of four levels of overall density BI-RADS score: almost entirely fatty, scattered areas of fibro glandular density, heterogeneously dense (40 percent) and scattered areas of fibro glandular density (40 percent).
In certain states, law requires that patient whose results come back as heterogeneously dense and extremely dense are informed as what that means, and the next steps to take.
Controversy surrounding the imaging options available for second look leads providers to use personal opinion and budget as leads providers to use personal opinion and budget as deciding factors.

DCIS INITIAL DETECTION, ASSESSMENT AND EXTENSION

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Ductal carcinoma insitu (DCIS) is the most common non-invasive ductal carcinoma.
Before widespread mammographic screening, it was accounting for only 0.8%–5.0% of all breast cancers.
Most of these lesions manifested clinically as a palpable mass, nipple discharge, or Paget disease.
However, in recent studies of women undergoing mammographic screening, DCIS has accounted for 15%–20% of all detected breast cancers and 25%–56% of clinically occult breast cancers detected at mammography.
DCIS represents a broad biologic spectrum of disease and has become increasingly important due to both a dramatic rise in the detection rate and ongoing controversy surrounding its clinical significance and optimal treatment.
At mammography, 62%–98% of DCIS lesions are detected owing to the presence of calcifications, with 2%–23% manifesting as simply a mass or asymmetric density. Although most cases of DCIS are diagnosed mammographically, 6%–23% of DCIS lesions are not visible at mammography.
Role of MRI in these cases and also in detection of precise extension of diagnosed DCIS in dense breasts should be considered.
The value of screen detection and treatment of ductal carcinoma in situ (DCIS) is a matter of controversy. At present, the extent to which the diagnosis and treatment of DCIS could prevent the occurrence of invasive breast cancer in the future is not clear.
The association between screen-detected DCIS and subsequent invasive interval cancers suggests that detection and treatment of DCIS is worthwhile in prevention of future invasive disease.

POSTOPERATIVE BREAST IMAGING

Simin Alerasool
Radiologist.MD

There is currently no consensus on a protocol for imaging the postoperative breast. Surveillance imaging after a breast cancer diagnosis is important because there is an increased risk of recurrence developing in patients, and early detection has been shown to improve survival.

In the case of mastectomy, most local recurrences (90%) occur within the first five years. These are most likely to occur in the skin and subcutaneous tissues surrounding the scar. Screening mammography is not indicated for the ipsilateral chest wall , however, evaluation of suspicious palpable findings at the mastectomy site may include diagnostic mammography, sonography, or MR.

In breast conservative therapy local-regional recurrences is about 1%–2.5% per year. In the immediate postoperative period, suspicious findings likely represent residual disease, whereas local recurrence typically occurs 3–7 years after BCT.

The purpose of postoperative imaging is 2-fold: first to evaluate the adequacy of resection, and second to detect tumor recurrence.

The treated breast is a rapidly changing organ, and early postoperative mammograms may demonstrate many findings, which usually evolve and resolve over time. Masses, fluid collections, architectural distortion, scarring, edema, skin thickening, and calcifications are posttreatment findings that may mimic or mask local tumor recurrence. Radiation therapy not only exacerbates these changes but also delays resolution.

Mammography represents the cornerstone of post-breast conservation imaging.Changes in the mammographic appearance after stabilization should raise suspicions for tumor recurrence.

The first mammograms of the treated breast are usually obtained 6 months after the completion of radiation therapy, along with mammograms of the contralateral breast. Thereafter, both breasts are imaged annually.

Sonography is frequently used to provide adjunct information of new abnormalities on physical exam, mammography, or breast MRI. Screening ultrasound can be particularly problematic in the conservatively treated breast since the normal postsurgical findings of scar, fat necrosis, and fluid collections can all demonstrate suspicious sonographic features and lead to unnecessary biopsies in an otherwise asymptomatic patient .Fat necrosis is a common and challenging pitfall in interpretation of post-BCT imaging. However, when identified appropriately, this finding can be placed in the BI-RADS 2 or BI-RADS 3 category. Recurrent breast cancer at or near a lumpectomy site can be seen as a hypoechoic, solid,or complex mass adjacent to the shadowing surgical scar, often with noncircumscribed margins and extensive posterior acoustic shadowing.If the postbiopsy scar gets bigger, or if the edges start to become rounder and the “scar” grows, the finding is worrisome for cancer.

The MR imaging appearance of fat necrosis can be indistinguishable from that of malignancy and may mimic recurrence.Enhancement related to fat necrosis has been reported to persist for up to 5 years after lumpectomy .

On MRI masslike enhancement, nodularity larger than 5 mm around a seroma cavity, segmental or ductal and clumped NMLE, rapid initial enhancement and washout kinetics not consistent with those of fat necrosis, and BI-RADS 3 lesions with increased size or prominence during short-interval follow-up should all be considered suspicious findings and appropriate for biopsy or the BI-RADS 4 category.

DWI is considered as enhancing the diagnostic performance of MRI in differentiating residual malignancy from post operative changes.

STANDARD MEASUREMENT OF CRL

Koroush Shahsavan,MD

CRL is the most accurate method for estimating of gestational age. here, we are discussing the new guidelines for measurement of CRL., that's been introduced by the fetal medicine researchers.

INCREASED NT WITH NORMAL KARYOTYPE

Elham Keshavarz
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Pathophysiology of increased NT:

1- Cardiac failure
21,18,13: Narrowing of aortic isthmus…dilated ascending aorta…over perfusion of head and neck 21: AVSD/VSD
18: Valvular/VSD
13: Valvular/AVSD/VSD/thruncus arteriosus
Turner : Coarectation and spectrum of left heart obstruction
2- Venous congestion in head and neck
a-amnion rupture…constriction of fetal body
b-diaphragmatic hernia…sup mediastinal compression
c-skeletal dysplasia…narrow chest
3- Abnormal or delay development of lymphatic system
Turner: Thyrosine kinase gene (x)
Overdistention of lymphatic sac due to failure of communication with the internal jugular vein
4- Failure of lymphatic drainage
Neuromuscular disorder …impaired fetal movement …failure of lymphatic drainage
5- Fetal anemia/ hypoproteinemia
a- immune and nonimmune hydropse: anemia and hypoproteinemia (anemia…high C.O.H.F)
b- homozygous alfa-thalasemia
6- Congenital infection
a- TORCH: myocardial infection…cardiac dysfunction
B M suppression …anemia…high C.O.H.F

b- PB19: B M suppression …anemia…high C.O.H.F
7- Altered composition of the extracellular matrix
21, 18,13: many of component protein of extracellular matrix are encoded on ch 21,18,13
21: increased collagen 6
18: increased Laminin
13: increased collagen 4

ASSESSMENT OF FETAL HEAD (BRAIN AND CALVARIUM) AND EVALUATION OF NTD

Ahmad Soltani Shirazi
Associated professor of Ahwaz Jundishapur medical science university

The first trimester embryo cephalic end is identifiable by about 8 weeks of pregnancy, bones of vault show mineralization by 11 weeks.
The brain mantle is very thin, the ventricles are large and filled with choroid, which is felt to provide nourishment for developing of brain.
A large echo free space behind, the hindbrain represents the rhombencephalic cavity, which decrease size as the cerebellum begins to form.
From 14 weeks most part of the cerebral structures is visualized in sonography.
Three standard views have been suggested that show major structures with these views 95% of anomalies of cerebral can be detected all are transaxial include.
Thalamic view, ventricular view and cerebellar view.
The thalamic view used to measure BPD.
It display the thalamus, third ventricle, fornices, basal ganglia , insula and ambient cistern.
Ventricular view is slightly higer and show bodies, the atria of lateral ventricule as well as the interhemispheric fissure.
The cerebellar view shows the cerebellar hemispheres, cisterna magna.

Cavum septi pellucidi.
The cisterna magna is the CSF space between the cerebellum and occipital bone if it obliterated suggests arnold chiari 2 malformation.
Between 14 week to 38 weeks the transverse atrial size constant at 7.6mm diameter, measurement above 10 mm indicate ventriculomegally.
In all congenlital CNS abnomalities can be according to time of insult in prenatal life or errors of dorsal induction.
There errors cause developmental defects, including anencephaly, encephaloceles, spinal dysraphism and chiari mal formations.
At the end, the fetus brain sonography at second trimester is great tools for pregnancy have major role for R/O NTD and brain anomaly.

RADIOLOGICAL APPROACH TO POSTMENOPAUSAL ADNEXAL MASS

Nasrin Ahmadinejad.MD
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The degree of clinical suspicion of ovarian cancer is significantly higher for post menopausal than for premenopausal women.
An adenexal mass (mass of ovary, Fallopian tube or surrounding connective tissues) is a common gynaecological problem.
If a pelvic mass is present, the first step is to find out if it is ovarian or on-ovarian in origin.
The next step is to determine if the lesion can be categorized as benign or is indeterminate.
The final step is to determine whether a patient is in low risk category or high risk.
For characterization of ovarian masses ultrasound is often the first line method, especially for distinguishing cystic from complex cystic –solid and solid lesion.
Ct is useful for staging of proven malignant lesions
For complex lesion primary evaluation is often followed by MRI
On the other hand, even with MRI accurate diagnosis of neoplastic subtype is not possible.
MRI as an adjunct to sonography could prevent treatment delay of potentially malignant lesions.
It is also aproven cost-effective approach to the management of sonographically indeterminate adenexal masses.

RADIOLOGICAL APPROACH TO ACUTE PELVIC PAIN

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Acute pelvic pain is a common symptom needs to emergent medical evaluation. It is defined as non-cyclic pain less than three months. The duration of acute pelvic pain may range from several hours to several days, and its possible causes differs from functional ovarian cysts that require routine follow-up to adnexal torsion and ectopic pregnancy necessitating urgent surgery.
As a first diagnostic imaging evaluation, ultrasonography (US) is the best modality. High frequency endovaginal transducers allow excellent anatomic features and pathologic conditions.
Although ultrasonography (US) is the modality of choice for initial imaging, computed tomography (CT) also is often performed in patients with referred pain beyond the pelvis or in those who present after hours.
A structured approach to image interpretation is necessary to narrow the differential diagnosis.
First of all the differential can be divided into non-obstetric and obstetric etiologies by obtaining a beta-hCG level.
There is also a general difficulty of distinguishing between lower abdominal pain and pelvic pain. Pelvic pain may exist in the absence of a gynecologic cause, and US and CT images may reveal nongynecologic disease if they cover abdomen in addition to pelvic region.
According to the need to reduce radiation doses especially in younger patients and possibly pregnant patients, and the operator dependence of US, the role of magnetic resonance (MR) imaging in acute pelvic pain is increased. A short imaging protocol of about 10 minutes, without the use of an intravenous contrast agent in most cases, allows quick and reliable investigation of these patients. Although MR imaging might not be the modality of choice for all patients, it can be useful in some patients for whom CT is not warranted (pregnant patients or young patients) and US findings are inconclusive.

RMI AND GIRADS

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Mahdieh Hospital /Associate Prof.

Ultrasonography should be the first imaging modality utilized to evaluate pelvic masses. Most ovarian masses are asymptomatic. Asymptomatic ovarian masses are often detected during the annual pelvic exam and an ultrasound should be ordered for the initial assessment. A clinical exam has a low sensitivity to detect adnexal masses, so there should be a low threshold to do a baseline pelvic ultrasound. Of course, ultrasound should be the first modality to evaluate the pelvis if the ovarian mass presents with pelvic pain. Recent advances in ultrasound technology including improved resolution, color or power Doppler, three-dimensional ultrasound (3D-US), and contrast-enhanced techniques have made diagnosis of pelvic masses better.

An "adnexal mass" is a common specimen encountered in the daily pathology practice. Although most are benign, the incidence of malignancy increases with age, and approximately 30% are malignant in postmenopausal females

The proposed new classification of adnexal masses GI-RADS has been released.

A method for better preoperative discrimination of patients with adnexal mass was introduced by Jacob et al(RMI) based on the menopausal status, ultrasound findings and serum level of CA125, where, RMI=M X U X CA125, (M= menopausal status, U= Ultrasound score and CA125).

ROLE OF IMAGING IN GESTATIONAL TROPHOBLASTIC DISEASES

Maryam Rahmani
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Gestational trophoblastic diseases (GTD) are a wide spectrum of several conditions from benign to malignant ones, including hydatidiform mole partial or complete, invasive mole, choriocarcinoma and placental site trophoblastic tumor (PSTT).

Another terminology for aggressive ones are Gestational Trophoblastic Neoplasia (GTN) and Persistent trophoblastic neoplasia(PTN)as they may arise following evacuation of a molar pregnancy or after a normal term or preterm pregnancy, abortion, or ectopic pregnancy.

Early detection of GTN is quite important as treatment in early stages has an excellent prognosis and it is due to exquisite chemosensitivity of most of these lesions.

Initial diagnosis is based on adequate clinical features, serial β-hCG titers, and pelvic ultrasonography.

Pelvic magnetic resonance imaging (MRI) is used as a problem-solving tool to assess the depth of myometrial invasion and extrauterine disease spread in equivocal and complicated cases.

Chest radiography, body computed tomography (CT), and brain MRI has been recommended as investigative tools for overall disease staging.

Angiography has a role in management of disease complications and metastases.

Efficacy of PET (positron emission tomography) and PET/CT in the evaluation of recurrent or metastatic disease has not been adequately investigated yet.

Imaging of Neck nodes and FNA Recommendations?

INTRACRANIAL GODOLINIUM DEPOSITION AFTER CONTASR ENHANCED MR IMAGING

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Gadolinium-based contrast agents (GBCAs) represent a family of Gaminopolycarboxylic
Acid ligands chelated to gadolinium, a rare earth metal capable of altering the the relaxivity
Of nearby water molecules by the means of interaction with its unpaired electrons.
When used in magnetic resonance (MR) imaging, this interaction expands the range of signal
Intensities detected during the examination and permit to detect variety of pathologic
Processes ,including inflammation, infection, and malignancy that other - wise be undetectable
With unenhanced MR of other imaging modalities.
And More 10 million IV injections administered in states alone.
AS free gadolinium is cytotoxic, the presence of the organic ligand make it save to use.
The first nephrogenic systemic fibrosis reported in patient with renal dysfunction.
Recently reported GBca may deposit in patient with normal kidney function.
Rather on in autopsied patient report Plasma mass spectrometry (ICP_MS) and brain
Deposited within neuronal tissues (Globus pallidus,thalamus,dentate,pons) are significant
Dose dependent and concentration of GA per gram.
Neural tissue deposition appears to be cumulative in patient's life time.
Neural tissue deposition may see in all patients.
The clinical significance of these finding is not known.
Exam from 2000 to 2014 in Mayo Clinic, Rochester evaluated and 13 patients
Who underwent at least four GBCA injections evaluated in post mortem neural tissue?
Sampling. They study in four direction..
1: MR imaging and GBCA administration.
2: MR imaging Data analysis.
3: Tissue Processing.
4: Mass Spectrometry.
All patients had different brain diseases and had at least two to four injections of contrast. Some patients had four to twenty nine contrast-enhanced MR examinations. in none contrast MR and T1 film they found all increased signals in Basal Gangilia, dentate nucleus, Globus Pallidus, thalamus and pons.
In electromicroscop and mass spectroscopy found more contrast in Dentate Nucleus and less contrast in pons.
However, the mechanism of GBCA deposition in certain neuroanatpmic location remains poorly understood.
In electron microscopic exam several small round signlaes in the Basal Gangilia, dentate nucleus, globus pallidus, thalamus,and pons shows .
Three medical center report ed this findings..
1: Robert J.Mcdinald ,M.D. Of Mayo Clinic, Rochester.
2: Tomonori Kanda,F Teikyo University School Of Medicine.
3: By Alexander Radbruch, University Of Heidelberg ,Germany.
4: recently emanuel kanal,m.d.from university of pittsurgh.
gbcas first approved by fda for use mri in 1988 and widely used for brain imaging.
the gadolinium ion is toxic to humans so it is attached to a ligand, kind of
molecular escort to carries the agent to blood stream.
nine different form of gbca approved by ffda. but two of them are using more.
linear or macrocyclic .linear agent have open chain,while the macrocyclic agent is "caged".from the knowledge macrocycliiic agent is better,but acourding to radiology journal june 2015 may be less likely to be retained in brain.
dr.e.kanal professor of radiology at the university of pittsburgh, and chairman of
the american college of radology and chieft mr safety committee from 2002- 2012 "saysi hope that thses findings awakens us to the fact that current parctices with respect to mri contrast will no longer be acceptable ." patinet need to know that someone is watching their back and safeguarding their best interrest,

and the radiologist is in the best position to do that". also he says mri with contrast is used only when absoutely is necessary.
dr kanda professor of radiology from japan and university of teikyo says our data suggest that mr imaging hyperintensity in regions of the brain was associated with gbca.recently from ohio state university reported , the bones also may involve even in patients with normal kidnies functions.

PATHOLOGIC FINDINGS IN ANORECTAL MRI

Saeed Naghibi MD.
Assistant professor of radiology

Imaging of both benign and malignant anorectal diseases has traditionally posed a challenge to clinicians, and as a result history and physical exam have been relied on heavily. CT scanning and endorectal ultrasound have become popular in assessment of anatomy and staging of tumors, but have limitations. Magnetic resonance imaging (MRI) has the capability to fill in the gaps left open by more conventional imaging modalities and continues to be promising as the definitive imaging technique in the pelvis, especially with advancement of emerging technologies in this field. A comprehensive review of this topic has been undertaken. Anorectal diseases are divided into three broad categories: cancer, fistula/abscess, and pelvic floor disorders. A review of the literature is performed to evaluate the use of MRI and other imaging modalities in these three areas. Preoperative imaging is useful in the evaluation of all three areas of anorectal disease. MRI is an effective tool in delineating anatomy and, when correlating with the specific clinical scenario, is an effective adjunct in clinical decision-making in order to optimize outcome. MRI continues to be a promising and novel approach to imaging various afflictions of the anorectum and the pelvic floor. Its role is more well-established in some areas than in others, and there are still significant limitations. As technology advances, MRI will shed more light on a complex anatomical area.

INTERNAL HERNIA

Hamidreza Haghighatkhah
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For radiologists' diagnosis and findings of internal hernia esp.at abdominopelvic CT - Scan is difficult. Internal hernia is uncommon cause of intestinal obstruction and its pre surgical diagnosis is very important for surgeons.
There are three key points in abdominopelvic CT – Scan to diagnosis of internal hernia and radiologists should pay attention to these guides.
First of all, notice to peritoneal cavity anatomy and potential disposed spaces for internal herniation.
Second is find a sac like space containing dilated intestinal loops in patients who clinically are suspicious to intestinal obstruction.
Third looking for converging displacement with stretching and engorgement of mesenteric vessels in orifice of sac.
Common types of internal hernia according to frequency are as below:
Paraduodenal (left and right)
Pericecal
Transmesenteric
Foramen of winslow
Intersigmoid
Supravesical and pelvic
Transomental

PERIANAL FISTULA DISEASE, ANATOMY, PATHOGENESIS, CLASSIFICATION AND SCANNING PROTOCOL

Maryam Farghadani, MD
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Perianal fistula is a common disorder that often recurs because of infection that was missed at surgery. Preoperative MR can help to prevent recurrence. In this review we will address the anatomy, pathogenesis, classification and scanning protocol of perianal fistulas.
A perianal fistula is an abnormal connection between the epithelialized surface of the anal canal and the skin. The most widely used classification is the Parks Classification which distinguishes four kinds of fistula: intersphincteric, transsphincteric, suprasphincteric and extrasphincteric. The most common fistulas are the intersphincteric and the transsphincteric. The extrasphincteric fistula is uncommon and only seen in patients who had multiple operations. In these cases, the connection with the original fistula tract to the bowel is lost. A superficial fistula is a fistula that has no relation to the sphincter or the perianal glands and is not part of the Parks classification. These are more often due to Crohns disease or anorectal procedures such as hemorrhoidectomy or sphincterotomy. A localizer in three directions is needed in order to align the T2 sequences axial and coronal to the anal canal. Any localizer that properly displays the anal canal can be used.

LATE POST OPERATIVE COMPLICATIONS IN GI TRACT

Luis Curvo-Semedo,MD
Assistant Professor, Faculty of Medicine, University of Coimbra,Consultant, Medical Imaging Department, Coimbra University Hospital Centre, Portugal

Radiologists should be aware of the newer surgical techniques and expected post-operative alterations, to yield a correct interpretation of a post-surgery imaging examination, thus being able to differentiate a normal post-operative finding from a potential complication. Many times, communication with the referring surgeon is strongly advised before performing a diagnostic study in such situations.
It is crucial to perform a technically adequate imaging examination, so that post-operative anatomical and functional findings may be evaluated. Therefore, the aims of this lecture are to become acquainted with

the long-term complications of surgery to the gastrointestinal tract and also to know the appropriate use of imaging in the assessment of long-term complications. It will include a mention of the technical issues that need to be considered to achieve better diagnostic accuracy, as well as a description and illustration of the main imaging findings of late post-operative complications. Those include disease-related (recurrence for malignancy or inflammatory disease) and procedure-related (anastomotic strictures, internal herniation, adhesions and intussusception, among others) complications. Focus will be placed on cross-sectional imaging techniques, particularly CT, which at present constitutes the workhorse for detecting and characterizing late post-operative complications after GI tract surgery. In this way, knowledge of the most frequent complications after gastrointestinal surgery in the late post-operative period is of paramount importance for every radiologist, so that potentially life-threatening situations can be promptly diagnosed and adequate therapy can be planned.

ROLE OF IMAGING IN ASSESSMENT OF LIVER TUMOR RESPONSE TO LOCOREGIONAL THERAPY

Alireza Rasekhi. MD

There are many treatment options in hepatic malignancies including systemic chemotherapy , surgery and locoregional therapy including TACE and RF ablation by (interventional radiologist).
They have created a new challenge for radiologist to assess them by imaging afterwards.There are several quantification methods used for evaluating the treatment response of the liver tumors based on imaging. These include WHO, RECIST, RECIST 1.1, CHOI, EASL ,...
All of them are based on CT, MRI,PET,and functional imaging.
Quantitative imaging allows robust evaluation of hepatic tumor response. In addition to size changes, various biologic and functional parameters can be quantified by using new imaging technologies. Measurement of these parameters is especially important for the evaluation of tumor response to novel targeted therapies, in which change in functional status sometimes precedes anatomic modification. Familiarization with these different biomarkers is important to facilitate pivotal communication between oncologists and radiologists with regard to patient cancer treatment.

BILIARY INTERVENTIONS

Hazhir Saberi, MD
Tehran University of Medical Sciences

Biliary strictures have relatively wide spectrum of causes from benign to malignant.
Endoscopic interventions, percutaneous interventions & surgery could be selected by multidisciplinary teams for treatment of these patients. Ultrasound, CT, MRI, ERCP & PTBD are used for diagnosis of type of stricture, localization and also staging of malignant causes.
In this lecture we will discuss about image guided percutaneous methods like external biliary drainage, high pressure balloons, external-internal biliary drainage for benign biliary stenosis and also stenting, external-internal biliary drainage with brachytherapy for malignant causes like klatskin tumors.
In case of malignant causes, the most cause is cholangiocarcinoma (klatskin tumor) which most of the time is inoperable but other tumors like adenocarcinoma of gallbladder, stomach and etc. can invade extra or intrahepatic bile ducts directly. We can do the same protocol including external-internal biliary drainage and then brachytherapy for these tumors. sometimes metastatic lymphadenopathies in hilum of liver cause biliary stenosis due to compression of CBD, in these cases we only do biliary drainage or stenting to decrease bilirubin and for the possibility of chemotherapy.
In benign causes most frequent cause is ligation or traumatization of CBD, CHD or RHD in open or laparoscopic cholecystectomy. Inevitable hepatojejunostomy or choledocojejunostomy are needed in these patients and the most complication of this surgery is narrowing of anastomosis and then rising of bilirubin & LFT. Intervention of choice in these

complications is PTC and ballooning. We have a study from 5 years ago with high pressure balloon, and more than 90% of patients are symptom free in this study.
Sometimes iatrogenic damage to extra hepatic bile ducts causes bile leakage; there are some ideas to repair it by intervention.

MANAGEMENT OF BENIGN BILIARY STRICTURES INCLUDING LIVER TRANSPLANT PATIENT

Alireza Rasekhi. MD
Shiraz University of Medical Sciences

Biliary stricture can be seen with a wide array of nonneoplastic causes. Iatrogenic stricture is the most common benign biliary stricture and accounts for up to 80% of all benign strictures. Cholecystectomy and orthotopic liver transplantation (OLT) are the most common iatrogenic causes of benign biliary stricture. A spectrum of diseases such as chronic pancreatitis, autoimmune cholangitis associated with autoimmune pancreatitis, PSC, recurrent pyogenic cholangitis, HIV cholangiopathy, chemotherapy-induced sclerosing cholangitis, and Mirizzi syndrome can also result in biliary stricture.
Biliary complications after liver transplantation individuals are often ill, making nonoperative treatment and management attractive options. The endoscopic route for evaluation (endoscopic retrograde cholangiopancreatography) remains preferable, due to its safety profile, as opposed to the percutaneous route (percutaneous transhepatic cholangiography with percutaneous transhepatic biliary drainage), though the endoscopic route may not be possible in patients with a Roux-en-Y reconstruction.actually decision about procedure is based on the group experience. The two most common early complications include leaks from the anastomosis or cystic duct stump (of the donor or native duct) and obstruction at the surgical anastomosis. Nonoperative treatment is often successful in early complications. Late complications presenting with leaks and obstruction are often more difficult to treat nonoperatively and frequently require surgical treatment or retransplantation, though both endoscopic and percutaneous methods can be useful in the management of these complications or as a bridge to definitive surgical therapy.

HOLLOW VISCUS INJURY IN BLUNT ABDOMINAL TRAUMA

Iman Mohseni
Iran university of Medical Sciences

Hollow viscus injury (HVI) from blunt abdominal trauma is no longer rare, and occurs in 5% to 25% of cases. Although early recognition of HVI may be difficult in all cases, it is very important due to its tremendous life threatening potential. The high mortality rates reflect the severity of the HVI and associated injuries. Age of the patient, anatomical site and time of presentation are probably main prognostic factors. HVI patients should be carefully monitored for related injuries and complications. The decision to operate in HVI has to be based on mechanism of injury and clinical findings together with radiological evidence. Free peritoneal fluid is a sensitive but not specific finding in diagnosing HVI. Specific findings for HVI on CT are pneumoperitoneum, retroperitoneal air, oral contrast extravasation, bowel wall discontinuity, patchy bowel wall enhancement and mesenteric abnormality.

ANORECTAL CANCER STAGING

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International guidelines on the management of rectal cancer have recommended MRI as invaluable for staging of primary rectal cancer. MRI is accurate in identifying prognostic risk factors of primary rectal cancer and in stratifying low risk patients for surgical treatment and high risk for preoperative chemoradiotherapy. If MRI is performed according to a state of the art MR protocol and findings are reported in a

structured way with complete information on findings that will have a direct impact on therapeutic decision making. For MRI to become a tool based on which reliable decisions can be made that will impact treatment strategy, there is therefore a need for recommendations on how a state of the art MRI protocol should be performed and interpreted. This lecture will try to demonstrate what should be considered a state of the art MR protocol of rectal cancer, how it should be performed and how the imaging findings should be interpreted and reported.

CT COLONOGRAPHY: STATE-OF-THE-ART

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CT colonography (CTC) is a robust and reliable imaging test of the colon. The technique is easy, less labor-intensive than barium enema and conventional colonoscopy (CC) and is inherently safer with a rate of reported procedure-related complications lower than barium enema itself. The success rate of CTC is approximately 100%, if bowel preparation and distension are optimal and no sedation is required. From the patient's perspective, the major advantages of CTC include the very brief time required to perform the examination, the absence of contrast enemas and the potential for same-day CC when polyps are detected. Accuracy for the detection of colorectal cancer (CRC) is as high as CC. Identification of polyp is size dependent, with large lesions (≥10 mm) accurately detected and small lesions (6-9 mm) identified with moderate to good sensitivity. Recent studies show good sensitivity for the identification of nonpolypoid (flat) lesions as well.
Current CTC indications include the evaluation of Patients who had undergone a previous incomplete CC or those who are unfit for CC (elderly and frail individuals, patients with underlying severe clinical conditions, or with contraindication to sedation). CTC can also be efficiently used in the assessment of diverticular disease (excluding patients with acute diverticulitis, where the exam should be postponed), before laparoscopic surgery for CRC (to have an accurate localization of the lesion), in the evaluation of colonic involvement in the case of deep pelvic endometriosis (replacing barium enema). CTC is also a safe procedure in patients with colostomy. For CRC screening, CTC should be considered an opportunistic screening test (not available for population, or mass screening) to be offered to asymptomatic average-risk individuals, of both genders, starting at age 50. The use in individuals with positive family history should be discussed with the Patient first. Absolute contraindication is to propose CTC for surveillance of genetic syndromes and chronic inflammatory bowel diseases (in particular, ulcerative colitis).
The use of CTC in the follow-up after surgery for CRC is achieving interesting evidences despite the fact that literature data are still relatively weak in terms of numerosity of the studied populations. In Patients who underwent previous polypectomy CTC cannot be recommended as first test because debate is still open.
It is desirable that in the future CTC would be the first-line and only diagnostic test for colonic diseases, leaving to CC only a therapeutic role.

POST TREATMENT IMAGING OF RECTAL CANCER

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The objectives of neoadjuvant therapy are to downstage and downsize the tumor in order to improve resectability and achieve better local control. Preoperative chemoradiation therapy (CRT) has become standard of care for locally advanced rectal cancer and led to a decline in local recurrence rates.
Post-CRT MRI for assessing invasion of mesorectal fascia (MRF) based on morphologic criteria alone shows both high sensitivity and NPV. Its main challenge is the assessment of hypointense "fibrotic" tissue in the initial tumor area that may contain small residual tumor nests. DWI can help differentiate neoplastic from radiation-induced fibrosis and inflammation within the MRF, potentially improving the

overall diagnostic accuracy.
The reported overall accuracy of MRI in assessing the T stage of irradiated rectal cancer is 47%–54%. The major cause of overstaging is diffuse hypointense tissue infiltration into the mesorectal fat, related to marked fibrosis of the bowel wall and desmoplastic reaction. Replacement by fibrotic scar tissue with an island of residual adenocarcinoma can make it difficult to identify viable tumor on MR images, causing understaging.
Imaging after CRT is not sufficiently accurate for identifying complete responders, with PPVs ranging from 17–50%. In most cases a hypointense scar replaces the site of disease, and the major component of error on MRI is overstaging due to its limited capability to differentiate between viable tumor, residual fibrotic tissue, and desmoplastic reaction. DWI in addition to standard MRI significantly improves the performance of radiologists to select complete responders

CT AND MRI OF SMALL BOWEL NEOPLASMS

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Small bowel neoplasms, including adenocarcinoma, carcinoid tumour, lymphoma and gastrointestinal stromal tumours, represent a small percentage of gastrointestinal cancers, yet are among those with the poorest prognosis compared with other gastrointestinal malignancies. Unclear clinical scenarios and difficult radiological diagnosis often delay treatment with negative effects on patient survival.
Multidetector CT (MDCT) and MRI represent feasible and accurate diagnostic techniques for the identification and staging of small bowel neoplasms. These techniques have completely replaced conventional barium radiography as the tool of choice. However, the inherent technical and physiological challenges of small bowel imaging require a familiarity with patient preparation and scan protocols. Adequate knowledge of the histopathology and natural evolution of small bowel neoplasms is also important for differential diagnosis.

BORDERLINE RESECTABLE PANCREATIC ADENOCARCINOMA

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Pancreatic adenocarcinoma is the fourth leading cause of cancer related death in the Western world, and represents 85% of pancreatic tumors. Clinical signs and symptoms at presentation are jaundice, abdominal pain, weight loss, asthenia and anorexia. It occurs in the head of the pancreas in 75% of cases. The mean 5 year related survival is only 5%. An early diagnosis of pancreatic carcinoma is the conditio sine qua non in order to obtain curative resection, and is typically achieved with computed tomography (CT). Despite the advances in cross sectional imaging, unfortunately up to 14% of patients diagnosed with resectable pancreatic tumors on imaging evaluation are found to have unresectable disease following subsequent laparoscopy. Imaging plays an important role also in characterization, such as in the differential diagnosis between mass forming pancreatitis and pancreatic adenocarcinoma. This is not a secondary issue, since 5-10% of pancreatic head resection are mass forming chronic pancreatitis and not cancer. Imaging plays a role also in staging patients. Some patients will go right away to surgical resection. Those patients with pancreatic adenocarcinoma that are not deemed immediately resectable will undergo neoadjuvant therapy, and those who will be successfully downstaged will have surgical resection. Finally, the majority of patients with a disease that is judged too advanced will only receive chemo-radiotherapy. Follow-up studies are performed in order to decide whether these patients can continue the theraphy they are on, or change or even stop therapy.
The main questions for the radiologist facing a patient with a pancreatic mass are: Is there a true lesion? Is the lesion a pancreatic cancer? Are there any signs of vascular involvement? Are posterior (“retroperitoneal”) margins free? Are there any metastases/peritoneal implants?
In order to answer these question, performing the best possible CT protocol is mandatory. CT should be performed with a multiphasic technique: precontrast phase, pancreatic phase (40 seconds) which cor-

responds to the peak of enhancement of the gland, and portal venous phase (80 seconds), that allows optimal enhancement of the portal vein and liver. Performing an early, angiographic arterial phase is not mandatory. Adenocarcinoma of the pancreas will result as hypoattenuating in comparison to the surrounding pancreatic parenchyma in the pancreatic phase, while hepatic metastases will be maximally detectable on portal venous phase due to their hypoattenuation in comparison to the liver. Apart from the direct sign of a pancreatic mass, other indirect sign are important for the diagnosis: atrophy of the pancreatic nontumorous parenchyma and dilated main pancreatic duct. These indirect signs are especially important in those instances of isoattenuating pancreatic adenocarcinoma that are not uncommonly encountered when the tumor is under 2cm in size.

MRI is considered a problem solving tool in patients with pancratic adenocarcinoma. It is performed when there are contraindications to contrast-enhanced CT; when the suspicion of pancreatic tumor is high and the mass is not visible on CT; for the differential diagnosis between autoimmune pancreatitis and cancer; for the detection of small liver metastases; to characterize indeterminate liver lesions on CT.

Pancreatic surgery carries significant morbidity. If resection is performed in all borderline resectable pancreatic lesions, there is the potential to harm patients in whom life expectancy is not probable to get prolonged. The treatment philosophy is therefore to maximize survival but also maximize quality of life. If the decision is made to resect a tumor, every attempt should be made to acquire an accurate pretreatment staging. Criteria for resection are: localized pancreatic tumor; no arterial invasion; no major venous invasion; no distant metastases; patient eligible for a major surgery.

Complete resection is the only possible curative treatment, and can be achieved only when a R0 resection (microscopically negative margins) is achieved. High morbidity and mortality rates are however associated with arterial resection and reconstruction. So, how is unresectability defined? The determination of unresectability (surgically not removable) of a pancreatic cancer should be made by an experienced pancreatic surgeon since in selected situations apparent unresectable tumors may be resectable by an experienced pancreatic surgeon with specialized techniques including localized resection of the blood vessels. Most patients unfortunately still undergo resection for palliation, not for cure. The key issue for curative resection is arterial involvement. Can the surgeon "peel the tumor off the artery?" There are four different grades of involvement: less than 90° is grade 1; less than 180° is grade 2; less than 270° is grade 3; greater than 270° is grade 4, with the cut off less than 180° being resectable (vessel is "abutted") and more than 180° being unresectable (vessel is "encased"). The "key arteries" to look at, in order to judge whether a tumor is resectable or not, are the celiak trunk, the hepatic artery and superior mesenteric artery. Same applies to the involvement of the portal vein and superior mesenteric vein.

So we consider borderline tumors those that involve the mesenteric vasculature to a limited extent. Two definitions are possible: 1) those for which "resection, while possible, would likely be compromised by positive surgical margins … in the absence of preoperative therapy." (Ann Surg Oncol. 2013;20:2787-95) 2) Those that are involved with nearby structures so as to be neither clearly resectable nor clearly unresectable, with a high chance of an R1 resection (NCCN 2.2015).

PANCREATIC CYSTIC NEOPLASMS

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1. Review most frequently encountered cystic pancreatic lesions
2. Provide a logical approach do differential diagnosis of cystic pancreatic lesions integrating clinical and imaging information
3. Discuss follow-up guidelines

MAGNETIC RESONANCE CHOLANGIO- PANCREATOGRAPHY (MRCP) OF BILE DUCT ABNORMALITIES

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Magnetic resonance cholangiopancreatography (MRCP) is used for noninvasive work-up of patients with a variety of pancreaticobiliary disorders. MRCP is comparable with invasive endoscopic retrograde cholangiopancreatography (ERCP) in the detection and characterization of extrahepatic and pancreatic bile duct abnormalities. It also has a significant role in diagnosis and follow-up of patients with a variety of acquired disorders resulting in progressive destruction and disappearance of the intrahepatic bile ducts, the so-called Vanishing Bile Duct Disease, a process that ultimately leads to cholestasis. There are multiple etiologies that can result in this final common pathologic picture, including autoimmune disorders, medications, infectious diseases, and neoplastic disorders. The prognosis and treatment depend on the etiology and degree of injury. Although, the underlying etiology is made pathologically, it can be suggested on imaging tests when disease is advanced.
The advantages of MRCP include noninvasive detection of progressive bile duct abnormalities in asymptomatic patients and visualization of bile ducts not visualized at ERCP. These advantages would ultimately result in earlier diagnosis and therapy.
In this talk, we review technical aspects for MRCP and present the spectrum of intrahepatic and extrahepatic bile duct abnormalities encountered in patients with primary sclerosing cholangitis (PSC), cholangiocarcinoma, or secondary processes simulating PSC, with emphasis on MRCP with ERCP correlation.

GASTRIC CANCER STAGING

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Despite a marked decline in the incidence of gastric cancer in many western countries, gastric cancer remains the leading causes of cancer-related deaths worldwide. The incidence is highest in parts of Asia, South America, and Eastern Europe. In Iran, gastric cancer remains the most frequent cancer in men and is the leading cause of cancer mortality in both genders. Since complete surgical resection of a gastric tumor and adjacent lymph nodes, is the only chance for a cure, early detection and accurate preoperative staging of is critical.
Radiologic and endoscopic staging is crucial in the management of patients with gastric cancer. Various imaging techniques including double-contrast upper gastrointestinal barium examinations, multidetector computed tomography, magnetic resonance imaging, positron-emission tomography, and endoscopic ultrasound are all used in the diagnosis and staging of gastric carcinoma to varying degrees. Although Fiberoptic endoscopy and double-contrast barium swallow studies, allow the detection of small lesions early in the course of the disease, the depth of tumor invasion and the presence or absence of metastasis cannot be determined with these modalities. Computed tomographic (CT) scans of the abdomen can delineate the extent of the primary tumor, presence of peritoneal extension, as well as nodal and distant metastases.
In this talk, we discuss the imaging characteristics of gastric cancer (adenocarcinoma, lymphoma, gastrointestinal stromal tumors, carcinoid, and metastasis) and mimics, patterns of tumor spread, advantages and limitations of CT and FDG PET in pretreatment staging and in the monitoring of response to therapy. In addition, we discuss benefits of combined diagnostic CT and PET.

IMAGING IN BARIATRIC SURGERY

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Obesity is a serious, multifactorial, chronic illness affecting patients of all ages that continues to increase in prevalence at an alarming rate.
Bariatric surgery has come to the forefront in the treatment of morbid obesity as a result of research-proven effectiveness and the frustrating failure of traditional conservative methods.
Surgery has the ability to reduce, and in some cases resolve, many comorbidities such as hypertension, type 2 diabetes, and sleep apnea. The success of bar-

iatric surgery is reflected in the exponential growth of surgical volume from 2002 to 2005, increasing from an estimated 72,177 to 171,200 procedures per year. Bariatric surgery is generally categorized into two main categories, restrictive and malabsorptive. In restrictive procedures, gastric volume is reduced substantially to decrease caloric intake by promoting early satiety. In malabsorptive procedures, the gastrointestinal tract is surgically altered to induce malabsorption and hence decrease caloric intake. In addition, procedures may combine techniques.
The spectrum of procedures includes the Roux-en-Y gastric bypass, laparoscopic adjustable gastric banding, vertical-banded gastroplasty (VBG), jejunoileal bypass, bilio-pancreatic diversion, and biliopancreatic diversion with duodenal switch.

TIPS AND PORTAL HYPERTENSION

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Transjugular Intrahepatic Portosystemic Shunt (TIPS) is the interventional creation of a tract between the portal venous system and the central venous system. The two accepted indications for TIPS are secondary prevention of vatical bleeding and refractory ascites, both results from an increased portovenous pressure. Portal hypertension is defined as a gradient larger than 6 mmHg, but clinical complications seem to occur only when the pressure gradient exceeds 10-12 mmHg (Krajina-A, CVIR 2012). Portovenous pressure could be measured by a transjugular introduced end-hole catheter in a wedge position in a peripheral liver vein or by introducing a wedge balloon in a liver vein. The aim of TIPS is to reduce the increased portovenous pressure to 12 mmHg or a relative decrease of 20%. A TIPS should also preserve a portion of portal blood flow to the liver, in excessive collateral veins (e.g. esophageal varices) an additional embolization of theses varicose veins is necessary. Clinical successful TIPS creation is defined as cessation of variceal bleeding, decrease of ascites, and conversion into diuretic-sensitive ascites, improvement of liver function without the development of hepatic encephalopathy.

TIPS is an invasive procedure with a massive change blood flow dynamics and should be carefully considered in the following circumstances: APACHE II score > 20, especially in Child C patients, and irreversible phase of hemorrhagic shock; Child-Pugh score > 12 and MELD score > 18; total bilirubin > 3.5 mg/dl; right-sided heart failure with elevation of the central venous pressure (mean right atrium pressure > 15 mm Hg); hepatic encephalopathy poorly controlled by lactulose, especially in patients older than 60, patients with diabetes, and patients receiving hemodialysis; chronic occlusion of the portal vein with periportal collaterals, hypervascular hepatic tumors, polycystic liver disease; and active infection, either intrahepatic or systemic.
During TIPS tract creation a sharp needle is introduced from the (right) hepatic vein into the right portal vein. Traditionally this puncture was performed landmark orientated, today either carbon dioxide wedge portography or ultrasound is used for the needle navigation during the puncture procedure. We currently investigate if cone-beam computed tomography (CBCT) could be used for navigation of puncture procedure. Creation of a TIPS with the use of expanded polytetrafluoroethylene (ePTFE)-covered stent grafts has been reported to reduce the incidence of shunt dysfunction to 13 % at 6 months compared to bare metal stents with 44% dysfunction (Bureau C, Gastroenterology 2004). These results have been reproduced in other studies with TIPS potency rates of 90, 84, and 74% at 1, 2, and 3 years of follow-up, respectively. Primary response to treatment was seen in 97% of patients treated for variceal bleeding and 84% of patients treated for refractory ascites. A relapse of the index symptom was seen in 13% of bleeders and 9% of patients treated for refractory ascites (Rössle-M, Acta Radiol. 2006).

TRANSARTERIAL CHEMOEMBOLIZATION (TACE)

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Transarterial Chemoembolization (TACE) is the

standard treatment for intermediate stage (BCLC B) hepatocellular cancers (HCC). TACE utilizes the fact that HCCs are perfused to 80% by the liver artery and only to 20% by the portal venous system. TACE uses the arterial perfusion of HCCs to introduce ischemia and chemotherapeutics into the tumor to kill tumor cells and to minimize systemic effects for the patient. TACE was developed in the early 1980s in Japan and traditionally was a mixture of lipiodol (ethyl ester of iodized fatty acids of poppy seed oil) and a chemotherapeutic agent (water-in-oil emulsion) (de Baere-T, CVIR 2016). This so called conventional or lipiodol TACE is usually completed by intraarterial application of gelatin sponge and this technique is established as the standard treatment for HCCs without portal vein invasion as a result of 2 randomized studies using doxorubicin (Llovet-JM, Lancet 2002) or cisplatium (Lo-CM, Hematology 2002) as a chemotherapeutic agent. Both studies demonstrated a significant superiority of TACE compared to best supportive care.

TACE is also used to stabilize HCC tumors in patients on the waiting list for liver transplantation, so called „bridge to transplantation“, and as a adjunctive to thermal local ablative techniques (e.g. radio frequency ablation (RFA) or microwave ablation (MWA)). The addition of a TACE before thermal ablation reduces the perfusion induced „cooling“ of the ablation zone and significantly increases local tumor control and survival when combined with thermal ablation in HCCs from 3.5 to 7 cm (Peng-ZW, J Clin Oncol 2013).

In the last 15 years 2 new TACE techniques were developed, TACE with drug-eluting microphereres (DEB-TACE) and TACE using degradable starch microspheres (DSM-TACE). In DEB-TACE the chemotherapeutic agent is released slowly from the embolizing microparticles reducing the systemic side effects of TACE (Lammer-J, CVIR 2010). This technique showed a reduction of post-procedural abdominal pain, but failed to demonstrate a survival benefit compared to conventional lipiodol TACE (Golfieri-R, Br J Cancer 2014).

In recent years TACE spread to other secondary liver tumors, specially to liver metastasis from gastroenteropancreatic neuroendocrine tumors (GEP-NETs) and from colorectal cancers (CRC). In GEP-NET ether a transarterial embolisation (TAE) without chemotherapeutic agent or a conventional TACE with doxorubicin is performed in specialized centers. For CRC liver metastasis DEB-TACE using irinotecan as loading drug is the established technique for TACE.

MICRO WAVE ABLATION (MWA) OF TUMORS

Shahram Akhlaghpoor MD.

Thermal tumor ablation is becoming increasingly important for treating cancers of the liver, lung, kidney and bone. Radiofreqency (RF) ablation is currently the most popular and widely studied thermal ablation modality, while microwave ablation (MWA) is rapidly being rediscovered and developed for clinical use. While both RF and microwave energy can heat tissue to cytotoxic levels, the mechanisms of RF and microwave heating are quite different and must be considered for ablation of different tissue types.

The major distinction between microwave and RF heating is that microwave heating occurs in a volume around the applicator antenna, while RF heating is limited to areas of high current density. RF heating requires an electrically conductive path while microwaves to not; thus, microwaves are capable of propagating through materials with low or zero conductivity.

Microwaves offer all of the benefits of RF energy for thermal ablation in the liver, but microwaves have also been shown to ablate tissue up to and around large vessels, and seem to create larger zones of ablation in the same high-perfusion areas where RF energy is limited

Success of RF ablation in lung has been limited. RF energy has a reduced ability to penetrate through the low conductivity of aerated lung, which increases the impedance. By contrast, the lower permittivity and conductivity of aerated lung allows deeper microwave penetration than in the liver or kidney.

The high water content of the kidney reduces Electro Magnetic field penetration somewhat, but increases the heat generation rate with microwave energy. A decrease in penetration may be less relevant because of the increased heat generation. The fast, volume heating of microwaves also presents an increased ability to overcome perfusion.

Due to bone's low conductivity and relative permittivity, microwaves may penetrate deeper, be less affected by tissue heating or desiccation and be more effective for heating bone tumors than RF energy.
In particular, RF heating is limited in areas of high perfusion (kidney and liver), in tissues with poor electrical and thermal conductivity (lung and bone), and in areas near large heat sinks (liver, lung and kidney). Microwaves offer all of the same benefits as RF energy for thermal ablation, but are not as dependent on tissue properties and have the ability to heat faster in a larger volume. Thus, microwaves are less susceptible to perfusion or heat sinks and may be able to penetrate deeper into low-conductivity materials (lung and bone).

MR ENTEROGRAPHY: HOW TO DIFFERENTIATE VARIOUS PHENOTYPES OF CROHN'S DISEASE.

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Crohn's disease (CD) is a chronic relapsing autoimmune disorder, characterized by discontinuous and multifocal distribution, which is involving any part of the gastrointestinal tract, particularly the small bowel. It is usually inflammatory, when first recognized, but progresses over time to stricturing or penetrating disease. Diagnosis and investigation of suspected acute flares of CD are challenging for the gastroenterologists. Magnetic Resonance Enterography (MRE) is a unique technique for assessment of small bowel abnormalities in patients with CD. MRE allows accurate assessment of extraluminal complications, disease distribution and activity, as well as evaluation of inaccessible bowel segments proximal to strictures encountered at colonoscopy. This along with being non-invasive and without ionizing radiation has made MRE a modality of choice in the follow-up of these patients. MRE is not only an excellent modality to diagnose CD, but can provide superior diagnostic information regarding to the differentiation of quiescent (inactive), active, stricturing or penetrating disease. In this talk, the technical considerations of MRE and spectrum of imaging findings in patients with different clinical subtypes of CD will be discussed. The data have been provided from the referral GI imaging center of Shariati hospital, Tehran.

BENIGN FOCAL LESIONS (FNH VS. ADENOMA)

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Recent advances in modern cross-sectional imaging, as well as the general practice to image the liver during the dominant phase of hepatic arterial enhancement, substantially increase the number of focal nodular hyperplasia (FNH) and hepatocellular adenoma (HA) lesions that are incidentally detected.

FNH

FNH is the second most common benign tumors of the liver and generally occurs in childbearing and middle-aged asymptomatic women (1:9, male-to-female ratio). It is considered to be a hyperplastic response to a congenital or acquired anomaly of the arterial blood supply.
Due to the higher contrast resolution and lack of ionizing radiation, MRI currently represents the preferred technique at our institutions for the examination of young patients suspected of having hepatic tumors. Imaging criteria that generally allow a confident diagnosis of typical lesions include: isointensity or slight hyperintensity to the adjacent liver parenchyma on T2-weighted images; isointensity or slight hypointensity to the adjacent liver parenchyma on T1-weighted images. After injection of gadolinium, FNH typically shows immediate, intense, homogeneous enhancement on T1-weighted MR images on HAP, whereas the lesion exhibits isointensity or slight hyperintensity to the adjacent liver parenchyma during the hepatic venous and equilibrium phases due to a rapid drainage by large peripheral veins. A central scar is usually visible as a focus of hyperintensity on T2-weighted images, and hypointensity on unenhanced, as well as early contrast-enhanced,

T1-weighted images. Scars generally show contrast medium retention on T1-weighted images during the equilibrium-phase (5-10 min from the start of contrast medium injection). FNH shows iso-or hyperintensity on hepatobiliary phase, due to uptake of hepatocyte-selective contrast agents by functioning hepatocytes and elimination through the biliary system.

Hepatocellular adenoma

Hepatic adenoma is a rare, primary benign neoplasm of the liver. Since hepatic adenoma carries an increased risk of hemorrhage or malignant transformation, knowledge of the imaging features of hepatic adenoma is important to allow differentiation from other hepatic tumors, so that surgical excision can be undertaken in selected cases. Hepatocellular adenoma occurrence is strongly associated with oral contraceptive use. The majority of patients with hepatic adenomas are asymptomatic. Tumors are discovered during diagnostic work-up of elevated liver enzymes, during liver ultrasound monitoring of pregnancy or incidentally for other reasons. A large adenoma may cause a sensation of right upper quadrant fullness or discomfort. About 10% of patients present acutely with severe abdominal pain due to subcapsular or intra-peritoneal rupture and hemoperitoneum, which may be associated with hypovolaemic shock. The risk of malignant transformation of adenoma is on the order of 10%, and is higher in males.

The imaging appearance of hepatocellular adenoma is variable. Today HA is no longer a single entity, but it consist of four different types, based on the genetic mutation.

1) HNF1-a, one third of adenomas, are typically severely steatotic.
2) Inflammatory adenomas (also known as telangiectatic adenomas), 50% of cases.
3) Beta-catenin mutated, 10% of cases, containing cellular atypias, and therefore at risk for malignant degeneration.
4) Unclassified, 10% of cases

Steatotic adenomas are typically found in women. They are smaller in comparison to inflammatory adenomas. They tend to be multiple, and they never show degeneration.

On MR Imaging, we look for the presence of fat with fat saturated and dual phase sequences. Signal loss must be strong and homogeneous. These are iso or slightly hyper on T2, they enhance mildly and show washout.

Inflammatory adenomas can be found in men in 10% of cases. They are larger and found in obese patients. They are seen in patients with inflammatory syndrome. They are at risk of hemorrhage (30%). The liver is steatotic in 30% of cases. They are at risk of malignant transformation in 10% of cases. Lesions are more at risk of degeneration and hemorrhage when they are > 5cm.

Inflammatory adenomas show heterogeneous enhancement on HAP, with persistent enhancement on late phase. They are hyperintense on T1 and strongly hyperintense on T2. They will not show signal loss on out of phase. Although hepatobiliary phase seemed useful to differentiate FNH from adenoma, FNH being iso- to hyperintense and adenoma being hypointense, more recent articles have shown a partial overlap of behavior between FNH and HA, with some HA showing contrast uptake on hepatobiliary phase.

When it is not possible to establish at imaging whether a lesion if FNH or hepatocellular adenoma, or the subtype of adenoma, a biopsy is warranted.

FAT AND IRON DEPOSITION IN LIVER

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1. Review background clinical information on the importance of diagnosing liver fat and iron

2. Review MRI methods and results for diagnosing liver fat and iron

IMAGING OF CHOLANGIOCARCINOMA

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Cholangiocarcinoma (CCA) is usually asymptomatic at early stage. When symptomatic, the clinical onset of IH-CCA is heterogeneous with jaundice, abdominal pain or weight loss associated or not with systemic manifestations. In 20-25% of the cases, however, diagnosis of IHCCA is an incidental finding. For p-CCA, in contrast, jaundice (typically painless) is the most frequent clinical onset. IHCCA occurs, more frequently than p-CCA, in patients with chronic liver disease (HBV, HCV, NASH) or parasitic infestation. Nonetheless, the majority of CCA cases occur in the absence of an evident chronic liver disease or other risk factors.

The most frequent macroscopic presentation of IH-CCA is the mass-forming type. If this occurs in the context of cirrhotic liver, after exclusion of a metastatic lesion, differential diagnosis with HCC is demanding. Contrast-enhanced MRI and CT studies on IHCCA show lack of HCC hallmarks only in large nodules (> 3 cm), while smaller nodules frequently show a pattern of contrast medium wash-in and wash-out similar to atypical HCC. The most frequent imaging patterns displayed by IHCCA in the cirrhotic liver are a progressive homogeneous contrast uptake until the delayed (around 5') phase (MRI, CT) or an arterial peripheral-rim enhancement (CT). Currently, identification of rare primitive liver cancers, such as HCC with stem cell features (CK19+-HCC), cholangiolocarcinoma and combined HCC-CCA, by imaging procedures is still a challenge. After excluding HCC, or in the context of a nodule in non-cirrhotic liver, biopsy is necessary.

Peripheral CCA (pCCA) usually appears as a bile duct stricture. No doubt that, in this case, MRI and MRCP are the imaging procedures with the highest diagnostic accuracy for localizing and sizing the stricture; the challenge being the definitive demonstration of malignancy. For a definitive diagnosis, these patients usually undergo ERCP in combination with other techniques (citology, brushing, FISH, biopsy, Intraductal Ultrasound, Choledochoscopy, cholangioscopy, chromoendoscopy, confocal endoscopy, narrow band imaging), but still with unsatisfactory sensitivity. Indeed, at least 40% of patients are sent to surgery without a definitive diagnosis of malignancy and in 10% of cases, after surgery, no evidence of cancer is reported in resected tissues. Even more challenging it is the diagnosis of CCA in PSC patients. Biliary strictures, occurring, at the time of PSC presentation in 15–20% of patients, may be of malignant nature in 10-15% of the cases. MRI, CT, EUS or 18FDG PET-CT cannot definitively demonstrate the neoplastic nature of the stricture. The only condition that does not require histologic confirmation is a biliary stricture associated with peri-hilar mass, hypertrophy–atrophy complex and vascular encasement, but this is a very rare event. EUS-FNA demonstrated a good diagnostic performance for discriminating benign vs malignant biliary strictures and without apparent risk of tumor seeding related to the procedure.

HEPATOCELLULAR CARCINOMA

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Cirrhosis is the final result of chronic damage to the liver from various etiologies, characterized by parenchymal injury leading to extensive fibrosis and nodular regeneration. The result is a diffuse disorganization of hepatic morphology with progressive loss of liver function.

Importance of the imaging technique

Distinction among regenerating nodules, dysplastic nodules, and hepatocellular carcinoma with varying degrees of differentiation require an assessment of the hemodynamic nature of the mass. In evaluation of the cirrhotic liver, whether by CT or MR, it is essential to obtain multiple phases of imaging before and during the rapid (>4 ml/s) IV administration of contrast medium. Unenhanced images are followed by dynamic acquisition of images during the arterial, portal venous phase and delayed phases of enhancement. With MR, the hepatobiliary phase acquisition is typically added when Gadoxetic Acid (Bayer) or Gadobenate Dimeglumine (Bracco) are injected.

Regenerative nodules

In the cirrhotic liver, regenerative nodules are macronodular (>3 mm), as usually seen in chronic hepatitis B, or micronodular (<3 mm), as seen in other causes of cirrhosis. Most regenerative nodules are difficult to detect at CT or MR because they are too small

or are too similar to surrounding liver parenchyma. Computed tomography detects regenerative nodules when they are surrounded by hypodense fibrotic bands on nonenhanced CT or when they accumulate iron (siderotic nodules). Siderotic regenerative nodules are typically hyperattenuating to liver on nonenhanced CT and are isoattenuating to liver, and therefore difficult to detect, after contrast injection. MR imaging demonstrates regenerative nodules with greater sensitivity than any other imaging modality. They usually appear isointense to hypointense on T2-weighted MR images relative to the surrounding inflammatory fibrous septa and isointense to hyperintense relative to background liver parenchyma on T1-weighted sequences. The accumulation of iron within regenerative nodules may cause hypointensity on T2-weighted images because of magnetic field inhomogeneities, and marked hypointensity on T1-weighted gradient-Echo MR images, usually best visualized using TEs greater than 10 ms. Due to their portal venous supply, regenerative nodules usually enhance to the same degree than the background liver.

Dysplastic nodules

Dysplastic nodules are regenerative nodules containing atypical cells without definite histological signs of malignancy, and are considered an intermediate, premalignant step along the hepatocarcinogenesis process. Dysplastic nodules are found in 15–25% of cirrhotic livers at the time of transplantation and are subclassified on the basis of the degree of cellular abnormalities: low-grade (containing hepatocytes with mild atypia) and high-grade (when the degree of atypia is moderate, but insufficient for the diagnosis of malignancy). As with regenerative nodules, dysplastic nodules receive predominantly portal venous flow, and do not usually demonstrate bright enhancement on arterial phase CT or MRI. Therefore, marked arterial phase enhancement should suggest hepatocellular carcinoma rather than dysplastic nodule, but there is much overlap in imaging features between regenerative nodules, dysplastic nodules and welldifferentiated hepatocellular carcinoma. Dysplastic nodules typically appear hyperintense to the background liver parenchyma on T1-weighted images, and show hypointensity on T2-weighted images, quite in contrast to typical findings for hepatocellular carcinoma. Arterial phase enhancement should suggest development of a focus of hepatocellular carcinoma within a high-grade dysplastic nodule, the so-called "nodule within a nodule" appearance on MR imaging. Dysplastic nodules are detected and characterized better by MR than by CT.

Hepatocellular carcinoma

Hepatocellular carcinoma typically occurs within the cirrhotic liver. As the degree of (de-differentiation) malignancy increases, portal blood supply decreases, whereas non-triadal arteries (i.e., unaccompanied by portal venules and biliary ducts) develop to feed the nodules. Characteristically, hepatocellular carcinoma is hypoattenuating to liver on unenhanced CT, and manifests as a heterogeneous, moderately enhancing lesion during the arterial phase, with washout on portal venous and delayed phase. A capsule corresponding to peritumoral fibrosis along with sinusoids is also typically observed on delayed phase. Similar features are evident on MR imaging, and hepatocellular carcinoma is usually hypointense to liver on T1-weighted imaging and hyperintense on T2-weighted imaging. Signal loss on out of phase T1 weighted imaging will occur whenever there is fatty degeneration. Hypointensity on hepatobiliary phase, corresponding to decreased OATP8 expression, occurs in around 90% of HCC, and diffusion restriction on diffusion weighted imaging is also noted.

So the imaging findings for the diagnosis of hepatocellular carcinoma can be divided into major and ancillary criteria. Major criteria are arterial enhancement, venous washout, capsule appearance and growth when compared to previous examination. Ancillary criteria can be divided into nonspecific (T2 hyperintensity, diffusion restriction and hypointensity on hepatobiliary phase) and specific (nodule in nodule appearance, mosaic appearance and fatty degeneration). The reason why the latter are considered nonspecific is because they can be observed in cholangiocarcinoma, lymphoma and metastases occurring in the cirrhotic liver.

Both CT and MR are quite accurate in diagnosis of hepatocellular carcinoma nodule >2 cm in diameter. Smaller lesions are more challenging, but these are the goal of surveillance programs in which patients with cirrhosis have imaging evaluation at intervals of 6–12 months or less.

Accurate detection of small hepatocellular carcinomas is especially important because it offers the

chance of curative therapy by percutaneous ablation, surgical resection and liver transplantation.

LIVER CONTRAST AGENTS

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1. Review physicochemical properties of liver specific contrast agents (including Gd-BOPTA and gadoxetic acid)
2. Review optimized MRI protocol using gadoxetic acid
3. Discuss advantages and disadvantages of gadoxetic acid use

BENIGN ESOPHAGEAL ABNORMALITIES

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Benign esophageal conditions are responsible for less than one fifth of the esophagus lesions. These conditions can be primary, secondary or a manifestation of a systemic disorder. Anatomically they can be divided to mucosal and submucosal, the later includes submucosal layer, muscularis propria and adventitia. Due to the lack of a serosal layer, pathologies of esophagus can expand rapidly.
The main benign esophageal lesions of esophagus are benign tumors (e.g. Leiomyoma, squamous papillomas), polyp, esophagitis (inflammatory, infectious, postradiatio, etc.), Strictures, (para-)esophageal varices, motility disorder caused lesions (e.g. achalasia), hernies (e.g. hiatal hernia), Pseudolesions (foreign bodies), diverticulum, congenital lesions (duplication cysts), etc.
For the mucosal lesions the choice of radiologic diagnostic remains barium study (fluoroscopic esophagography) but it cannot evaluate the extramucosal extent of the condition. Complementary methods are upper GI endoscopy (UGIE), endosonography, CT and MRI. For the submucosal lesions, the decision should be made case by case. Apart from the advantage of possibility of investigating beyond the lumen, CT is easier to perform in case of an emergency or when a patient's general condition is not good.
The aim of the utility of cross sectional imaging methods is to investigate and assess the esophagus wall, neighbor tissues/structures, lymph nodes, mediastinum and other pictured compartments. In cross sectional imaging, the esophagus looks like a collapsed tube and this limits the assessment. There are few techniques available to distend the esophagus but in practice the result is in several cases not optimal. In any case it is commonly accepted that a wall thickness more than 5 mm and a lumen distention more than 10 mm are pathologic but in the same time often nonspecific.
A radiologist needs to know how an optimal exam of esophagus can be performed and needs to understand the scopes and limits of cross sectional imaging in the evaluation of the benign esophageal conditions to play it's – day to day becoming more important - role in the primary diagnosis, correct reference and recommendation as well as preventing the further complications.

ACUTE PANCREATITIS

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Acute pancreatitis is an acute inflammatory process of the pancreas which is a potentially life threatening condition.
The most common causes of acute pancreatitis are choledocholithiasis
and ethanol abuse.
The diagnosis is usually established by the detection of elevated
Levels of pancreatic enzymes in the blood, urine, or

both in a patient with acute abdominal pain nausea and vomiting .
Role of imaging is either to explain the diagnosis when the clinical picture is confusing, to assess severity, to determine prognosis, or to detect complications.
In 1992, the Atlanta classification for acute pancreatitis was introduced as a universally applicable classification system for the various manifestations of acute pancreatitis.

POST INTERVENTION LIVER IMAGING

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There are many treatment options in hepatic malignancies including systemic chemotherapy , surgery and locoregional therapy including TACE and RF ablation by (interventional radiologist).
They have created a new challenge for radiologist to assess them by imaging afterwards.There are several quantification methods used for evaluating the treatment response of the liver tumors based on imaging. These include WHO , RECIST , RECIST 1.1 , CHOI , EASL ,...
All of them are based on CT, MRI,PET,and functional imaging.
Quantitative imaging allows robust evaluation of hepatic tumor response. In addition to size changes, various biologic and functional parameters can be quantified by using new imaging technologies. Measurement of these parameters is especially important for the evaluation of tumor response to novel targeted therapies, in which change in functional status sometimes precedes anatomic modification. Familiarization with these different biomarkers is important to facilitate pivotal communication between oncologists and radiologists with regard to patient cancer treatment.

BILIARY COMPLICATIONS AFTER LIVER TRANSPLANT

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Biliary stricture can be seen with a wide array of nonneoplastic causes. Iatrogenic stricture is the most common benign biliary stricture and accounts for up to 80% of all benign strictures. Cholecystectomy and orthotopic liver transplantation (OLT) are the most common iatrogenic causes of benign biliary stricture. A spectrum of diseases such as chronic pancreatitis, autoimmune cholangitis associated with autoimmune pancreatitis, PSC, recurrent pyogenic cholangitis, HIV cholangiopathy, chemotherapy-induced sclerosing cholangitis, and Mirizzi syndrome can also result in biliary stricture .
Biliary complications after liver transplantation individuals are often ill, making nonoperative treatment and management attractive options. The endoscopic route for evaluation (endoscopic retrograde cholangiopancreatography) remains preferable, due to its safety profile, as opposed to the percutaneous route (percutaneous transhepatic cholangiography with percutaneous transhepatic biliary drainage), though the endoscopic route may not be possible in patients with a Roux-en-Y reconstruction.actually decision about procedure is based on the group experience. The two most common early complications include leaks from the anastomosis or cystic duct stump (of the donor or native duct) and obstruction at the surgical anastomosis. Nonoperative treatment is often successful in early complications. Late complications presenting with leaks and obstruction are often more difficult to treat nonoperatively and frequently require surgical treatment or retransplantation, though both endoscopic and percutaneous methods can be useful in the management of these complications or as a bridge to definitive surgical therapy.

GASTROINTESTINAL LYMPHOMA: IMAGING FINDINGS

Ali Hekmatnia
M.D. and Radiologist. Professor of Medical Sciences of Isfahan University
Amirhossein Ghazavi, MD
M.D. and Radiologist

Gastrointestinal lymphoma is an uncommon disease but is the most
frequently occurring extranodal lymphoma and is almost exclusively of non-Hodgkin type. Primary gastrointestinal lymphoma most commonly involves the stomach but can involve any part of the gastrointestinal tract from the esophagus to the rectum. Although gastrointestinal lymphoma has a wide variety of imaging appearances and definitive diagnosis relies on histopathologic analysis, certain findings can strongly suggest the diagnosis. Imaging also plays an important role in the detection of complications. The most commonly used imaging modalities are barium examination and computed tomography (CT).

INVITED SPEAKERS LECTURES
CARDIAC IMAGING

BASIC CARDIO-VASCULAR MEASUREMENTS IN CHEST CT

Arshid Azarin
Cardio-Vascular Imaging, Hôpital Européen Georges Pompidou,Paris- France
Laboratoire d'Imagerie Biomédicale - UPMC

Cross-sectional imaging techniques such as computed tomography (CT) and magnetic resonance imaging (MRI) are increasingly being performed, allowing unrestricted assessment of the heart and great vessels. ECG-gated acquisition protocols are crucial in reducing motion artefacts. Measurement of the thoracic aorta is performed at different anatomic levels using a multi-plane double-oblique reconstruction perpendicular to the lumen, allowing for identification of patients requiring surgical management. Aortitis, Aortic hematoma and dissection are to be recognized and assessed properly. Assessment of the heart includes measurement of right and left atrial areas, end-systolic and end-diastolic right and left ventricular volumes (allowing determination of ejection fraction) and left ventricular end-diastolic wall thickness, which are relevant for the diagnosis of cardiomyopathies. The anatomy, connections and dimensions of the pulmonary veins can be easily analysed and banormalities recognised. The presence of thrombosis in cardiac cavities, mainly aortic arch, in the left atrial appendage and the left ventricular apex should also be sought, most importantly in patients with a history of systemic embolism. Other structures, such as the coronary arteries and cardiac valves can also be accurately assessed by CT and MRI. Pericardium and basic periciardial abnormmalities will be described.

Learning Objectives:

1. To review the most useful measurements on cross-sectional imaging of the heart and great vessels.
2. To learn how to accurately perform these measurements.
3. To know when the measurements are of clinical importance.

INVITED SPEAKERS LECTURES
MIR

ECONOMIC CONSIDERATION IN MEDICAL IMAGING IN IRAN

Kurosh Abdollahifard.MD
Physics department of the Maraghe medical science faculty Maragheh. Iran.
Deputy of the president (for executive affairs') in Iranian Society of Radiology (ISR)

Medicine as an onward looking field is challenged by its lack of robust economic orientation. The advent of highly sophisticated and costly diagnostic and therapeutic procedures including various imaging studies, laboratory tests and instrument - based operations has rendered a financially oriented management at medical centers doubly important. Viability of Imaging centers particularly hinges upon availability of secure financial resources. This study, deals with main economic parameters that influence the investment basics of the imaging center's economy. We have taken into account the GDP percentage of the medical financial basket & main governmental policies & rules in Iran. To sum up, we have compared the same parameters with other neighbouring countries of Iran as well as affluent countries such as USA and EU.

IMAGING APPROACH TO HEAD AND NECK INFECTIONS

Hashem Sharifian, MD
Radiologist,Tehran University of Medical Sciences, Amir-a'alam hospital, Head of head and neck section, Advanced Diagnostic and Interventional Radiology research center, TUMS

Approach to various diseases in head and neck region, greatly depends upon anatomic recognition of the site of the lesion. The mode of spread of disease in neck spaces as well as anatomic regions can narrows the spectrum of differential diagnosis. Then the characteristics of the lesion in various imaging modalities can lead us to specific diagnosis or a group of diseases such as neoplastic, infectious, congenital ... lesions. In this lecture, we review important points about infectious processes in head and neck region, to better evaluate them and so help the management of the patient.

HOW TO READ A HEAD AND NECK STUDY IN TUMORAL LESIONS?

Yasmin Davoudi, MD
Associate Professor of Radiology, Department of Radiology, Emam Reza Hospital, Mashhad University of Medical Sciences

The head and neck is a region of considerable anatomical and functional complexity, making the accurate staging of a head and neck neoplasm a challenging task. The clinician often detects pathology, but may not appreciate, based on the physical examination, the entire submucosal tumor extension, nor the possible regional and distant disease spread.
The introduction of CT and MRI has revolutionized head and neck radiology. Current radiological modalities provide a reliable visualization of the head and neck structures to an unprecedented level of detail. If carefully performed and interpreted, modern radiological techniques allow a comprehensive evaluation of the extent of pathological processes.
In this talk we would discuss the important imaging findings that the radiologist should look for and include in his/ her diagnosis when facing a head / neck tumor. We would also, through a series of cases, provide a comprehensive review of state-of-the-art head and neck cancer imaging.

HOW TO READ A HEAD AND NECK STUDY IN TRAUMATIC EVENTS?

Leila Aghaghazvini , MD
Assistant professor, Department of Radiology, Shariati hospital, Tehran University of Medical Sciences, Tehran, Iran

Maxillofacial traumatic injuries are one of the most frequently encountered emergencies. Facial bones have complex anatomy requires multiplanar imaging techniques for a proper evaluation. The main purpose of diagnostic imaging is to detect the exact number and location of facial bones fractures and extensions with soft tissue injuries. MDCT multi-planar and 3-D reconstructions improve diagnostic accuracy and surgical planning. In this presentation, we review the practical key points about the traumatic injuries in head and neck region to determine and help in the management of the maxillofacial traumatic patient.

HAW TO READ IN HEAD AND NECK LYMPHADENOPATHY STUDY AND WHAT IS FNA RECOMMENDATION?

Shahriar Shahriaran,MD

There are several areas within the anatomy of neck which- irrespective of the clinician's experience- are hardly accessible for physical examination. Evaluation of such privileged areas that are mainly located within the deep areas of SCM muscles and the viscera of the deep and caudal regions of neck and the retropharyngeal regions may require imaging modalities such as MR, CT, PET/CT and ultrasound which are currently available for visualization of the deeper parts as well as complementary study of the superficial areas.

By means of tissue metabolism detectors such as PET/CT it is now possible to speculate the metabolic activity of tissues. Such studies may often lead to the detection of tumors missed on physical examination or the source of various metastasis.

This session aims to probe current diagnostic procedures from the basis of cervical anatomy and embryology anatomy based evaluation of cervical lymph nodes and host a briefly review

LUNG CT-SCAN REPORTING; BASICS & PICS

Shahram Kahkouee,MD

• To explain systematic approach & standard reporting;

• Secondary lobule

• Reticular pattern

• Nodular pattern

– Algorithm for nodular pattern
– Tree-in-bud

• High Attenuation pattern

– Ground-glass opacity
– Mosaic attenuation
– Crazy Paving
– Consolidation

• Low Attenuation pattern

– Emphysema
– Cystic lung disease
– Honeycombing

• Distribution within the lung

• Additional findings

• Differential diagnosis of interstitial lung diseases

PET-CT IN LUNG CANCER

Mehrdad Bakhshayeshkaram,MD

FDG PET/CT has gained wide acceptance for diagnosis and staging of patients with suspected or known lung cancer. FDG PET/CT has proved to be very sensitive in characterization of SPN (97%). In addition, PET/CT is the most important non-invasive imaging tool in staging of lung cancer providing additional valuable information over anatomic imaging modalities with excellent diagnostic performance result in prevention of futile surgery and appropriate stage specific management. T staging may be improved by more accurately depiction of mediastinal and chest wall invasion as well as pleural involvement. Preoperative non-invasive evaluation of N staging (hilar and mediastinal lymph node involvement) as well as M staging (extrathoracic metastasis other than brain) are major clinical roles of FDG PET/CT, however, it is highly recommended that PET positive findings correlate with histopathologic confirmatory study, particularly if the results potentially alter management. PET/CT may also be used to direct invasive staging.

IMAGING OF CHEST IN NEWBORN, INFANTS AND CHILDREN (NORMAL CHEST X RAY, NORMAL VARIATIONS AND PATHOLOGIES)

Ali Hekmatnia,MD
Professor of Isfahan University of Medical Science

Chest X- ray is the most common imaging modality used for diagnosis of thoracic abnormalities in children. Normal variation is very common in neonates, infants and children. Therefore, distinguishing these from pathologies is very important. The differentiation between mediastinal, pulmonary paramchymal, pleural and chest wall lesions is crucial. Early diagnosis of these pathologies is significant in prevention of complications. The mentioned pathologies will be shown and explained by the collection of cases which have been gathered from our department in this paper.

IMAGING OF THORACIC TUMORS IN CHILDREN

Roxana Azma, MD
Assistant professor of radiology, Mofid children's hospital, Shahid Beheshti University of medical sciences

Thoracic tumors are rare in children. Conventional chest radiography is the most common intinial imaging procedure. After discovering a chest mass, cross-sectional imaging is often required for accurate localization and characterization of the lesion in order to narrow the differential diagnosis.
Knowledge of the differential diagnostic possibilities for chest tumors in children is important for both the pediatric and general radiologist because they differ from adults.
Tumors in the mediastinum are best characterized by the compartment in which they arise. Malignant tumors arising in the anterior mediastinum are most commonly due to lymphoma or leukemia followed by germ cell tumors. Malignant tumors of the middle mediastinum are usually due to adenopathy from leukemia or lymphoma. Middle mediastinal tumors are usually seen in association with anterior mediastinal disease. They are rarely seen in isolation. Tumors of the posterior mediastinum are usually of neurogenic origin with neuroblastoma being most common.
Chest wall tumors are infrequent in infants and children, but a high proportion of these tumors are malignant. The most frequent tumors are the malignant small round cell tumors (Ewing's sarcoma/primitive neuroectodermal tumor [PNET] family) followed by rhabdomyosarcoma, osteosarcoma, chondrosarcoma, and a spectrum of other sarcomas.

IMAGING OF CONGENITAL INTRAPERITONEAL AND RETROPERITONEAL CYSTIC LESIONS

Fatemeh Mehdipour,MD
Jondishapour University of Medical Sciences, Ahwaz

Focal cystic abdominal masses are frequent disorders that can be symptomatic or incidental findings in pediatric patients. Imagining evaluation can provide precise information regarding their location, appearance, size, and mass effect on adjacent abdominal structures. This information is crucial for early and correct diagnosis, which, in turn, can lead to optimal patient management.
Many intra abdominal collections within the peritoneal cavity such as abscess, seroma, biloma, urinoma, or lymphocele may mimic primary peritoneal cystic masses and need to be differentiated.clinical history and imagining features may help differentiate intra abdominal collections from primary peritoneal masses.
Lymphangiomas are benign multilocular cystic masses that can virtually occur in any location within the abdomen and insinuate between structures. Ultrasound may help differentiate enteric duplication cysts from other mesenteric and omental cysts in the abdomen.
Many of the primary cystic peritoneal masses have specific imaging features which can help in an accurate diagnosis and management of these entities.

PEDIATRIC INGUINAL CANAL IMAGING (SPECTRUM OF PHYSIOLOGIC AND PATHOLOGIC FINDINGS)

Maryam Farghadani, MD
Assistant Professor of Isfahan University of Medical Science, Radiology and Imaging department
Ali Hekmatnia, MD
Professor of Isfahan University of Medical Science, Radiology and Imaging department

The inguinal canal is often seen at the edge of the field of view on plain radiography, computed tomography, or magnetic resonance imaging and may often not be scanned when performing sonography of the scrotum or abdomen. As a result, pathology in this anatomical region may be easily overlooked. The peculiar embryology of the inguinal canal makes the identification of pathology in the inguinal region significant, as some of the processes that take place within the scrotum may originate in the abdomen, and vice versa.
DWe will reviews the relevant embryology of the inguinal canal, will discuss abdominal and scrotal conditions that involve the inguinal region, and illustrates associated pathology.

NORMAL SPINAL DEVELOPMENT AND ANOMALIES IN PEDIATRICS

Neda Pak, MD
Assistant professor of radiology, Tehran University of Medical sciences

Normal spinal development and anomalies in pediatrics familarity with normal spinal development is necessary for differentiation of normal radiologic findings from anomalies and post traumatic abnormalities as normal synchondrosis could be misinterpreted as fracture line in X ray or even CT scan.
spinal Malformation is a failure of the embryologic differentiation or development of a specific anatomic structure, causing it to be absent or improperly formed before the fetal period commences. The main types of spinal anomalies seen in paediatric patients are basilar invagination, C1-C2 instability, congenital occipitocervical synostosis, odontoid anomalies, Klippel- Feil syndrome. hemivertebra , butterfly and block vertebra as well as scoliosis and kyphosis.
intraspinal malformations (syrinx, diastematomyelia and tethered cord) are also found with congenital malformations of the bony spine. VACTERL syndrome (abnormalities of the v ertebrae, a nus, c ardiovascular tree, t rachea, e sophagus, r enal system, and l imb buds) is an extreme example of the associated malformations in synchronously developing organ systems.
familarity with these anomalies is essential for correct diagnosis.

PEDIATRIC VCUG STUDY(PROTOCOLS AND PATHOLOGICAL FINDINGS)

Ali Hekmatnia, MD
Somayeh Hajiahmadi, MD

Voiding cystourethrography is commonly performed in children with prenatally diagnosed hydronephrosis, urinary tract infections, and voiding abnormalities. Voiding cystourethrography can be performed with many variations designed to optimize visualization of disease and minimize radiation exposures . In this article we review the proper techniques to allow detection of most common pathologic conditions with very low radiation exposure.

PRACTICE PARAMETER OF PEDIATRIC UPPER GI & FOLLOW THROUGH FLUOROSCOPIC PROCEDURE

Maryam Riahinejad
Depatment of radiology , Isfahan university of medical sciences Isfahan , Iran

Many of the indications of Upper GI & follow through study are the .same for both pediatric & adult

group.
Specification of the exam is according to medical neccessity and then patient preparation depends on the patient age & assessment of performing radiologist.
Planning of examination technique consists kind & amount of contrast media & timing of images to assess the progress of contrast through intestinal loops to colon That would minimize safety .radiation exposure
Finaly Reporting of exam is performed according to medical necessity & consists anatomical site of bowel loops Specially ligament of treitz site , Dilation of loops , dilution of contrast , pattern & thickness of folds & site & mobility of cecum

DOPPLER ULTRASONOGRAPHY OF PENIS

Mahyar Ghafoori, MD.
Professor of Radiology, Iran University of Medical sciences

The use of Doppler ultrasound in the assessment of the penile vasculature was first described in 1985. Advantages of penile Doppler and pharmacologic duplex ultrasonography include objective, minimally invasive evaluation of penile hemodynamics at a relatively low cost. Intracavernosal injection of vasoactive substances including prostaglandin E1, papaverine and phentolamine permits testing penile circulation not only at rest when the flow is minimal but also under maximal direct pharmacologic stimulation, when arterial insufficiency may be observed. These substances may be administrated as a single drug or in combination, with reported efficacy rates of up to 94%. Intracavernosal injections are routinely given with color Doppler ultrasound, but despite this the tests have been less than completely reliable possibly owing to the negative effects of anxiety and adrenergic output on the testing results. A variety of techniques has been used to minimize anxiety and maximize the reproducibility of the investigations, including a quiet and private environment, manual stimulation and visual sexual stimulation. Others have used avoidance of injection giving high doses of PDE5 inhibitors and visual stimulation to promote blood flow and erection during testing, gaining from a less invasive procedure but losing on the certainty of maximal vascular relaxation stimulation. In addition to various techniques employed to stimulate penile blood flow and an erection during testing, in order to increase observer ability to precisely assess vasculogenic causes of ED, interpretation of penile Doppler ultrasound findings remain very difficult in some cases. First, there is a gray area in the criteria for identifying arteriogenic ED. The parameter that is most commonly used to define arteriogenic ED is peak systolic blood flow in the penile arteries. Peak flow rates less than 25 cm/s are abnormally low and peak flow rates greater than 35 cm/s are normal, but the range of 25–35 cm/s is equivocal.

COLOR DOPPLER OF SCROTUM, INCLUDING VARICOCELE

Seyed Morteza Bagheri
Iran University of Mediacl sciences

Testicular pain is a common sign. There are several causes for scrotal pain. Some of them are located inside the scrotum and others are referral pain from other areas, such as the kidney, ureter and pathology of the inguinal region. Some of acute painful scrotal conditions, such as testicular torsion, rupture of the tunica albuginea and ischemic orchitis, are emergency condition and early diagnosis is critical for the patient's outcome.

Evaluation of acute painful scrotum has always been a challenge for the clinician, due to non-specific signs and symptoms. Color Doppler ultrasonography (CDUS) is the imaging modality of choice for evaluating scrotal diseases. Therefore, the use of color Doppler ultrasound is important in helping to diagnose the disease. For example, epididymo-orchitis and testicular torsion have similar clinical presentations and color Doppler is useful in accurately differentiating between the two.

On the other hand, one of the most common causes of testicular pain is varicocele, therefore correct diagnosis and appropriate treatment can reduce symptoms and improve the patient's fertility.

In this lecture the role of color Doppler ultrasound in the assessment of various diseases of scrotum is explained. Also role of color Doppler ultrasonography in the diagnosis and determine its severity of varicoceles will be discussed.

NON GBM TUMORS: IMAGING PRESENTATIONS AND DIAGNOSTIC CLUES

Masoud Poureisa
Non Glial tumors: Imaging presentations and diagnostic clues
Dr Poureisa
Tabriz University of Medical Sciences

- An acoustic neuroma is also known as a schwannoma, vestibular schwannoma, or neurilemmoma, usually arise from the intracanalicular segment of the vestibular portion of the vestibulocochlear nerve. In over 90% of cases these tumors arise from the inferior division of the vestibular nerve. Most vestibular schwannomas have an intracanalicular component, and often result in widening of the porus acusticus resulting in the trumpeted IAM sign, which is present in up to 90% of cases. Extracanalicular extension into the cerebellopontine angle (path of least resistance) can lead to "ice-cream-cone" appearance. Small tumours tend to be solid whereas cystic degeneration seen commonly in larger tumors
- Meningiomas are extra axial tumors and represent the most common tumors of meninges. Typical meningiomas appear as dural based masses isointense to grey matter on both T1 and T2 weighted imaging, and demonstrate vivid contrast enhancement on both MRI and CT.
- Primary CNS lymphomas are uncommon tumors, accounting for only 1% of malignant CNS tumors. On imaging, PCNSL characteristically is identified as a CT hyperdense enhancing supratentorial mass, with MRI T1 hypointense, T2 isoto hyperintense, vivid homogeneous enhancement and restricted diffusion. Usually, there is no expressive associated vasogenic oedema.
- craniopharyngiomas are relatively benign neoplasms that typically arise in the sellar/suprasellar region. Although craniopharyngiomas are found in patients of all ages there is a bimodal distribution, with the first peak between the ages of 10-14 years, made up almost exclusively of adamantinomatous type, and a second smaller peak in adults aged over 50 years old, comprised mostly of papillary subtype. There appears to be a similar incidence in both males and females. In the vast majority of cases, craniopharyngiomas have a large suprasellar component (95%), with most involving both the suprasellar and intrasellar spaces (75%). Overall, calcification is very common, but this is only true of the adamantinomatous subtype (~90% are calcified
- pituitary adenomas are primary tumors that occur in the pituitary gland and are one of the most common intracranial neoplasms. Post contrast and especially thin section dynamic contrast enhanced imaging is an important part of a pituitary MRI and has significantly improved diagnostic accuracy. Some often subtle morphology changes can be identified on non-contrast images however. These include bulkiness of the gland on the side of the microadenoma, subtle remodelling of the floor of the sella, deviation of the pituitary infundibulum away from the adenoma.
- Primitive neuroectodermal tumors are agressive neoplasms of the brain, most frequently encountered in the paediatric population. A number of tumours fall under the umbrella term CNS PNET, Medulloblastoma by far the most common. 15% of all CNS PNET are supratentorial. pineoblastoma is the most common supratentorial PNET. Supratentorial PNETs, by definition, occur above the tentorium, and can either arise in the cerebral hemispheres, or within the lateral ventricles. Often seen as a large irregular mass.c ystic components are common (≈65%). Calcification can be common (≈70%) and shows heterogenous contrast enhancement.
- Medulloblastomas are the most common malignant brain tumor of childhood. They most commonly present as midline masses in the roof of the 4th ventricle with associated mass effect and hydrocephalus. Overall the vast majority (94%) of medulloblastomas arise in the cerebellum and the majority of these, from the vermis (75%). They tend to protrude into the fourth ventricle from its roof, and may even grow directly into the brainstem.
- Masses in the **pineal region** have a relatively broad differential because of the variety of cell types found in the region. If large enough, the mass

may compress the tectal plate and may cause a defect in up-gaze (Parinaud syndrome) or obstructive hydrocephalus, if the cerebral aqueduct is compressed.

GBM: MULTIPLE IMAGING PRESENTATION AND DIAGNOSTIC CLUES

Ali Radmehr, MD

The Glioblastoma Multiforme is the most common primary CNS tumor with variable imaging patterns. It may show hemorrhagic or necrotic components. Some of the glioblastoma multiform involves entire one or two hemispheres.
This tumor can demonstrate extracranial metastases. In this session the imaging findings of globlastoma multiforme with emphasis to MRI features with be present.

TUMORS-LIKE LESIONS IN BRAIN

Jalal Jalal Shokouhi, MD
AliAkbar Khadem, PhD student
Shahyar pashae, PhD

DDX between tumoral and tumor like lesions of brain is necessary for planning adequate treatment and stimulating outcome and future diagnosis.
Radiologist should be aware of all non-neoplastic pathologies and diseases that may mimic tumors.
DDX is possible by high-end and functional neuroimaging tools with clinical correlation in neuroimaging. The role of I.V. GD injection is important.
Diagnosis in radiology side is by CT and MRI.
Misdiagnosis may lead to a significant delay of adequate treatment of malignant tumors or may result in over-treatment of a tumor-like benign lesion.

DDX are:

M.S., Post-surgical changes, Abscess after meningo-encephalitis, abscess from P.N.S., Septic emboli in DDX with GBM.

TORCH (toxoplasmosis, cytomegalovirus and herpes complex), TB, Neurosarcoidosis, Fungal and opportunistic infection, hydatid, schistosomiasis and paragnoimiasis, Hemorrhage intracranial, Stroke, AVM, Aneurysm, Dural sinus thrombosis, ADEM, PML and UBO's list.
Phakomatosis, Neurofibromas, Sturgeweber, Von hippel lindau, Metabolic, Leukodystrophies, Canavan, Alexander diseases
The recent development of functional MRI such as tensor imaging (DTI), Perfusion-weighted imaging (PWI), SWI, MRS and PH-weighted MRI are needed in DDX. MRA, MRV, PET-CT could be additionally use.

NEW TECHNIQUES IN PREOPERATIVE IMAGING OF BRAIN TUMORS

Mustafa Fazıl Gelal, MD
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İzmir, Turkey

The classical role of neuroimaging in patients with brain tumors had been purely anatomy based, and included evaluation of the structural abnormality and the diagnosis of the tumor-related complications. With the advent of the new neuroimaging techniques, including diffusion weighted imaging (DWI), perfusion weighted imaging (PWI) and MR spectroscopy (MRS), it has become possible to evaluate functional, hemodynamic, metabolic, cellular, and cytoarchitectural alterations of brain tumors. These physiology based imaging methods have enabled us to better characterize and grade brain tumors, guide treatment, assess treatment response and patient prognosis.
In this lecture, the use of advanced physiology based neuroimaging techniques in the preoperative evaluation of brain tumors will be discussed with the audience. The basic principles of DWI, PWI and MRS will be presented. The practical points in the evaluation of brain tumors using each of the 3 methods will be emphasized. Some pitfalls will also be covered. The difficulties encountered in the tumor work up by the practicing neuroradiologist will be mentioned in the view of case examples.

POST-TREATMENT BRAIN TUMOR IMAGING: RECURRENCE VS RADIATION NECROSIS, PSEUDOREGRESSION AND PSEUDOPROGRESSION

G.Bakhshandehpour M.D
Parseh Medical Imaging Center (Tehran)
M.Movahhedi M.D
Paytakht Medical Imaging Center (Tehran)

Objectives:

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

1- Recognize MRI appearance of above mention entities
2- Differentiate recurrence of brain tumors from post radiation changes , pseudoregression and pseudoprogression
- Recognize the role of Modern Imaging techniques in this regard

Presentation summary:

In treatment of primary and metastatic brain tumors in addition to surgery, chemoradiation therapies have also a central role in management of tumors and because of their effects on brain parenchyma, interpretation and analysis of post-surgical and medical treatment imaging findings, sometimes became challenging for neuroradiologist and treating clinicians. Post –treatment surveillance of brain tumors situation often involves multiple and serial MR exams and visualization of a new enhancing lesion on post-surgical or nonsurgical parts is a common presentation for post –treatment radiation effects (PTRE) such as Pseudoprogression, pseudoregression , radiation necrosis Vs tumor recurrence. So, differentiation of these possibilities has a crucial importance for treating team.

Radiation therapy can have three outcomes depending on the time of occurrence and clinical presentation.

- Acute outcome: occur early and generally at the time of radiation.
- Subacute or early- delayed outcomes: occur up to 3 months post therapy.
- Late-delayed outcomes: occur from 3 months to years after therapy.

Radiation necrosis is occurring in late stage with a 3% -24% frequency, depending to the radiation dose, overall treatment duration and irradiated brain volume.

Although not precisely, a combination of conventional and modern neuroimaging techniques could be helpful for differential of recurrence of tumor and radiation necrosis.

In this presentation we will try to review these diagnostic and differential imaging clues.

MR IMAGING OF ANKLE TENDONS

Farimah Noorbakhsh, MD
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The purpose of this presentation is to review the normal anatomy and abnormal appearances of tendons of the ankle, as assessed with Magnetic Resonance Imaging. Knowledge of anatomy and technique is essential for scanning the ankle tendons accurately and effectively. I will discuss the MR appearance of tendon pathology, including tendonosis/ tendinopathy, tenosynovitis and peritendonosis, partial and complete tears, subluxation and dislocation. The medial, lateral, and anterior tendon groups are discussed separately so as to focus on the MR appearance specific to each region of the ankle.
Ankle pain from tendon pathology is common and seen in a wide range of patients from young athletes to older individuals. MRI is the imaging modality of choice for evaluating ankle tendon derangements and is excellent for identifying injuries that can be treated with surgery.

DIABETIC FOOT

Mehdi Karami, MD
Associate Professor of Radiology
Isfahan University of Medical Sciences

Foot problems related to diabetes are associated with a high morbidity and high healthcare costs.
A painful, red and hot foot in a patient with diabetic patient is a diagnostic problem.

- *Osteomyelitis* in a diabetic with neuropathy, results from contiguous spread of a skin ulcer.
- *Charcot neuro-osteoarthropathy* is an articular disease basically. Signal intensities on MRI will not discriminate between active Charcot Joint and osteomyelitis.
- *Chronic Charcot arthropathy* no longer shows a hot and red foot. Rocker-bottom deformity is a joint deformity, subluxation and dislocation of the metatarsals lead to in which the cuboid becomes a weight-bearing structure.
- *Charcot with superimposed osteomyelitis* may cause to amputation. Cellulitis and skin ulceration can s lead to osteomyelitis and subsequently foot amputation.

Clinical signs and symptoms and laboratory findings are generally unhelpful in diagnosing osteomyelitis. The radiographic findings of neuro-osteoarthropathy and osteomyelitis overlap and bone infection may not show up on the first 2 weeks. MRI is one of the best methods to determine whether osteomyelitis is present. Following the path of an ulcer or sinus tract to the bone and evaluate the signal intensity of the bone marrow is the simplest way to diagnose osteomyelitis that usually occur in the midfoot in Osteomyelitis in chronic Charcot and hindfoot in diabetic neuropathy without Charcot.
In the acute stage of Charcot neuro-osteoarthropathy, rapid and progressive bone and joint destruction are seen within days or weeks. MRI shows only subchondral bone marrow edema and enhancement in this stage.
The chronic inactive stage the edema usually persists and clinical findings are crepitus, palpable loose bodies and large osteophytes. The five D's, classic radiographic description of neuro-osteoarthropathy, are Density, Debris, Dislocation, Distention and Disorganization.
Charcot with superimposed osteomyelitis is a diagnostic problem. To determine whether osteomyelitis in a Charcot foot at MR imaging is present, follow the path of an ulcer or sinus tract to the bone and evaluate the signal intensity of the bone marrow. If bone marrow edema is present, osteomyelitis is very likely and if bone marrow edema is seen without a cutaneous defect, active Charcot is likely. The ghost sign is indicative of neuro-osteoarthropathy with superimposed osteomyelitis that refers to poor definition of the margins of a bone on T1-weighted images, which become clear after contrast administration.

SINUS TARSI

Mohammad Reza Movahedi MD
Consultant radiologist Sohrevardi MRI Center, Consultant Radiologist Paytakht medical imaging center Tehran, Iran

Sinus tarsi is a cone shaped space in hind foot containing fat, neurovascular bundles and multiple ligaments.
The fat could be replaced by hemorrhage, edema or fibrotic tissue due to multiple reasons, the most common of them trauma which in that case is one of the reasons of hind foot pain and called sinus tari syndrome.
MRI is the modality of choice for diagnosis of sinus tarsi syndrome.
In this lecture we discuss the anatomy of sinus tarsi and also etiology and clinical findings as well as MRI findings of sinus tarsi syndrome.

GI AND GU INTERVENTIONS CASE REVIEW

Hadi Rokni Yazdi,MD
Professor of Radiology, Tehran University of Medical Sciences

In this presentation, I try to discuss some interesting and chalanging interventional cases in GI and GU with an interactive format of presentation, including hepatobiliary, dialysis access and some GU interventions.

CASE REVIEW

Alireza Rasekhi,MD
Shiraz Uneversity of Medical sciences

Case 1

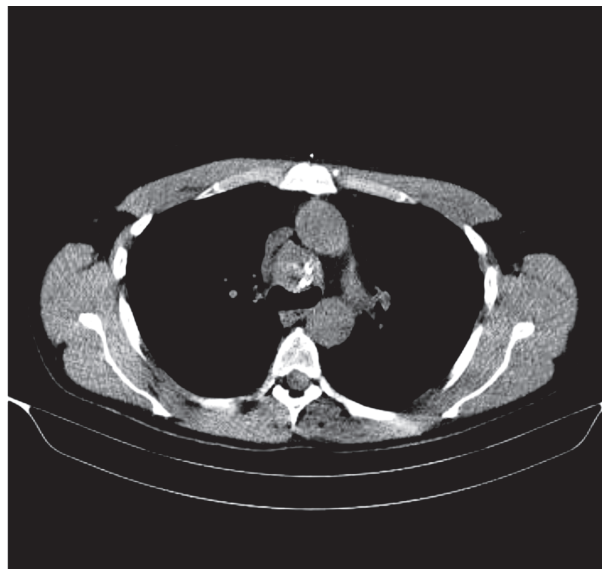
35 years old female with abdominal pain and fever

Sonography : 2 cystic lesions in the liver
Lab tests: high WBC count high neutrophil
CT scan : 2 abscesses in the liver, mild biliary dilatation
MRCP : mild dilation of intrahepatic ducts and dilation of CBD + filling defect
Abscesses drained by catheter with improvement of patients' condition
Bile continued to drain for more than expected
Another sonography confirmed CBD dilatation and filling defect with another new finding
ERCP performed
Worms extracted after sphyncterotomy
Parasitology was infavor of Fsciola hepatica

Case 2

A 37 y/o male known case of H.L since many years ago presented with mediastinal mass

Patient is known case of H.L since about 15 years ago.
That mediastinoscopic Bx was done for him that complicated due to major vessel injury and open surgery was done for controlling the bleeding.
He was well up to 2 months ago that developed with fever ,chills and HTN.



- so he was admitted with prednisolone 60 mg daily and procarbazin 50 mg TID. For 3 weeks.
- Then again developed fever so AB Rx was done and fever disappeared.
- So refered for Bx.
- Chest Ct was done which revealed mediastinal mass with irregular area of calcification located between SVC and ascending aorta.
- FNA performed: not satisfactory for diagnosis
- Trucut biopsy: necrotic tissue only with inflammation
- Re Biopsy
- Foreign body

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