Oral Presentations

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O - 01

ASSESSMENT OF PANCREATIC ULTRASONOGRAPHY AND MRI FINDINGS IN RELATION TO GLUCOSE TOLERANCE TEST IN PATIENTS WITH BETA THALASSEMIA MAJOR

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Abstract

Objective: The most important cause of mortality is heart failure due to iron accumulation in beta thalassemia major and MRI have come into routine use in evaluation of the iron load. Objective of this study was to evaluate the correlation of ultrasonografi and MRI of the pancrease with glucose tolerance test.

Materials and Methods: This study sixty patients were included. Oral glucose tolerance test (OGTT) was performed in all the cases. Pancreas echogenicity was divided into three grades. Grade I, grade II and grade III. Pancreas MRI images were acquired using T2* GRE sequence parameters.

Results: OGTT impairment was defined in 5 cases, from the patient group and 1 case from the controls. Patient group, pancreas echogenicity was found as grade I in 21 cases (35%), grade II in 27 cases (45%) and grade III in 12 cases (20%). Control group, pancreas echogenicity was found as grade I in 29 cases (96.7%) and grade II in 1 case (3.3%). T2* values were between 1.0 and 35.8 ms in the patient group and between 23.4 and 53.1 ms in the controls.

Conclusion: In this study, increased echogenicity was observed by 65% and a statistically significant correlation was found between the pancreatic echogenicity increase and blood-glucose values. In this study, a significant negative correlation was found between T2* abnormality and fasting blood glucose. Glucose mechanism shows a correlation with pancreatic US and T2* MRI values. Pancreatic changes in beta thalassemia major patients can be evaluated with US and MRI.

Keywords: Beta thalassemia major, iron load, diabetes mellitus, pancreatic US and T2* MRI

O - 02

THE RELATIONSHIP BETWEEN AGE AND APPARENT DIFFUSION COEFFICIENT VALUES IN NORMAL SPLENIC PARENCHYMA

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Abstract

Objective: To evaluate the correlation between age and apparent diffusion coefficient values in normal spleen.

Materials and Methods: Between January 2017 and January 2018, 89 patients without abdominal MR imaging findings who underwent abdominal 3 T diffusion weighted imaging, (b=0, b=600 s/mm^2) were retrospectively included. ADC mean values of the spleen were measured at MR Workstation. Measurements were performed with 25 mm^2 ROIs at the splenic hilus level. The average of four ADC mean measurements was calculated to reduce random variability in the measurements. Pearsons correlation coefficient test was used to evaluate the relationship between age and ADC mean values.

Results: Twenty-four of the patients included in the study were males and 65 were females. The mean age was 45.9 years (range, 19-76 years). The mean ADC value was 0.9+0.13x10^{-3} mm^2/s (range, 0.66-1.2x10^{-3} mm^2/sn). There was a negative correlation between age and ADC mean values (r=-0.526, p=0.001).

Conclusion: There was a negative correlation between age and ADC mean values. It may be necessary to consider age when assessing spleen s ADC values.

Keywords: Apparent diffusion coefficient, spleen, age

O - 03

DIAGNOSTIC PERFORMANCE OF MULTIPARAMETRIC MR IMAGING AT 3.0 TESLA IN DISCRIMINATING PROSTATE CANCER FROM PROSTATITIS: HISTOPATHOLOGIC CORRELATION

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Abstract

Objective: Aim of this study is to evaluate the diagnostic performance of multiparametric magnetic resonance imaging (mpMRI) in differentiating prostatitis foci from prostate cancer (PCa).

Materials and Methods: This retrospective study included 81 biopsy-proven lesions (37 PCa and 44 prostatitis). SI on DWI (b=1000 and 2000 s/mm^2), normalised T2-signal intensity (nT2SI) and apparent diffusion coefficient (ADC) values, SI at the end of the dynamic curves, peak SI, mean enhancement percentage, mean peak time, and washout percentage obtained from dynamic contrast-enhanced imaging (DCEI) were evaluated.

Results: nT2SI (3.2 vs. 3.8, p=0.003) and ADC values (0.685 vs. 0.874x10-3 mm^2/s, p<0.001) were significantly lower in the PCa group than the prostatitis group. The washout percentage was significantly different between prostatitis group than the PCA (4% vs. 12%, respectively, p=0.003). ADC values alone showed higher specificity and and sensitivity (75% and 80.5%, respectively) than all of the single and most of the combined criteria.

Conclusion: mpMRI of the prostate gland can be used to differentiate between, prostatitis, PCa and normal tissue. SI on DWI (b=2000 s/mm^2), ADC values, nT2SI, and washout percentage were identified as MRI criteria for discriminating prostatitis from PCa. the ADC values alone, demonstrated higher sensitivity and specificity when compared with all of the single and most of the combined criteria.

Keywords: Prostate, prostate cancer, prostatitis, multiparametric MRI, diffusion MRI, T2 weighted imaging

O - 04

"T2-HYPOINTENSE DOT SIGN" HIGHLY SUGGESTIVE CLUE FOR THE DIAGNOSIS OF OVARIAN TORSION: A NOVEL SIGN

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Abstract

Objective: Early and accurate diagnosis is crucial for preserving the viability of the ovaries and for the appropriate management of patients with ovarian torsion. In this study, we aimed to investigate the reliability of "T2-Hypointense Dot Sign" in the diagnosis of ovarian torsion. We also aimed to compare the diagnostic capability of this sing with whirlpool sign in the detection of ovarian torsion.

Materials and Methods: The pelvic MRI images of 31 patients with surgically proven ovarian torsion were accepted to analysis. Thirty patients with adnexal neoplasm and 15 patients with tuboovarian abscess comprised the control group. The MRI images of 76 patients were retrospectively evaluated by two independent radiologists for the presence of T2 hypointense dot sign and whirlpool sign with using three point scale (0=definitely negative, 1=inconclusive, 2=definitely positive).

Results: T2 hypointense dot sign was more reliable than the whirlpool sign in the detection of ovarian torsion with the occurrence rate of 93.5% and 58%, respectively. Both signs were definitely negative in patients with adnexal neoplasm and tuboovarian abscess. "T2 hypointense dot sign" was definitely positive and definitely negative in 29 and two patients, respectively. The whirlpool sign was inconclusive and definitely negative in four and nine patients, respectively. Nevertheless, T2 hypointense dot sign was evident four and seven patients with inconclusive and definitely negative results for whirlpool sign, respectively.

Conclusion: The presence of ipsilateral "T2 hypointense dot sign" could be valuable clue for the accurate and early diagnosis of ovarian torsion on non-contrast MRI.

Keywords: Ovarian torsion, MRI, T2-Hypointense dot sign

O - 05

ASSESMENT OF CARDIAC AND HEPATIC IRON OVERLOAD IN THALASEMIA MAJOR PATIENTS WITH CARDIAC MAGNETIC RESONANCE IMAGING

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Abstract

Objective: In this study, assesment of cardiac and hepatic iron overload in thalasemia major patients with cardiac magnetic resonance imaging (MRI) T2* study was aimed.

Materials and Methods: 13 thalasemia major patient (7 female, 6 male) was included in this retrospective study. With General Electric DiscoveryTM MR750W 3 Tesla MRI scanner; myocard and liver iron overload was assessed with T2* sequance. Cardiac T2* time was measured at mid-septum;<20 msec was accepted significant for siderosis. If T2* time was 10-20 msec, considered moderate siderosis;if T2* time was<10 msec, considered severe cardiac siderosis. Liver iron overload was categorised normal if T2* time was >11.4 msec; categorised mild if T2*time was 3.8-11.4 msec; categorised moderate if T2* time was 1.8-3.8 msec; categorised severe if T2* time was<1.8 msec. Age, serum iron and ferritin levels, frequency of transfusion, chelation theraphy, co-morbid disease informations of patients was obtained and recorded from hospital information system (HIS).

Results: The age of the patients ranged between 9 and 59 years. Cardiac siderosis was detected in 4 patients (30.1%) within 13 total patients. 1 patient had modarate cardiac siderosis, 3 patients had severe cardiac siderosis. Except one patient, there was liver iron overload in all patients. 4 (30.1%) patients had mild iron overload, 6 (46.1%) patients had moderate iron overload, 1 patient (7.1%) had severe iron overload. In 13 patients, 12 patient had iron chelation theraphy. In 3 patients, serum ferritin level was <1000 ng/ mL. In this 3 patients, mild and moderate liver iron overload was detected, but there was no cardiac siderosis. Between serum ferritin levels and liver T2* time, there was no statistically significant correlation (p=0.12) Between serum ferritin levels and cardiac T2* time, there was a strong negative correlation (r=-0.762, p<0.05). There was no statistically significant correlation between cardiac T2* time and liver T2* time (p=0.24).

Conclusion: Cardiac T2* imaging is a successful and non-invasive modality, which can demonstrate cardiac siderosis; even before the myocardial dysfunction emerged. In same session, measuring cardiac and liver T2* time simultaneously, in tranfusion dependent thalasemia major patiens can lead to the detection of iron overload before clinical manifestations and guide early onset of chelation theraphy.

Keywords: Cardiac iron overload, thalassemia major, cardiac MRI

O - 06

NON INVASIVE ASSESSMENT OF RENAL VASCULATURE USING INHANCE (3D INFLOW INVERSION RECOVERY) SEQUENCE OBTAINED WITH 3.0 T MR IN CASES OF RENOVASCULAR HYPERTENSION

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Abstract

Objective: To evaluate the diagnostic performance of inhance (3D inflow inversion recovery) MRA in the depiction of the renal vasculature and

in the detection of main renal artery diseases in cases of renovascular hypertension.

Materials and Methods: Unenhanced-MRA (inhance MRA) was performed in 73 patients (31 women, 42 men; mean [±SD] age, 54±17 years) with clinical suspicion of renovascular hypertension. All examinations were performed with a 3.0 T MR system (GE Discovery 750 T). Inhance-MRA was performed using a respiratory-triggered 3D fat saturated fast imaging employing steady state adquisition with inversion recovery pulses. Three radiologist independently evaluated the main renal artery, first order segmental branches and secondary order arteries within the renal parenchyma with the 'inhance' sequences, retrospectively. Each reader graded the MR image quality on a 4-point confidence scale based on the vessel signal intensity, sharpness and complete delineation of vessel borders. Also the pathologies of the main renal artery (stenosis, occlusion) were evaluated. After the independent reviews, a consensus was reached to resolve discrepancies. The consensus data was used as the reference for the unenhanced-MRA reading.

Results: More than one renal artery was found in 24 patients. There was early division in 15 patients. Three patients had both extra renal artery and early division variations. All of the variations could be detected correctly by all readers. In five patients, all readers detected stenosis at main renal arteries. In two patients, two readers found renal artery stenosis while one reader interpreted it as normal. In a patient two readers reported as normal while one found renal artery stenosis. MR image quality score was found significantly higher in imaging main renal artery for all readers, compared to first order branch and parenchymal branch ($p<0.001$).Intraclass correlation coefficient was found high for evaluating main renal artery disease (ICC=0.82) and the presence of vascular variations (ICC=0.96).

Conclusion: Inhance 3D Inflow Inversion Recovery sequence is a reliable diagnostic method to depict renal vasculature without using contrast material in a very short time. The normality, stenosis and variations in the main renal arteries can be easily detected by this method. This method can be used safely as an alternative to enhanced techniques in patients with renal insufficiency.

Keywords: Inhance inflow inversion recovery, magnetic resonance, renal artery disease

O - 07

1.5 TESLA PROSTAT MRI PI-RADS V2 RESULTS, CORRELATION WITH FUSION BIOPSY

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Abstract

Objective: Prostate cancer is the most common type of cancer in men. Magnetic resonance imaging (MRI) now plays an important role in the detection, localization and staging of prostate cancer. In this study, we aimed to correlate the lesions reported as especially PI-RADS 3 and PI-RADS 4 with fusion biopsy at 1.5T prostate MRI.

Materials and Methods: Dynamic multiparametric imaging was performed with 1.5T MRI (Magnetom Symphony, Siemens) system in 16 patients (age range 45-77, age average 62) with high PSA values or rapid PSA elevation with touché findings, family history or previously reported systematic biopsy benignity. PI-RADSv2 scoring system was used to grade the lesions. US-guided fusion biopsies combined with MRI findings of PI-RADS 3 and 4 lesions were performed separately.

Results: A total of 22 biopsies with PIRADS 2 (n=1), PIRADS 3 (n=11) and PIRADS 4 (n=10) lesions were performed in 16 patients. Of the lesions, 14 were in peripheral zone, 5 in transitional and 3 in central zone. Prostate adenocarcinoma was detected in 8 of 10 lesions scored with PI-RADS 4 (Picture 1), and 1 of 11 lesions scored with PI-RADS 3. The sensitivity of PI-RADSv2 for malignant lesion detection was 88,8%, specificity was 84,6%, accuracy was 86,3%. The negative predictive value (NPV) and positive predictive value (PPV) were calculated as 91,6 % and 80 %, respectively.

Conclusion: High incidence of malignant results in lesions scoring PI-RADS 4 in prostate MRI suggests that these patients should be directed to biopsy. Fusion biopsy improves accuracy rates, avoids unnecessary systematic biopsies and complications. When the appropriate sequences were used in 1.5T MRI system, the rate of detection of non-malignant lesions was found to be high. Thus, the complications that may occur secondary to the extra invasive procedures are also prevented.

Keywords: PI-RADS v2, 1.5 Tesla Prostat MRI, Fusion biopsy

O - 08

CONTRIBUTION OF THE DIFFUSION WEIGHTED MAGNETIC RESONANCE IMAGING ON TYPING OF LIVER CYST HYDATIC

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Abstract

Objective: The purpose of this study is to provide classification of different types of hepatic hydatid cysts by measuring the mean apparent diffusion coefficient (ADC) using diffusion-weighted magnetic resonance imaging (DWI).

Materials and Methods: The total of 60 patients (42 female,18 male) and 79 lesions included in the research conducted in İstanbul Research and Training Hospital between January 2014 and May 2015, had been diagnosed with hepatic cyst lesions for various reasons according to the hospitals archived records of abdominal MRI, and therefore had their diagnosis pathologically or serologically confirmed. ADC and EADC maps were obtained with values of b0 and b400 s/mm^2 and ADC and EADC mean valuses were calculated for each lesions. Then the average value calculated for each cyst types are compared quantitatively.

Results: In our study for ADC values, we determined that statistically there was significant difference between types 1 and 4, between type 2 and type 4, type 3 and type 4 ($p=0.001$). When we compared EADC values we found that WHO type 4 lesions EADC values were obviously lower than who type 1, 2 and 5 lesions ($p=0.001$).In addition, we divided our patients lesions into two groups, active (types 1-2-3) and inactive (types 4-5). When we compared each groups mean ADC and EADC values, we determined the difference between active and inactive groups. When compared to inactive groups, lesions ADC values of active types were higher and EADC values were lower as shown by statistics.

Conclusion: Our study shows that ADC and EADC values may be useful for differentiaton of type 4 lesions from other classes, and seperation of active and inactive groups.

Keywords: Hydatid cyst, diffusion weighted magnetic resonance imaging, apparent diffusion coefficient

O - 09

COMPARISON OF APPARENT DIFFUSION COEFFICIENT VALUES BETWEEN MALIGNANT LESIONS AND NORMAL UTERINE CERVIX WITH 3T MRI

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Abstract

Objective: The aim of the study was to measure and compare apparent diffusion coefficient (ADC) values of uterine cervix between cervical neoplasms and normal cervical tissues with 3-Tesla magnetic resonance imaging (MRI).

Materials and Methods: From April 2017 to February 2018, eleven consecutive female patients having Diffusion-weighted MRI (DWI) with a diagnosis cervix neoplasia were included in this retrospective case-control study. The control group consisted of age-matched patients with normal cervical smear and having pelvic DWI due to other pathologies expect cervical pathologies and genital malignities. All examinations were performed by using a 3-T MR with 2 different b values (b=50, 800 s/mm^2). A total of 22 patients (cervical neoplasia group n=11 and control group n=11) ADC measurements were performed on the axial ADC map three-times by the same radiologist.

Results: The mean age of total patients, neoplasia group, and the control group was 50.9 (between 33-58), 51 and 50.8, respectively. There was no statistically significant difference in mean age between the two groups (p>0.05). Neoplasms were 6 squamous cell carcinoma, 1 adenocarcinoma, 1 clear cell carcinoma, 1 carcinoma in situ, 2 LSIL. The means of cervix ADC values of age-match groups were 0.79±0.32 mm^2/s and 1.51±0.11 mm^2/s, respectively. There were statistically significant differences between groups in term of cervical ADC values (p=0.00).

Conclusion: In pelvic DWI lower ADC values of uterine cervix indicate neoplasm of the cervix. Further study with large patient population is necessary to find out a cut-off value

Keywords: 3T, ADC, uterine cervix cancer, DWI

O - 010

ABDOMINAL PAIN IN PREGNANCY: THE ROLE OF MAGNETIC RESONANCE IMAGING IN THE DIAGNOSIS OF ACUTE APPENDICITIS

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Abstract

Objective: To evaluate the diagnostic performance of magnetic resonance imaging (MRI) in pregnant patients with suspected acute appendicitis and to assess its role in identifying other causes of abdominal pain in this population.

Materials and Methods: A retrospective database search from 2011 through 2018 for MRI exams of pregnant patients due to abdominal pain was performed. Sixty-one patients (median age:30 years) were identified. MRI exams were reviewed and the patients' electronic medical record for surgical, pathological, and clinical follow up were investigated. Cases were evaluated for presence of appendicitis, visualization of the appendix, and non-appendiceal causes of pain. Kappa statistic and McNemar test were used to determine agreement between MRI and pathological examinations. Subjective analysis of image quality of MRI sequences was performed in cases with proven appendicitis.

Results: Seven (11.5%) of 61 MRI exams were consistent with acute appendicitis and were proven on pathology. One patient who underwent appendectomy was found to have appendicitis which could not be identified by MRI. The sensitivity and specificity of MRI were 87.5% and 100%, respectively. Radiological and pathological agreement was found to be excellent (Kappa:0.92). Non-appendiceal causes for the patient's abdominal pain were seen in 32 (52.4%) scans. In 13 cases (21.3%), appendix could not be visualized on MRI. Of these, none had a final diagnosis of appendicitis. For the subjective analysis of image quality of each separately viewed MRI sequence in detecting appendicitis, there was no statistical significant difference (p>0.05).

Conclusion: MRI shows a high diagnostic value in the assessment of pregnant patients with suspected appendicitis and provides a variety of diagnoses of acute abdominal pain.

Keywords: Pregnancy, abdominal pain, appendicitis, MRI

O-11

IS MRI BE PREFERRED IN PEDIATRIC PRESEPTAL AND POSTSEPTAL PERIORBITAL INFECTION DIFFERENTIAL DIAGNOSIS?

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Objective: In children who referred to hospital with periorbital swelling to differentiate preseptal cellulitis and orbital infection requiring emergency diagnosis and treatment, clinically is difficult so radiologic imaging is used. In children orbita CT with contrast is preferred because it does not require anesthesia and is easy to use in emergency conditions. However orbital infections and intracranial complications are evaluated better with orbital MRI. We purposed to evaluate difference between radiological findings of orbita CT and MRI and the contributions of these findings to the treatment in pediatric patients who had periorbital infection diagnosis in hospital.

Materials and Methods: We evaluated 106 patients who referred to hospital with periorbital swelling. The study is included 28 patients of these who performed CT and MRI. The findings of orbital CT and MRI of the cases were evaluated according to the Chandler classification used for periorbital infections.

Results: 13 (46.4%) of cases were male, 15 (53.6%) of cases were female and mean age was 8.43. While 22 (78.5%) of all cases was detected paranasal sinusitis.There was no difference between two imagings in the diagnosis of preseptal cellulitis,in diagnosis of orbital cellulitis that MRI was found significantly superior ($p<0.05$). No significant difference between two imagings in diagnosis subperiostal abscess but in evaluation of abscess size there was significant difference and MRI evaluate subperiostal abscess size larger than CT.

Conclusion: CT is often used to distinguish between emergency preseptal and postseptal periorbital infections in children. However orbita MRI is more effective modality in assessing orbital extension and subperiosteal abscess size.

Keywords: MRI, differential diagnosis, pediatric, periorbital infection

O - 012

ROLE OF MRCP IN EVALUATION OF PATIENTS WITH POST-CHOLECYSTECTOMY SYNDROME

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Abstract

Objective: The recurrence or new development of upper abdominal symptoms and signs (right upper quadrant pain, indigestion, abnormal liver function tests, hyperbilirubinemia etc.) after cholecystectomy operation is called as post-cholecystectomy syndrome (PCS). Its prevalence among cholecystectomised patients is about %10-15. The aim of this study was to assess the role of magnetic resonance cholangiopancreatography (MRCP) in the evaluation of patients with PCS.

Materials and Methods: A retrospective study over a period of 7 years (between January 2011 and January 2018) was performed with 379 patients who have cholecystectomy history and recurrent upper abdominal symptoms. Clinical data from hospital's electronic medical record system and MRCP images of patients were retrieved and evaluated. The definitive diagnosis was confirmed by patient history, physical examination, laboratory tests, US, MRCP and ERCP all together and it was compared to MRCP diagnosis in order to asses accuracy of MRCP alone in PCS.

Results: The patients group consisted of 57 early PCS and 322 late PCS. Among the late PCS group the most common diagnosis was choledocolithiasis (32%). Twelve patients were diagnosed with malignancy, 8 of them had cholangiocellular carcinoma. Among the early PCS group the most common diagnosis was postoperative collection (30%) followed by operation related biliary tree injury (24.5%). MRCP yielded an overall sensitivity of 98%, specificity of 92%, accuracy of 94% for the diagnosis of causes of PCS.

Conclusion: MRCP is a noninvasive, useful and reliable method in the diagnosis of causes of PCS and should be recommended for a better management of these patients.

Keywords: Cholecystectomy, choledocolithiasis, MRCP

O - 013

CAN WE PREDICT THE TIMING OF HEPATOSPECIFIC CONTRAST AGENT APPEARANCE IN THE BILE DUCT BEFORE MRI?

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Abstract

Objective: Gd-EOB-DTPA is highly effective in diagnosis of bile duct pathologies. However, in some patients, Gd-EOB-DTPA is seen in the bile ducts at 5 min, and in some patients it is not observed at 120 min. The purpose of this study is to predict the Gd-EOB-DTPA appearance time (Gd-AppTime) in bile ducts with ALBI, APRI, FIB4 scores and liver function (albumin, bilirubin) and transaminase levels before examination.

Materials and Methods: Thirty-five patients were screened. 2 patients were removed from the study because of hepaticojejenostomy. 33 patients were analysed for Gd-AppTime in intrahepatic bile ducts, common hepatic duct, proximal and distal common bile duct, gallbladder and duodenum. Possible correlation between ALBI, APRI, FIB4 scores, liver function (albumin, bilirubin), and transaminase levels were investigated with Gd-AppTime.

Results: Thirty-three patients (19K, 14E) were included in the study. The mean age was 52±13 (min:20, max: 84). There was no significant correlation between age and Gd-AppTime ($p>0.05$). ALBI score correlated positively with Gd-AppTime in proximal common bile duct ($r=0.373$, $p=0.03$), but correlated negatively with albumin ($r=-0.366$, $p=0.04$). On the other side, Gd-AppTime in distal common bile duct showed a negative correlation only with the albumin ($r=-0.394$, $p=0.02$). There was a significant correlation between total examination time with ALBI ($r=0.504$, $p=0.003$) and albumin ($r=-0.428$, $p=0.01$).

Conclusion: Changes in liver function affect the Gd-AppTime and duration of the examination. We believe that this relationship can be seen more strongly with larger population studies.

Keywords: Hepatospecific contrast agents, MRI, imaging time

O - 014

THE ACCURACY OF 3T MAGNETIC RESONANCE CHOLANGIOPANCREATOGRAPHY IN SUSPECTED CHOLEDOCOLITHIASIS

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Abstract

Objective: The purpose of this study was to investigate interobserver agreement during MRCP evaluation and the sensitivity and specificity of MRCP obtained with 3T scanners in cases of suspected bile duct obstruction.

Materials and Methods: Totally 37 patients who had MRCP and ERCP were included. Choledochal pathology was divided into two groups regarding the presence of stones as "there is stone or not". MRCP were performed with 3 Tesla system using respiratory triggered HASTE technique in axial and coronal plane and with T2 SPACE sequence in coronal plane. Sensitivity, specificity, negative predictive value (NPV), and positive predictive value (PPV) were calculated separately for each observer. Cohen kappa analysis was performed for the correlation between the observers. The average of both observers was calculated for comparison with other studies.

Results: The mean age of the 37 patients who constituted the study population was 63.51 (14-91). The mean time between MRCP and ECRP was 5.46 days (1-15 days). Median choledoc diamater was 5 mm (3-8 mm) in 7 normal subjects and 11.65 mm (6-23 mm) in 30 choledocolithasis. Agreement between the observers was analysed and Cohen's kappa value was evaluated as 0.84. For two observers, sensitivity of MRCP was 93% where as specificity was 75% for the first observer and 62% for the second.

Conclusion: In this study we found a high level of interobserver agreement in evaluating MRCP. MRCP has a high sensitivity in detecting choledocolithiasis in 3T scanners.

Keywords: 3T MRI, choledocolithiasis, MRCP, ERCP

O - 015

EVALUATION OF MICROWAVE ABLATION TREATMENT EFFICIENCY OF LIVER GIANT CAVERNOUS HEMANGIOMAS WITH MRI

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Abstract

Objective: Microwave ablation (MA) is a newly developed interventional method as an alternative to endovascular embolization used as a classical method in the treatment of hepatic cavernous hemangiomas. The purpose of this study was to evaluate the role of MR imaging in the assessment of treatment response of liver hemangiomas after MA therapy.

Materials and Methods: All patients who underwent MA therapy for cavernous hemangioma who had pre- and post-interventional MR examinations at our hospital between 10/2016 and 04/2017 were included. A retrospective analysis of the institutional imaging database identified 10 patients (5 men, 5 women, mean age: 47.9 years).

Measurements of diameter and volume of lesions were performed on axial T2w FSE images with fat saturation. ADC values of normal liver parenchyma and of the hepatic hemangiomas were calculated using diffusion weighted images. Results were calculated and compared using paired t-test with a significance level of 0.05.

Results: Criteria of tumor response to treatment assessed with respect to RECIST criteria. The mean diameter and volume of hemangiomas showed a significant decrease following treatment ($p<0.05$). Though comparison of pre- and post-interventional T1 and T2 signals were statistically significant ADC values were not.

Conclusion: In the treatment of hepatic giant cavernous hemangiomas, the results of the MA procedure are confounding. The most appropriate sequence showing the ablation zone for diameter and volumetric measurements in MR scans is T2w FSE scans. ADC values do not provide a clear benefit in the quantitative assessment of residual liver tissue. Significant regression is observed in lesion dimensions according to RECIST criteria.

Keywords: Cavernous hemangioma, microwave ablation, MR, liver

O - 016

DIAGNOSTIC PERFORMANCE OF MR IMAGING FINDINGS AND DIFFUSION WEIGHTED MRI IN THE DIFFERENTIATION OF ENDOMETRIOMAS FROM HEMORRHAGIC OVARIAN CYSTS

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Abstract

Objective: To evaluate magnetic resonance imaging (MRI) feature of endometriomas and to determine sensitivity and specificity of the Diffusion Weighted MRI in helping to distinguish endometriomas from other hemorrhagic adnexal cystic lesions.

Materials and Methods: Seventy-one patients who underwent surgery for histopathologically confirmed endometrioma and twenty-five patients with hemorrhagic cyst were included in the this study. The following MRI findings were reviewed in 96 patients (87 lesions in 71 patients with endometrioma and 25 lesions in 25 patients with hemorrhagic cyst): lesion size, morphological appearance, T2-weighted (T2W) signal intensity, T1-weighted (T1W) signal intensity, DWI signals with apparent diffusion coefficient (ADC) calculated for b=600 s/mm, b=800 s/mm (2), T2 dark spot and T2 shading sign in cystic lesions. Sensitivity, specificity, and positive and negative predictive values of the T2 dark spot and T1 hyperintencity and T2 shading sign in distinguishing endometriomas from hemorrhagic lesions were calculated. ADC values were measured 50-100 mm2 ROI in the ADC map.

Results: In the endometrioma group, T2A shading and T2 dark spot findings were significantly higher; T1A hypointensity was significantly higher in the hemorrhagic cyst group. We observed significantly lower ADC values in endometriomas compared with hemorrhagic ovarian cysts in all b values. Sensitivity, specificity, positive predictive value, and negative predictive value of ADC values of 2 x10-3 mm^2 /sn for differentiating endometriomas from other hemorrhagic cystic ovarian masses were 88.9%, 96.5%, 96% and 98.88% respectively.

Conclusion: We suggest that DWI should be included in the routine MRI protocol for the evaluation of endometriomas from hemorrhagic ovarian cysts. It

may help in the better disease evaluation in substantiation with clues from the symptomatology as well as signal intensity on the conventional MRI.

Keywords: DWI and ADC, endometrioma, hemorrhagic ovarian cyst, MRI

O - 017

MRI FINDINGS OF PREGNANT PATIENTS WITH ACUTE ABDOMINAL PAIN

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Abstract

Objective: Ultrasonography (US) is the basic imaging method in pregnancy. US may not be thoroughly evaluated pelvic region in the advanced stage of pregnancy. Magnetic resonance imaging(MRI) is the main diagnostic tool for the evaluation of the pregnant women with acute abdominal pain. The purpose of this study to evaluate MRI findings of pregnant patients with acute abdominal pain.

Materials and Methods: The study group comprised 24 patients (mean age, 30.7±6.1) in whom abdominal MRI was performed for acute abdominal pain. These patients were consecutively referred to our department for abdominal MR imaging and evaluated between January 2010 and January 2018, retrospectively. Abdominal MRI examinations were obtained with fast T2-weighted images (WIs), and T1-Wis. No contrast material was administered. Chi-square test was performed using SPSS V.24 for statistical analysis.

Results: MRI has revealed normal findings in 9 patients, renal mass in 1 patient, isolated pelvic fluid in 1 patient, acute appendicitis in 4 patients, ovarian torsion in 1 patient, benign ovarian or uterine mass in 3 patients, complicated over cyst in 2 patients, endometrioma in 1 patient and acute hepatitis in 1 patient. There were no statistically significant differences between acute abdomen etiologies in terms of patient age and gestational age ($p>0.05$).

Conclusion: Acute abdominal pain during pregnancy requires rapid and effective diagnosis because of the necessity of urgent surgical intervention and it can cause high mortality and morbidity in case of delayed diagnosis. MRI is main diagnostic method used in the evaluation of acute abdominal pain in pregnant patients.

Keywords: Pregnancy, MRI, acute abdominal pain

O - 018

DIFFUSION WEIGHTED MAGNETIC RESONANCE IMAGING FINDINGS IN DETERMINING OF LIVER METASTASES IN PANCREAS CANCER

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Abstract

Objective: Pancreatic cancer (ca) is one of the most common, curable, and poorly prognostic tumors of the present day. A screening test that provides early diagnosis has not been established yet. In order to prevent unnecessary operations, screening should be done optimally. The purpose of this study was to investigate the superiority of Diffuse weighted imaging (DWI) sequences and computed tomography (CT) findigns in detecting small liver metastases, in addition to determine early diagnosis and operability criteria in pancreatic cancer.

Materials and Methods: 79 pancreatic masses with adenocarcinoma and pancreatic neuroendocrine tumor (panNET) according to pathology results were evaluated retrospectively between 2009-2017 years. Laparoscopy, operation, biopsy and follow-up correlations were investigated with CT and DWI MRI findings.

Results: The distribution of ADC values did not show a statistically significant difference ($p=0.976$) in measurements between primer Adeno ca and PanNET. Similarly, there was no statistically significant difference in ADC measurements from the metastases of both groups ($p=0.140$). In a total of 8 patients more number of metastases were detected in DWI than in CT (38.10%). In 3 patients with no metastases detected on CT, 1 metastasis was detected on DWI MRI. In 3 patients DWI MRI showed single metastasis but they were not observed in CT.

Conclusion: One of the functional imaging modalities, DWI generally improves staging in terms of diagnosis of pancreatic adenocarcinoma and PanNET lesions and determination of liver metastases. Functional radiologic imaging should therefore be used as a part of MR imaging modalities, and liver metastases in pancreas CA. Thus, liver metastases not detected in CT can be detected with DWI MRI, preventing unnecessary operations and thus increase in morbidity and mortality.

Keywords: MRI, DWI, pancreatic cancer, liver metastases, CT

O - 019

COMPLIANCE WITH THE TECHNICAL STANDARDS PROPOSED BY PI-RADS V2 GUIDELINE IN PERFORMING MULTIPARAMETRIC PROSTATE MAGNETIC RESONANCE IMAGING IN UNIVERSITY AND TRAINING HOSPITALS IN TURKEY: PRELIMINARY RESULTS

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Abstract

Objective: Prostate imaging reporting and data system version 2 (PIRADSv2) aims global standardization for acquisition and interpretation of multiparametric magnetic resonance imaging (mpMRI). The purpose of this study was to determine adherence to PIRADSv2 parameters in academic centers in Turkey.

Materials and Methods: Eighty four tertiary referral academic hospitals in Turkey were asked to report their technical parameters of their prostate mpMRI protocols. A total of 6, 9, 8 and 9 acquisition

parameters for axial T2W, diffusion weighed imaging (DWI), dynamic contrast enhancement (DCE) and other technical standards were queried, respectively.

Results: Forty two of 84 centers reported to perform prostate mpMRI (n=26 located in one of the biggest 3 cities [İstanbul, Ankara, İzmir]) either at 1.5 (n=28) or 3 (n=14) Tesla. Two (4.8%) centers reported use of endorectal coil. There was only one center (2.4%) that had complete adherence to all parameters of PIRADSv2. For axial T2, adherence to voxel dimension on frequency, phase encoding steps, maximum 3mm slice thickness (ST) were 7.1% (3), 40.5% (17), 73.8 (31), respectively. For DWI, adherence to minimal b value (b≥1400), maximal 4mm ST were 61.9% (26), 83.3%(35), respectively. Among 40 centers performing DCE, 24 centers use temporal resolution<10sec, whereas 8 centers use temporal resolution<7 sec. Repetition time was the most commonly compliant parameter (38/40) for DCE. The mean image acquisition time for axial T2, DWI and DCE were 234, 301 and 233sec respectively.

Conclusion: The adherence to technical parameters of PIRADSv2 was lower than expected in academic centers in Turkey.

Keywords: PIRADSV2, Multiparametric, Prostate, MRI, Parameter

O - 020

IMAGING OF ACUTE PANCREATITIS: UPDATE OF THE REVISED ATLANTA CLASSIFICATON

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Abstract

Objective: To familarise the radiologist with the Revised Atlanta classification system of acute pancreatitis with the help of pictorial review and encourage them to use it in their everyday practice.

Materials and Methods: 213 patients who got the diagnosis of acute pancreatitis between 2015 to 2017 years in Sakarya University Hospital were taken to our study. We evaluated the morphology of the pancreas, interstitial oedematous and necrotisan,severity of the pancreas and local complications. We also evaluated laboratory tests, APACHE, Ranson, BISAP, SIRS, PANCODE and CTSI scores.

Results: We evaluated 213 acute pancreatic patients. %86.7were interstitial oedematous pancreatitis, %13.1 were necrotisan pancreatitis. According to Revised Atlanta criterisation; %69.1 minimal severe, % 29.2 medium severe and %9.7 was highly severe pancreatitis. We also evaluate Ranson, BISAP, SIRS and APACHE scores.

Conclusion: The Revised Atlanta classification helps in standardizing the terminologies used in acute pancreatitis across a wide range of specialities. It helps in precise documentation and reporting of the cases of acute pancreatitis and makes the role of the radiologist in dispensable. It also helps in stratifying the patients based on severity leading to effective management and treatment planning. Imaging findings along with the duration of onset of symptoms help in clearly identfying the different type of collections. This further enhances the importance of the radiologist in the multi-disciplinary management of acute pancreatitis.

Keywords: Abdominal imaging, CT, MR, pancreatitis, revised Atlanta classification

O - 021

ASSESSMENT OF THE HEPATIC VASCULAR STRUCTURES: DYNAMIC ENHANCED MRI VERSUS DYNAMIC ENHANCED CT IN HEALTHY LIVER AND DISEASED LIVER

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Abstract

Objective: We aimed to examine the relative usefulness and accuracy of MRI in assessing hepatic vascular structures as compared to CT in healthy liver and diseased liver.

Materials and Methods: We prospectively assessed 48 donor candidates and 60 adult patients with liver disease who underwent dynamic enhanced MRI and dynamic enhanced CT concurrently. The results of CT were compared against MRI firstly for all subjects totally and than for donors and patients separately. Additionally results of qualitative and quantitative MRI findings were also compared between donors and patients.

Results: For all subjects included in this study, demonstration of each vascular structure was significantly better at CT, except for right portal vein (RPV) and right inferior hepatic vein (RIHV) that were demonstrated equally at CT and MRI. The furthest inferior performances of MRI were in visualizing segment IV artery and RIHV. For both CT and MRI, the demonstration of venous structures was significantly better in donors, except for left hepatic artery that was demonstrated better in patients. The qualitative and quantitative MRI findings were not significantly different between healthy subjects and patients with liver disease.

Conclusion: A detailed study of hepatic vascular structures is crucially significant in many clinical conditions in particular, in partial liver resection, cadaveric liver transplantation, living-donor liver transplantation, and in interventional treatment of hepatic primary or secondary tumours. Although CT remains the initial modality of choice in evaluating hepatic vascular anatomy, MRI appears diagnostically equivalent and/or close and should be considered primary single imaging modality particularly if there is any contraindication to ct.

Keywords: Chronic liver disease, magnetic resonance imaging, computed tomography

O - 022

DIAGNOSTIC VALUE OF CONVENTIONAL ENTEROCLYSIS AND FOLLOW-UP MR ENTEROGRAPHY IN ADVANCED STAGE AND COMPLICATED CROHN DISEASE

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Abstract

Objective: To determinene the type, stage, complication and activation signs of Crohns disease with both Enteroclysis (ECL) and Magnetic Resonance Enterography (MRE), and to assess the complementary role for the clinician to identify the treatment modalities.

Materials and Methods: In this study, we performed primary radiologic diagnostic imaging with conventional enteroclysis in 110 patients with pre-diagnosis of Crohns disease and 107 cases with clinical findings of reactivation and/or complications with follow-up and treatment with Crohns disease. Follow-up MR review was performed for complicated or advanced stage CH according to conventional ECL findings.

Results: ECL was superior in determining the type and stage of the disease while MRE was more indicative of the activation findings and complications of the disease.

Conclusion: ECL and MRE combination is the optimal imaging method that guides the clinician in selecting the medical/surgical treatment to be applied to the patient, complementing each other in determining activation findings, the type-stage and complications of the disease by revealing the mural-extramural and intraabdominal involvement.

Keywords: Crohn disease, enteroclysis, magnetic resonance enterography

O - 023

ENDOMETRIUM-MYOMETRIUM JUNCTIONAL ZONE THICKNESS IN ENDOMETRIOMA PATIENTS

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Abstract

Objective: Junctional zone (JZ) is known as a transition zone between the endometrium and the external myometrium. In this study, we aimed to investigate JZ thickness in endometriosis patients comparing with the control group.

Materials and Methods: MR images of 53 premenopausal patients operated between May 2012 and October 2017 due to endometrioma/endometriosis (Group 1, n=22) or other benign ovarian causes (Group 2, n=31) were retrospectively evaluated. On sagittal T2W images, two measurements were performed at the thickest (maximum) and the thinnest (minimum) levels of JZ. The difference between the two was calculated ('JZdif'). Groups were composed according to the presence of the hyperintense nodule, JZ greater than 8 mm and 'JZdif' greater than 4 mm. The two groups were evaluated statistically by Chi-square and Mann-Whitney U Tests.

Results: The mean JZ min thickness was 4.77 mm in Group 1 and 4.52 mm in Group 2; the mean max thickness was 8.00 mm and 5.52, respectively. The 'JZdif' value was 3.22 mm in Group 1 and 1.00 mm in Group 2). Statistically significant difference was found in the thickness of JZ (>8mm) and JZ difference (>4mm) groups (p values 0.012 and 0.017, respectively). There was no significant difference between the two groups in CA-125 values and hyperintense nodule presence (p>0.05).

Conclusion: In this study; JZ thickness was found to be thicker in the endometriosis patients than in the control group. The difference between JZ max-min greater than 4 mm was observed in endometriosis patients.

Keywords: Junctional zone, endometriosis, MRI

O - 024

THE EFFECT OF AGING ON ADC VALUES OF UTERINE CERVIX

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Abstract

Objective: The aim of the study was to evaluate whether a change of apparent diffusion coefficient (ADC) values with aging in the uterine cervix with 3-Tesla magnetic resonance imaging (MRI) or not.

Materials and Methods: We searched female patients age between 18 to 70 having lower abdominal diffusion-weighed MRI (DWI) in radiology database from December 2017 to February 2018. Patients having gynecologic malignancies were not included the study. All DWI examinations were performed by using a 3-T MR with 2 different b values (b=50, 800 s/mm^2). The ADC values of the cervix were measured on the axial ADC map three-times by the same radiologist who didnt know the age of the patients. All patients divided into three groups according to their ages: group 1 age between 18-39, group 2 age between 40-49 and group 3 age between 50-70. The mean of measured ADC values and standard deviations were calculated for each patient. To evaluate the correlation between the age of the patient and ADC value Pearson-correlation analysis was performed.

Results: A total of 96 women age between 18-70 (mean 41,31) were included the study. In age over 49 the mean of ADC value was 0.95±0.17 mm^2/s and in age, under 50 years the mean of ADC values was over 1.26±0.19 mm^2/s. There were statistically significant differences between groups in term of cervical ADC values (p=0.00). There was a negative correlation between age and ADC values.

Conclusion: In previous studies, ADC values have been shown to be decreased due to hypercellularity. In this study, we found a negative correlation between aging and ADC values. This may indicate that hypercellularity may occur with aging. When we are evaluating the ADC values of cervix we must take into account of patients age.

Keywords: DWI, ADC, aging, uterine cervix

O - 025

EVALUATION OF MRI FINDINGS IN LIRADS-TIV LESIONS ACCORDING TO MORPHOLOGIC CHARACTERISTICS

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Abstract

Objective: Hepatocellular carcinoma (HCC) is the most common epithelial primer malignant tumor of liver. In the world it is the most common fifth tumor and third death cause. Incidence is high in Asia and Africa where HBV and HCV prevalence is prominent. In Turkey the etiologies are HBV, HCV and alcoholic liver disease respectively. Magnetic resonance imaging (MRI) is an effective diagnostic method. American College of Radiology reported LIRADS in 2011 and revised in 2017 in order to be able to produce a common report language for cirrhotic patients detection. In recent classification, HCC lesions with thrombus at least in one vein are classified as LIRADS-TIV lesions. Herein we aimed to evaluate MRI findings in LIRADS-TIV lesions according to morphologic features.

Materials and Methods: MRI images of 20 patients with HCC between March 2017–March 2018 were evaluated. Venous invasions were classified in 4 level (Level 1- one vein near to lesion, Level 2- right-left portal veins, Level 3- main portal vein, Level 4- Confluence-extrahepatic veins). Level 1-2 was Group 1, Level 3-4 was Group 2. Lesions were evaluated according to distribution (focal-infiltrative), microscopic fat-necrosis and washout. Qui-Square Test was applied, $p<0.05$ was statistical significant.

Results: Mean diameter was 10.75±64.73mm. Most common ethology was HBV. There was no statistical significance between two groups according to distribution, necrosis-washout. However microscopic fat content was statistically significant between groups ($p<0.05$).

Conclusion: Metastatic features are manifest in LIRADS-TIV lesions and LIRADS-TIV forms contraindication in terms of transplantation. Venous thrombus is low in lesions with microscopic fat content, which is a well differentiation criterion. MRI is effective method in detection. Studies of LIRADS-TIV tumors will be able to clarify the characteristics of larger series of patients.

Keywords: Hepatocelular carcinoma, LIRAD-TIV, magneticresonance imaging

O - 026

IMAGING OF ADRENAL ADENOMAS USING FIESTA BALANCED STEADY STATE FREE PRECESSION PULS SEQUENCE

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Abstract

Objective: Although FIESTA sequence is routinely used in anatomic evaluation of upper abdominal imaging, we recently showed in a previous study that it could be revealed intracellular lipid content in cases such as liver hepatosteatosis. In this study, imaging findings of adrenal adenomas which have intracellular lipid content will be presented using FIESTA sequence first time in the literature.

Materials and Methods: Fifty cases with adrenal adenoma which had adrenal signal intensity index (ASII) over 20% in out of phase MR imaging using 1.5 T machine were retrospectively measured SI mean values using appopriate 3 ROIs in adrenal adenoma, liver, spleen and psoas muscle in coronal FIESTA slices. SI values of Adrenal adenom, liver, spleen and psoas muscle were compared with SI values of ASII in out of phase images using Pearson correlation and T-test.

Results: Adenomas SI values of FIESTA sequence were showed poor negative correlation (-0.036) with ASII values of out of phase images, whereas correlations of adenoma/spleen SI with ASII were strongest negative (-0.264), adenoma/psoas SI with ASII were poorest negative (-0.011). All SI measurements of FIESTA sequence were well corraleted with each other. We also detected poor positive correlation (+0.102) between SI of adrenal adenomas using FIESTA and SI obtained in out of phase images.

Conclusion: Although FIESTA sequence showed poor correlation with out of phase MRI in detection of typical adrenal adenomas containing intracellular lipid, the best correlation was observed in using spleen SI/adenoma SI ratio and adenomas were apperaed as hypointense in FIESTA sequnece. However larger comperative studies including cases with lipid poor adenomas and non adenomas are required to evaluate diagnostic value of the results.

Keywords: Adrenal adenoma, FIESTA sequence, magnetic resonance imaging

O - 027

CORRELATION OF HEPATIC ARTERIAL AND PORTAL VENOUS ANATOMY WITH BILE DUCT VARIATIONS

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Abstract

Objective: To correlate hepatic arterial (HA) and portal venous (PV) anatomy with variations of bile duct (BD) confluence.

Materials and Methods: A total of 225 liver donors, who underwent dynamic-enhanced CT at our institution from July 2011-March 2017, were retrospectively reviewed. Hepatic artery and PV anatomy were categorized according to classifications of Michel and Cheng et al., respectively. Bile duct variations were evaluated on MRCP images according to Mc Sweeney classification. Hepatic vascular anatomy was correlated with BD variations using chi- square test.

Results: The study population consisted of 159 patients. The most observed HA variations were type 3 in 16 and type 2 in 10 patients. Type 1 PV was detected in 132, type 2 PV in 4 and type 3 PV in 23 patients. A normal BD anatomy and variations were observed in 79 and 80 patients, respectively. Bile duct anatomy showed no significant correlation between both HA and PV anatomy ($p>0.05$). A positive correlation was found between segment 4 artery arising from right HA and presence of diverse BD variations. Segment 4 artery originating from left HA was significantly associated with normal BD anatomy ($p=0.046$).

Conclusion: Preoperative assessment of hepatic vascular and BD anatomy in liver donors is essential for safe liver transplantation. However, due to their thin caliber in MRCP, detection of BD variations can be challenging. In such cases, the presence of segment 4 artery originating from right HA might be indicative of BD variation and should lead to more cautious biliary assessment.

Keywords: Liver donor, hepatic artery, portal vein, bile duct variations

O - 028

THE VALUE OF IMAGING FINDINGS FOR PREDICTING HEPATOCELLULAR CARCINOMA (HCC) RECURRENCE AFTER LIVING DONOR LIVER TRANSPLANTATION (LDLT)

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Abstract

Objective: HCC recurrence rate after LDLT remains a significant problem in clinical practise. Although many potential risk factors have been described, a reliable preoperative method to estimate this risk has not been established. The purpose of this study was to determine the utility of imaging findings in predicting HCC recurrence after LDLT.

Materials and Methods: Eighty patients with 135 HCCs who were underwent CT and/or MRI included in this study. Twelve patients with 37 HCCs (group I) had recurrence, while 68 patients with 98 HCCs (group II) had remained disease free. Following radiologic findings were evaluated by two radiologists: number of HCCs, largest tumor diameter, tumor margins, tumor internal homogeneity, arterial enhancement pattern, the presence or absence of tumor capsule, periportal LAP, bulging (tumor causing liver capsul expansion), and beak sign (the acute angle between the tumor and liver parenchyma).

Results: Number of HCCs were significantly higher and the distance from tumor to portal vein were significantly shorter in group I than those of group II. A tumor capsule was seen in 56,8% in group I, and 78,6% in group II; LAP was seen in 56,8% in group I, and 7,1% in group II, beak sign was seen in 29,7% in group I, and 2.2% in group II. The bulging sign was more frequently seen in group I.

Conclusion: Patient with beak sign in their pretransplant imaging examinations might benefit from histologic confirmation of the tumor through biopsy and subsequent bridge treatment such as TARE or TACE prior to liver transplantation.

Keywords: Liver transplantation, beak sign, HCC

O - 029

DIFFERENTIATION OF ADRENAL ADENOMAS FROM ADRENAL METASTASIS WITH INTRAVOXEL INCOHERENT MOTION MODEL

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Abstract

Objective: Intravoxel incoherent motion is a diffusion weighted imaging method which can characterize the relation between signal intensity and b value. Regarding to this bieksponential model, IVIM would seperate the diffusion of water molecules from microcapillary perfusion of tissues. This technique may estimate the perfusion of tissues without intravenous contrast application. To investigate the value of an intravoxel incoherent motion (IVIM) diffusion perfusion model for differentiation between adrenal adenomas and adrenal metastasis.

Materials and Methods: We retrospectively evaluated thirty five adrenal lesions. Twenty five lesions were incidentally detected adenomas. Ten lesions were adrenal metastasis from primary oncologic malignancies. Fourteen lesions were bilateral. Mean age of all subjects was 61 years (range 43-81). All patients were examined by 1.5T MRI (Siemens, Magnetom Symphony, Erlangen, Germany) with the use of four-channel phased array body coil. In addition to routine pre- and postcontrast sequences, IVIM (16 dif ferent b factors of 0, 50, 100, 150, 200, 300, 400, 500, 600, 700, 800, 900, 1000, 1100, 1200, 1300 s/mm^2) and conventional DWI (3 different b factors of 50, 400, 800 s/mm^2) were obtained using a free breath single-shot echo planar spin echo (EPI) sequence. The ADC maps reconstructed from conventional DWI (ADCcon). The mean D (true diffusion coefficent), D* (pseudo-diffusion coefficient associated with blood flow) and f (perfusion fraction) values also calculated from IVIM. Quantitatively, both ADCcon, D, D* and f values were compared between adenoma and metastase groups by Mann-Whitney U test.

Results: The f and D values were statistically higher in metastasis group ($p<0.05$). ADC and D* values of metastatic lesions were significantly lower than those of adenomas ($p<0.05$).

Conclusion: IVIM parameters such as f, ADC and D* values can provide significant diagnostic information about differentiation of adrenal adenomas and adrenal metastasis, based on different perfusion characteristics.

Keywords: Adrenal, metastasis, adenoma, intravoxel incoherent motion

O - 030

EFFECTIVENESS OF CT AND MRI METHODS IN EVALUATING LIVER STEATOSIS OF LIVING LIVER DONORS

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Abstract

Objective: To investigate the efficacy of CT and MRI methods in quantifying liver fat.

Materials and Methods: Sixty-five patients who underwent CT and MR examinations as living donor candidates for liver transplantation from January 2017 to March 2018 were studied. Patients without histopathology were excluded. Patients body mass index (BMI) was noted. The liver attenuation index (LAI) obtained by ROI analysis from the liver and spleen parenchyma on non-contrast CT examination were calculated. In MR, the parenchyma fat signal fraction was obtained by ROI analysis from the in-out phase images and the proton density fat fraction (PDFF) map. MRI

and CT results were compared with pre- and / or intraoperative biopsy results. Spearman correlation coefficient and ROC (receiver operating characteristic) analysis were used for statistical analysis. Sensitivity, specificity, positive predictive value, negative predictive value and 95% confidence interval were calculated.

Results: A total of 30 patients (19 males, 11 females, mean age 34.7 years (range 19-55 years) were included in the study. The mean BMI of the patients was 26.9 (range 20-38). There was a significant correlation between, CT LAI, the parenchyma fat signal fraction and histopathologic results (r=-0.712, 0.508, 0.649, respectively). According to the presence or absence of steatosis, patients were divided into two groups. Cut-off values for CT, dual-echo technique and PDFF were determined as 6.25, 3.2, and 2.95, respectively. The area under curve was measured as 0.847, 0.831, 0.855, respectively. Sensitivity, specificity, positive predictive value (95% confidence interval), negative predictive value and accuracy were 0.833, 0.722, 0.667 (0.471-0.821), 0.867 and 0.77, respectively, for CT and 0.833, 0.778, 0.714 (0.519-0.856), 0.875 and 0.80 respectively, for, dual-echo technique and 0.909, 0.688, 0.667 (0.460-0.828), 0. 917 and 0.78 respectively, for PDFF.

Conclusion: Significant correlation of dual-echo technique, PDFF and CT outcomes with histopathology suggests that these noninvasive effective methods can be used as biopsy alternatives when living donor liver fat is graded.

Keywords: Liver donors, fat quantification, CT, MR

O - 031

EVALUATION OF ACUTE ABDOMEN WITH RAPID SEQUENCE MR

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Abstract

Objective: Acute abdominal pain is a clinical chart for which patients apply to emergency services and which often results in the need for surgical treatment.

Contrast-enhanced abdominal computed tomography (CT) and ultrasonography are frequently used as first-step imaging methods in these cases.

In this study, it was aimed to compare the diagnostic performance of nonenhanced abdominal MR imaging in cases with acute abdomen pain, evaluation of compliance between observers and comparison with ultrasonography and computed tomography.

Materials and Methods: Patients admitted to our emergency department with acute abdomen pain between January 2016-February 2018 were included in the study. Data obtained from computed tomography and/or ultrasonography examinations were recorded retrospectively.

MRI images were independently evaluated by two Radiology specialists and the results were recorded.

Results: 12 of the 25 cases included in the study were male (48%) and 13 were female (52%). The average age was 44.32±21.87. In 13 cases (52%) the treatment was surgical and 12 (48%) cases were conservative. MR sensitivity was 100% for the first observer, 92% for the second observer, BT sensitivity was 90%, ultrasound sensitivity was 61.5%. In the evaluation of inter-observer harmony, there was a perfect compliance between the two observers (κ=0.901).

Conclusion: Abdomen MRI obtained without using contrast agent Computed Tomography and ultrasonography shows high diagnostic success in acute abdomen cases and high compliance between observers.

Although the cost is high, there are advantages that can be evaluated without using contrast agent, not containing ionizing radiation and not requiring Radiology Specialist.

Keywords: MRI, abdomen, emergency

O - 032

CORRELATION OF GD-EOB-DTPA ENHANCED DYNAMIC MRI WITH HISTOPATHOLOGICAL DIFFERENTIATION IN HEPATOCELLULAR CARCINOMA

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Abstract

Objective: To evaluate the relationship between histological differentiation of the tumor and enhancement pattern in dynamic MRI (DMRI) with gadoxetine acid disodium (Gd-EOB-DTPA) in patients with hepatocellular carcinoma (HCC).

Materials and Methods: Between April 2015 and February 2018 Gd-EOB-DTPA DMRI of 32 patients with histopathologically proved HCC were evaluated retrospectively. Tumors' morphological features, distribution, AFP values and enhancement pattern were qualitatively analyzed. The relative signal intensity ratio (RIR) and enhancement ratio (ER) were examined quantitatively by measuring signal intensities of hepatic parenchyma and tumor in post-contrast hepatobiliary phase in DMRI.

Results: Thirty-two patients (median age 64.5) were evaluated. HCCs were diagnosed as well (n=14), moderately (n=9) and poorly differentiated (n=9) according to histopathological evaluation. AFP values were significantly higher in poorly differentiated tumors (p=0.030). There was no correlation between the enhancement pattern of the tumor, morphological features and tumor distribution with the histological differentiation (p=0.319, p=0.565, p=0.293, respectively). There was statistically significant relationship between signal intensity of the tumor and histopathological differentiation in hepatobiliary phase (p=0.027). However, there was no significant correlation between post-contrast RIR and ER with tumor histological differentiation (p=0.065, p=0.160, respectively).

Conclusion: In Gd-EOB-DTPA-enhanced dynamic MRI, the contrast enhancement in the hepatobiliary phase is an effective parameter for predicting histologic differentiation in patients with hepatocellular carcinoma.

Keywords: Hepatocellular carcinoma, histopathologic differentiation, Gd-EOB-DTPA

O - 033

DIFUSSION WEIGHTED IMAGING OF HEPATOCELLULER CARCINOMA: RELATIONSHIP BETWEEN IMAGING CHARACTERISTICS, APPARENT DIFFUSION COEFFICIENTS AND HISTOPATHOLOGICAL GRADE

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Abstract

Objective: To define correlation between histopathological grade of hepatocellular carcinoma (HCC) and diffusion-weighted imaging (DWI) and apparent diffusion coefficient (ADC).

Materials and Methods: We retrospectively evaluated pathologically confirmed 33 patients with HCCs who underwent hepatic multiparametric dynamic MRI on 3.0-T platform, between September 2016 and January 2018. HCCs were diagnosed as well (n=13), moderately (n=11) and poorly (n=9) differentiated according to histopathological assessment. Two abdomen imaging experienced radiologists reviewed all the images and noted the signal intensity (SI) of each tumor on DWI images with b-values of 800 s/mm^2. The mean ADC values were measured for each tumor. The relationships between SI values, ADC values on DWI, and histopathological differentiation of HCC were analyzed.

Results: All HCC nodules showed hyperintensity with comparison to the surrounding hepatic parenchyma on DWI. There was no significant correlation between ADC values (p=0.143) and SI values on DWI (p=0.765) with histopathological grade. Alfa fetoprotein (AFP) values exhibited correlation with histopathologic grade of the tumor with higher measured values in poorly differentiated group (p=0.009). Presence of macrovascular invasion, pseudo-capsule and necrotic component, number or distribution of lesions showed no relationship with tumor grade.

Conclusion: Quantitative analysis of SI and ADC values did not show correlation with histopathological grade in hepatocellular carcinoma. However, AFP values might be useful to define tumor biology with respect to pathological differentiation.

Keywords: Hepatocellular carcinoma, histopathological differentiation, diffusion weighted imaging

O - 034

PELVIC LEIOMYOMAS IN RARE LOCALIZATIONS AND MAGNETIC RESONANCE IMAGING FINDINGS

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Abstract

The aim of this study was to evaluate some rarely localized uterine fibroids and their magnetic resonance imaging findings with case samples. In this retrospective study, 65 cases diagnosed as leiomyomas via pelvic MR examination were collected from recorded data between January 2014 and August 2017. Locations, sizes and MR signal features of 5 patients' masses were noted. Symptoms and complaints of the patients were recorded and discussed. The mean age of the patients was 45±6.16 years (37-53). An extra-uterine, and a giant fibroid and leiomyomas of the urinary bladder, uterine cervix, uterine isthmus were investigated. All patients underwent a laparotomy or laparoscopy, and the diagnosis was confirmed histopathologically. Pelvic fibroids based on their location, size and compression features lead to different symptoms and, diagnosis may sometimes be difficult. In this instance, the additional and problem-solving role of MRI should be kept in mind.

Keywords: Fibroid tumors, leiomyoma, magnetic resonance imaging

O - 035

MAGNETIC RESONANCE FINDINGS IN OVARIAN TORSION

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Abstract

Objective: To evaluate the magnetic resonance imaging (MRI) findings of patients with ovarian torsion and compare these findings with ovarian salvageability.

Materials and Methods: Patients who were diagnosed with ovarian torsion and underwent MRI were retrospectively investigated. A total of only 10 patients (mean age, 26.7; SD,±10; age range, 14-42), with surgical confirmation of ovarian torsion, were included to the study. All patients underwent conventional MRI and 6 patients also underwent diffusion-weighted imaging (DWI) using a b-value of 600 s/mm^2. Quantitative and qualitative analysis of both the torsed and contralateral normal ovary were performed.

Results: Of the 10 patients, 5 torsed ovaries could be salvaged in a viable state. The mean size of the torsed ovaries was found to increased more than 100% when compared to the contralateral normal ovary (60.8±19.3 mm vs. 25.8±3.4 mm). Peripheral rim of high signal intensity on T1 weighted imaging with fat saturation was found in 8 of the 10 patients. Of these 8 patients, 5 ovaries were found to be non-salvageable. Swirling of the vascular pedicle and free fluid around torsed ovaries was present in all cases. Torsion causes were ovarian fibroma in one case, endometrioma in two cases and ≥ 4 cm ovarian cyst in two cases. In other cases, there were no lesions. Average apparent diffusion coefficient (ADC) values in torsed ovaries were found to be lower than the contralateral normal ovary (1.6×10^{-3} mm^2/sn vs 2.1×10^{-3} mm^2/sn).

Conclusion: Swirling of the vascular pedicle, free fluid around torsed ovaries and increased ovarian size by more than 2 times compared to the contralateral ovary are significant findings for ovarian torsion and these findings should be carefully investigated in patients with suspected torsion.

Keywords: Ovarian torsion, magnetic resonance imaging, emergency medicine, ovarian viability

O - 037

EVALUATION OF COCHLEAR NERVE SCALE WITH MRI IN PATIENTS WITH IDIOPATHIC UNILATERAL SENSORINEURAL HEARING LOSS

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Abstract

Objective: Sensorineural hearing loss is the result of pathologies in the inner ear, retrocochlear region, vestibulocochlear nerve or intracranial region. Imaging is applied to these patients to exclude congenital, infectious, inflammatory or tumoral pathologies. In recent years, it has become possible to evaluate the cochlear nerve with magnetic resonance imaging (MRI), especially through the "constructive interference in steady state (CISS)" sequence. The aim of this study was to evaluate the cochlear nerve diameter in patients with unilateral sensorineural hearing loss and to compare the diameters of the normal side with the hearing loss side.

Materials and Methods: A total of 21 patients with idiopathic unilateral sensorineural hearing loss were included in the study. MRI and audiogram were performed on all patients. Both cochlear nerve diameters were measured on axial thin-section CISS sequence images.

Results: The patients comprised 10 males and 11 females with a mean age of 52±11 years. Hearing loss was determined in the right ear in 5 patients, and in the left ear in 16. The average cochlear nerve diameter on the side with hearing loss was 0.13 mm and 0.19 mm on the unaffected side. There was a statistically significant difference between the two sides ($p<0.001$).

Conclusion: In patients with unilateral sensorineural hearing loss, MRI allows anatomically detailed assessment of the cochlear nerve, as well as excluding possible organic pathologies. Demonstration of decreased cochlear nerve diameter in idiopathic sensorineural hearing loss will contribute to elucidating the etiology of this disease in the future.

Keywords: Cochlear nerve, sensorineural hearing loss, magnetic resonance imaging

O - 038

DOES THE PERFORMANCE OF MAGNETIC RESONANCE IMAGING REACH TO COMPUTERIZED TOMOGRAPHY IN SHOWING BONE CHANGES IN THE TEMPOROMANDIBULAR JOINT?

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Abstract

Objective: Temporomandibular joint (TMJ) pain affects 5-12% of the population. Among the pain-related disorders in the musculoskeletal system, it is the second most common cause after back pain.

Computerized tomography (CT) is the best imaging method to show bone cortex and sclerosis in radiological evaluation while magnetic resonance imaging (MRI) is the standard imaging method to identify internal derangement related with joint disc. In this study, the performance of MRI was compared to CT which is adopted the gold standard in showing bone changes in TMJ.

Materials and Methods: Between April 2013 and August 2017, the patients who had both TMJ CT and MRI were included. The patients who were under 15, had acute trauma-traumatic dislocation, congenital anomalies, history of head and neck tumors and radiotherapy were excluded. Joint degeneration was staged using condylar-eminence sclerosis, subchondral cyst, condylar erosion, osteophyte, deformation and ankylosis criteria.

Results: Degeneration was not seen in 47 of 108 joints that provided the inclusion criteria. 34 joints were in stage 1, 19 were in stage 2, 8 were in stage 3, on CT evaluation. All stage 2 and 3 joints were detected on MRI however 26/34 (76.5%) stage 1 joints were defined with MRI.

Sensitivity and specificity of magnetic resonance imaging were 86.9% and 97.9%, respectively, when computerized tomography was accepted as the gold standard. Magnetic resonance imaging could not detect 23.5% of early stage (Stage 1) degenerative cases.

Conclusion: Magnetic resonance imaging was quite successful in showing bone degeneration, but early stage bone changes could be missed.

Keywords: CT, MRI, internal derangement, bone degeneration, osteoarthritis, temporomandibular joint

O - 040

A CHALLENGING DIAGNOSIS ON MRI: ORBITAL IGG4-RELATED DISEASE AND LYMPHOMA

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Abstract

Objective: To investigate MRI features that may help to differentiate between orbital IgG4-related disease and lymphoma.

Materials and Methods: We retrospectively examined initial MRI studies (3 and 1.5 Tesla) of 9 patients with orbital IgG4-related disease (F/M: 5/4) and 9 patients with orbital non-Hodgkin lymphoma (F/M: 4/5). The median age of the patients at the time of MRI was 51 (7-69) and 40 (6-62) years, respectively. Orbital lesions were evaluated with respect to location, T1 and T2 signal intensity, contrast enhancement and diffusion characteristics. T2 signal intensity ratio (SIR) of lesions to temporal cortex, ADC ratio of lesions to cortex and pons were also calculated. Fisher's exact and Wilcoxon signed rank tests were performed to compare MRI findings between groups. Results with p-values ≤ 0.05 were considered to be statistically significant.

Results: Orbital involvement was unilateral in 8 patients in each group. The most frequent locations were lateral and/or superior extraconal

space in lymphoma (n=7), medial extraconal space and/or medial rectus muscle in IgG4-related disease (n=4). There was no significant difference in terms of T1 and T2 signal intensity, contrast enhancement pattern and T2 SIR between groups. The mean ADC values were 1.25±0.29 ($\times 10^{-3}$ mm^2/s) in IgG4-related lesions and 0.56±0.16 ($\times 10^{-3}$ mm^2/s) in lymphoma lesions. ADC values and ADC ratios were found significantly different between groups (p=0.01).

Conclusion: Although there is a considerable overlap in conventional MRI findings of orbital IgG4-related disease and lymphoma, ADC values and ADC ratios could be used to help differentiation.

Keywords: MRI, orbita, IgG4-related disease, lymphoma

O - 041

MRI PREVALENCE OF EXTRAMEDULLARY HEMATOPIESIS OF THE PARANASAL SINUSES IN CHILDREN WITH HAEMOGLOBINOPATHIES

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Abstract

Objective: Extramedullary hematopoiesis (EMH) develops in chronic anemies like thalassemia and sickle cell disease (SCD) as response to increased need for erithrocyte production. It most commonly occurs in liver, spleen and paravertebral regions. It is rare in head and neck but has been reported in paranasal sinuses (PNS), thyroid and lacrimal glands. Maxillary sinus is the most commonly involved PNS. Purpose of this study was to investigate magnetic resonance imaging (MRI) prevalence of EMH of PNS in pediatric patients with haemoglobinopathies.

Materials and Methods: Medical records of 110 pediatric patients (69 thalassemia, 41 SCD) who were followed up for haemoglobinopathies between January 2010-March 2018 in our instution were evaluated. Thirty patients (16 thalassemia, 14 SCD) who underwent MRI of the brain, neck and PNS for any reason were included in the study (13 girl, 17 boy; age range 3-19; median age 14 years). MRI studies were retrospectively reviewed.

Results: Four (13%) of 30 patients demonstrated EMH of PNS (2 girl, 2 boy; age range, 4-17; median age, 11 years). Three (18%) of 16 patients with thalassemia and 1 (7%) of 14 patients with SCD revealed EMH of PNS. Three (75%) of 4 were detected in maxillary sinus and one (25%) was in sphenoid sinus.

Conclusion: Patients with thalassemia demonstrated higher prevalence of EMH of PNS which was more frequently observed in maxillary sinus and defined as homogeneous soft tissue mass expanding the sinus wall, filling the sinus cavity and demonstrating signal intensity consistent with red bone marrow hyperplasia on MRI. It should not be confused with PNS tumors. Correct diagnosis prevents biopsy and other invasive procedures.

Keywords: Paranasal sinus, extramedullary hematopoiesis, thalassemia, sickle cell disease, magnetic resonance imaging

O - 042

SINONASAL SCHWANNOMAS:A CASE SERIES AND REVIEW

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Abstract

Schwannomas, also known as neurilemmomas or perineural fibroblastoma), are slow growing benign tumors and originate from the Schwann cells in the sheath of the myelinated nerve fibres first described by Verocay in 1908. These tumors can occur any location in the body but are comparatively common (25-45%) in the head and neck region but involvement of the sinonasal region and pterygopalatine fossa is rare (4%).

These lesions are typically asymptomatic until they grow large enough to perform a mass effect on ambient structures, by means of that producing clinical symptoms. Primarily the patients experience nonspecific nasal symptoms (such as rhinorrhea,epistaxis and nasal obstruction) the physician try to conservative praxis means fail to improve the symptoms. Sinonasal anatomy cause the early clinical diagnosis of such tumors difficult until the sinonasal schwannomas are quite large.

Keywords: Sinonasal Schwannoma, MRI, head and neck radiology

O - 046

CRANIOCEREBRAL METASTASES IN CHILDREN WITH NEUROBLASTOMA: A SERIES OF 8 CASES

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Abstract

Neuroblastoma is the third commonest childhood tumour after leukaemia and brain malignancies.that occur anywhere along the sympathetic chain, the vast majority arise from the adrenal gland. Craniocerebral neuroblastoma metastases may involve the calvaria, orbits, skull base, dura, brain, ventricles and leptomeninges.. Although neuroblastoma is common, involvement of the craniocerebral metastases, imaging findings and follow-up views are rarely reported in the literature. Generally, over the past several years, they presented as a case report. The aim of this study is to present imaging findings of craniocerebral metastases in children with neuroblastoma in a series of 8 cases.

Keywords: CNS, neuroblastoma, metastas, MRI

O - 049

RADIOMICS APPLICATIONS ON MAGNETIC RESONANCE IMAGES: HOW I DO IT?

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Abstract

Objective: Radiomics is rising its popularity among imaging community. It is a way of quantifiying the pixel values which reflect the underlying tissue architecture revealed by imaging modalities. Statistical, model based or wavelet transformations and shape features by geometric model descriptors can be used for analysis. Then by combining this data with clinical or other relevant patient data, some computer based pattern recognition algorithms are applied in order to classify them under correct pathological label. Our aim is to demonstrate steps of this process.

Materials and Methods: Although it seems somewhat sophisticated for the unfamiliar, it is not a so complicated process. Either by using Matlab and writing a few lines of code or by using software packages such as MaZda or Weka which are commercial products or freeware, analysis of our data is an easy task. We demonstrated the process step by step from region of interest selection to preprocessing and feature extraction and finally classification by means of Bayesian or kNN calssifier or neural networks on magnetic resonance images of brain tumors.

Results: The steps applied are demonstrated by screen shots of Matlab based processing.

Conclusion: In the new artificial intelligence era, radiomics methods are strong tools for decision support purposes. Familiarity with these methods may lead to more frequent usage of them by radiologists.

Keywords: Radiomics, artificial intelligence, texture analysis

O - 050

PATTERN RECOGNITION METHODS FOR RADIOMICS APPLICATIONS OF MRI IMAGES

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Abstract

Objective: Radiomics deals with the images as they are pieces of data and applies pattern recognition methods in order to classify them with correct labels. Supervised or unsupervised methods may be applied. With this study, our aim was introducing the most used pattern classification methods and provide some familiarity to them for non-technical staff.

Materials and Methods: Bayesian classification, kNN, artificial neural networks and support vector machine methods are introduced in an intuitive way.

Results: Aim of getting some familarity to these methods were provided by application of them to magnetic resonance image texture features and step by step examples

Conclusion: Machine learning methods are gaining importance and currently ongoing extensive research by them dominates innovative aspect of imaging science. Getting some familarity with them will provide both understanding the publications on that area more clearly and opportunity for joining the community applying these methods.

Keywords: Machine learning, pattern classificaiton, magnetic resonance texture

O - 051

DWI FOR SOLITARY PULMONARY NODULE ASSESSMENT

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Abstract

Objective: The aim of this study is to assess magnetic resonance imaging (MRI), diffusion-weighted imaging (DWI), T2 weighted image (T2WI) and apparent diffusion coefficient (ADC) maps thresholds value before computed tomography (CT) -guided transthorasic biopsy in solitary pulmonary nodules (SPN) by describing tumoral cell density.

Materials and Methods: Patients who had SPN were prospectively evaluated with MRI (T1WI, T2WI) and DWI (b=0, b=500, b=1000). ADC maps were created for each patient. Before the biopsy, lesion muscle ratios (LMR) at T2WI, ADC value, lesion spinal cord ratio at each b values were noted. The measurements were correlated with the histopathological results.

Results: 53 patients included in the study, 30.2% (n:16) were female and 69.8% (n:37) were male. 17 lesions (32.1%) are benign and 36 lesions(67,9%) are malignant. The age varies between 40-82 years, with a mean of 61.7±9.1 years. The SPN diameters were between 10 - 30 mm, and the median was 24 mm. LSR0 and LMR values were not statistically significant in detecting malignancy. LSR500 >0.53 value can predict malignancy with 100% sensitivity and 70.6% specificity. LSR1000 > 0.53 can predict malignancy with 88,9% sensitivity and 88,2% specificity. Setting the cut-off value at 0.9×10^{-3}, ADC values had a sensitivity of 72,2 % and a specificity of 88,2% for predicting malignancy.

Conclusion: For SPN follow up, a new following up protocol can be established using DWI and ADC mapping, safely. Particularly, patients with benign nodules with low cell density can be followed up without invasive interventional procedures.

Keywords: Solitary pulmonary nodule, diffusion weighted imaging, benign-malign pulmonary nodule differentiation

O - 052

A PHANTOM STUDY AT 3-TESLA: FAT QUANTIFICATION WITH 3D-CAIPIRINHA-DIXON VS. 3D-STANDART-DIXON

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Abstract

Objective: To evaluate the impact of 3D-CAIPIRINHA-DIXON on the detection and the quantification of fat content and to compare with 3D-STANDART-DIXON based on phantoms at 3.0T.

Materials and Methods: Nine fat-water phantoms were constructed with variation in fat content. All phantoms were examined on a 3T MR unit (Magnetom Skyra, Siemens Healthcare, Ger-many) with a 30-channel coil setup (with 18-channel body and 12-channel from the spine coils). All phantoms were imaged using both techniques (3D-DIXON with and without CAIPIRINHA (TR/TE−4.21/1.34 ms; spatial resolution−1.4×1.4×1.5 mm3). One radiologist placed a circular regions-of-interest (ROI) 5 cm2 within phantoms on these images. The ROIs were copied at the same position in the relevant slice for both Dixon sequences. 72 measurements had been done. Signal intensities and signal to noise ratios (SNRs) were calculated as mean signal divided by the standard deviation of noise and mean signal ratio of noise.

Results: The mean signal intensity indexes were not significantly different between the tech-niques with and without CAIPIRINHA (35.24±31.40; 34.72±31.16). SNR did statistically significantly differ between the techniques ($p<0.001$). SNR had lower values with CAIPIRINHA technique versus non-acceleration technique. Fat fraction SI and SNR values had no statistical significance between acceleration and non-acceleration techniques ($p>0.316$, $p>0.456$; respectively).

Conclusion: 3D-CAIPIRINHA-DIXON sequence (with PAT factor: 6) can be used for isotropic fat imaging with higher-resolution and improved/uniform fat suppression. At an acquisition time of 14 seconds, 3D-CAIPIRINHA-DIXON can be obtained in considerably less time than standard fat-saturated sequences.

Keywords: Caipirinha, dixon, phantom study, 3D, dixon, 3-tesla

O - 053

N-ACETYLCYSTEINE AND CORIANDRUM SATIVUM LEAF EXTRACT MAY REDIRECT GADOLINIUM TO KIDNEYS: PROMISING AGENTS AGAINST GADOLINIUM RETENTION IN BRAIN

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Abstract

Objective: Gadolinium based contrast agents (GBCA) have been shown to accumulate in brain despite normal kidney functions and this discovery drastically changed contrast media administration in the globe. As gadolinium is a heavy metal in the group of lanthanide, we hypothesized that drugs or herbs which were used previously to treat heavy metal or iron exposed rodents can similarly be used in GBCA administered rats. Therefore, in this preliminary study we aimed to reduce gadolinium levels in rodents after repetitive IV GBCA administration using several agents which were shown to have heavy metal or iron chelating properties.

Materials and Methods: Six group (n=6) of Wistar albino male rats were enrolled. Groups were arranged as Group 1: Control; Group 2: only GBCA without specific agent or herb; Group 3: Meso-2,3-Dimercaptosuccinic acid (DMSA); Group 4: N-acetylcysteine (NAC); Group 5: Coriandrum Sativum extract (Cilantro) and Group 6: Deferoxamine. All GBCAs were administrated from lateral tail vein two times a week with a high dose protocol (2.5mmol/kg, Gadodiamide: Omniscan (R), GE Healthcare, Waukesha, WI) and a total of 15mmol were given to Group 2, 3, 4, 5 and 6. DMSA, NAC and Cilantro were given to group 3, 4 and 5 with oral gavage 100 mg/kg, 150 mg/kg and 200 mg/kg per day, respectively for 15 days following the first GBCA injections. Deferoxamine was administrated to rats of Group 6 intraperitoneally (IP) 100 mg/kg per day. All rats were sacrificed under high dose anesthesia after 3 weeks. One hemisphere of cerebrum and cerebellum, blood and right kidney from each rat were extracted and each tissue homogenate was sent to Inductively Coupled Plasma Mass Spectrometry (ICP-MS) which is the gold standard method in the quantitative analysis of gadolinium levels.

Results: Kruskal Wallis test revealed insignificant difference in total body, brain and right kidney weight in the whole study group. The lowest brain gadolinium levels were detected in Group 4 with a median value of 397.70 ng/gr. However, it was not statistically significant compared to Group 2 ($p=0.831$). The study groups did not demonstrated significant difference in terms of blood gadolinium levels. Kidney gadolinium levels were both higher in Group 4 and 5 which was about twice as much of than that of Group 2 ($p=0.033$). Group 4 and 5 provided a statistically significant gadolinium boost in kidneys compared to group 3 and group 6. Deferoxamine did not decrease gadolinium in brain-blood nor significantly increased in kidneys.

Conclusion: The rats exposed to both Gadodiamide and NAC have revealed the lowest brain gadolinium levels. However, we were not able to find a significant difference. This might be due to high dose GBCA protocol and low clearance time that we used as the methodology. It is well known that the gadolinium clearance is supplied by the renal excretion following GBCA injection. Interestingly, our preliminary study has shown that NAC and Cilantro increased kidney gadolinium levels compared to Group 2 and other treatment groups. Despite lack of urine analysis, these findings prove the potential promising role of NAC and Cilantro in the redistribution of gadolinium.

Keywords: Gadolinium deposition, gadodiamide, brain, kidney, N-acetylcysteine, coriandrum sativum

O - 054

WHO SHOULD PROVIDE SEDATION FOR CHILDEREN IN MRI ROOM? THE COMPRASION OF DIFFERENT HEALTHCARE PROVIDERS

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Abstract

Objective: Magnetic resonance imaging (MRI) is a non-invasive diagnostic procedure which has distinct advantage over other imaging modalities. One of the most important factors for a successful MRI study is ability of

the patient to lie motionless. However, this becomes almost impossible for small children. In such conditions, a propor anesthetic sedation can determine the quality of diagnostic image. In this study, we aimed to analyze the experiences of different healthcare providers during anesthetic sedation for children in MRI room.

Materials and Methods: After the institutional ethical committee approval, the patients who had sedation for MRI study in the last 5 years were detected from hospital database. The records were divided into two; children sedated by an anesthesiologist were enrolled in group 1, and children sedated by nonanesthesiology doctors (radiologists, paediatricians, emergency physicians) or nurses were enrolled in group 2. The demographic variables of the children, sedation drugs, and complications were recorded.

Results: The demographic variables were similar. The anesthesiologist had commonly prefered propofol in anesthetic agent combinations, however nonanesthesiology doctors and nurses had usually prefered midazolam. The most frequent complication was agitation in both groups (n=22), whereas it was significantly high in group 2 (p=0.03). The other frequent complications were bronchospasm (n=14) and respiratory depression (n=13). One cardiovascular collapse case which was sedated by a radiologist was detected in group 2.

Conclusion: Although anesthetic sedation for children in MRI rooms provides advantages for radiologists, it carries potential risks. All healthcare providers, regardless of their practice venue, should be experienced and trained.

Keywords: Childeren, sedation, anesthetic

O - 055

IS THERE A RELATIONSHIP BETWEEN LEFT RENAL VEIN VARIATIONS AND MALIGNANCY DEVELOPMENT?

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Abstract

Objective: Left renal venous variation (LRVV) can be observed 2.6–10.2% of population depending on the method of investigation. There is no comprehensive information in the literature on the relationship between LRVV and cancer development. The purpose of this study is to analyse the association between LRVV and malignancy development.

Materials and Methods: A total of 371 patients with a LRVV on abdominal MRI or CT examination at Marmara University Pendik Training and Research Hospital between January 2015 and December 2016 were retrospectively evaluated in this study. To investigate the association between LRVV and malignancy, clinical and demographic data were recorded by means of Hospital Information System.

Results: Of the 371 patients, retroaortic LRVV were found in 277(74.6%) cases, while circumaortic LRVV were found in remaining 94(25.4%) cases. The patients' mean age was 46.2±19.2 years (range, 4-92 years) and the female to male ratio was 3 to 2 (female=223, male=148). Of the cases with LRVV, 86 (23.1%) had malignancy, the most common of which were gastrointestinal system(GIS) malignancy, which appeared in 31 (36.2%) cases and hematological malignancy which appeared in 28 (32.5%) cases. The malignity incidence was found statistically high in women %60.5(n:54) than men %39.5(n:32) (p=.006). There was no statistical difference in the retroaortic LRVV and circumaortic LRVV groups in terms of age, gender, malignancy frequency and types.

Conclusion: LRVV appears to be associated with high incidence of malignancy, especially GIS and hematologic malignancy, compared to the population. Further investigations are needed to understand the relationship between left renal vein variations and malignancy development.

Keywords: Variation, renal vein, retroaortic, circumaortic, cancer, computed tomography

O - 056

EFFICIENCY OF DIFFUSION WEIGHTED MRI ON DIFFERENTIATION OF SOLITARY PULMONARY NODULES

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Abstract

Objective: In this study we aimed to investigate the efficiency of Apparent Diffusion Coefficient (ADC) scores on Diffusion Weighted Imaging (DWI) in MRI for malignant-benign differentiation of solitary pulmonary nodules (SPN) detected and followed up.

Materials and Methods: The DWI (b0-b200-b400-b800) of 37 patients (28 male (75.7%), 9 female (24.3%); mean age, 58.7±13.7; age range, 25–85) that SPN was detected with conventional methods was evaluated including ADC map in 1.5 Tesla MRI between 2015-2017. The ADC scores of nodules (5-30 mm in diameter) detected from images was calculated. Measurements were performed by the same radiologist who does not know the diagnosis. 19 (51.4%) patients were diagnosed with benign and 18 (48.6 %) with malignant lesions. All malign nodules and 9 of benign nodules were diagnosed histopathologically. The other benign nodules were correlated with follow up, morphology, PET-CT and dynamic contrast enhanced (DCE) MRI. The independent t test and the ROC curve were used to calculate the difference between the scores of malignant and benign nodules.

Results: On DWI, the mean score of malignant nodules 1.13±0.3(0.3-1.7) was significantly lower than benign nodules (1.83±0.49(1-2.7) (p<0.01), with an area under the ROC curve of 0.867±0.63 (95% CI, 0.744-0.990). When a score of 1,35 was considered as a threshold, the sensitivity and specificity were %84.2 and %78.8 respectively.

Conclusion: The signal intensity of pulmonary nodules may be useful for malignant and benign differentiation on DWI. In addition when the morphologies, DCE and the SUV-max values of the nodules is correlated, it will have a high diagnostic value.

Keywords: Pulmonary nodule, DWI, ADC

O - 057 CARDIAC MRI IN DIFFERENT CARDIOMYOPATHY TYPES

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Abstract

Objective: Cardiomyopathies are classified into four main types: hypertrophic, dilated, restrictive cardiomyopathies and arrythmogenic right ventricular cardiomyopathy. Cardiac MRI is a leading method to diagnose cardiomyopathies. We aim to determine normal ranges of T1 and T2 relaxation times. Also, we intend to define the efficacy of T1/T2 mapping to detect and differentiate cardiomyopathy subtypes.

Materials and Methods: 78 patients were included. The patients are classified into eight subgroup: 1-ischemic cardiomyopathy(3), 2-hypertrophic cardiomyopathy (21), 3-dilated cardiomyopathy(6), 4- restrictive cardiomyopathy(6), 5-myocarditis(15), 6-noncompacted cardiomyopathy(8), 7-unclassified cardiomyopathy(9), 8-Cardiomyopathy without CMRI sign(10). 30 healthy volunteers consist of the control group.

Results: In patients group, T1 values are higher than the control group. In dilated cardiomyopathy subgroup, T1 values are higher than the control group for both homogenius myocard and myocard with a lesion. In hypertrophic cardiomyopathy subgroup, T1 values are higher than the control group. In ischemic cardiomyopathy and myocarditis subgroups, both T1 and T2 values are higher than the control group. In restrictive cardiomyopathy subgroup, T1 values are higher than the control group for both normal myocard and myocard with a lesion. Both T1 and T2 values are higher than control group in myocard with a lesion.

Conclusion: To conclude; both T1 and T2 mapping are sufficient for distinguishing normal and pathologic myocard. T1 values are more successful. Especially, using the native T1 and T2 mapping methods in combination, enables evaluating the myocard without using any contrast agent.

Keywords: Cardiomyopathy, T1, T2, MRI, mapping

O - 058

CAN T1 MAPPING BE USED INSTEAD OF TI SCOUT FOR NULLING THE MYOCARDIUM

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Abstract

Objective: Late gadolinium enhancement (LGE) imaging is the accepted application of cardiac MR imaging used to characterise myocardial tissue architecture. TI scout images are used to `estimate´ the most appropriate inversion recovery time (TI) to null the signal intensity of normal myocardium in order to maximise the contrast between healthy and diseased myocardium. The performance of LGE images is mostly effected by the IR time selected.

T1 mapping is a novel emerging technique for quantitative myocardium characterisation (2). Signal intensity on a determined time can be calculated by the formula by Bloch et al. (3)

SI=Mz,eq(1-2e^(-TI/T1))

SI/Mz,eq=1-2 e^(-TI/T1)

1-(SI/Mz,eq)=2* e^(-TI/T1)

1-(SI/Mz,eq)/2=e^(-TI/T1)

((Mz,eq-SI)/Mz,eq))/2=e(-TI/T1)

SI of the nulled myocardium is equal to 0

½=e(-TI/T1)

ln(1/2)=-TI/T1

-0.69315=-TI/T1

TI=T1*0.69315

According to this formula TI can be calculated by multiplying T1 value with a constant number of 0.69315.

The aim of this study is to investigate different MOLLI schemes in order to estimate null point of the myocardium.

Materials and Methods: Seven patients were scanned at 1.5 T (Aera, Siemens Healthcare GmbH, Erlangen, Germany) scanner with an additional single mid slice MOLLI 3(2)3(2)5 sequence after TI Scout images. Analysis was performed with region of interest placed conservatively within the septum.

Results: Mean TI estimate by T1 maps and TI scout and TI estimate selected for LGE showed positive correlation with each other (spearman: 0.986, p:0.000 and pearson: 0.986, p:0.000). Mean difference between TI estimate selected for LGE and MOLLI 3(2)3(2)5 was 9±5.

Conclusion: As a result, T1 mapping has been increasingly used for cardiac imaging in the last years. With MOLLI 3(2)3(2)5 null point of the myocardium can be calculated instead of estimating.

Keywords: T1 mapping, myocardium, null point, LGE, TI scout

O - 059

THE MR IMAGING OF 6 CARDIAC AMYLOIDOSIS AND REVIEW OF THE IMAGING LITERATURE

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Abstract

The imaging findings of 6 cardiac amyloidosis cases were evaulated with the MR imaging literature knowledge. The movement of left ventricle (LV), the thickness of LV myocardium, T1 map values of LV, and enhancement patterns after IV Gadoliniumand tagging feature of LV were assessed. They were clinically prediagnosed as cardiac amyloidosis by the cardiology department after echocardiographic and electrocardiographic evaluation. The laboratory findings of 6 cases were normal. There were no pathological diagnosis as a limiation. Cardiac MRI may be taken as an important diagnostic imaging modality in the diagnosis of amyloidosis.

Our findings were also similar with the findings of the literature

Keywords: Amyloidois, cardiac MRI, imaging findings

O - 060

SONOELASTOGRAPHIC EVALUATION OF THE SCIATIC NERVE IN PATIENTS WITH UNILATERAL LUMBAR DISC HERNIATION

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Abstract

Objective: The aim of this study was to compare MRI results, strain elastography and shear wave elastography (SWE) findings of the sciatic nerve in patients with unilateral lumbar disc herniation (LDH) and healthy control subjects

Materials and Methods: The study group included patients with complaints of unilateral sciatica for 3-12 months, with foraminal stenosis due to one level of LDH (L4-L5 or L5-S1). An age and gender-matched control group was formed of healthy subjects. LDH was diagnosed, and foraminal level assessment was based on the MRI-based description recommended by the North American Spine Society, the American Society of Spine Radiology, and the American Society of Neurology. 1.5 Tesla MRI unit was used to visualize nerve roots and herniation. The foraminal stenosis was assessed according to the Wildermuth staging. Sonoelastographic evaluations were performed on both the axial and longitudinal planes from the bilateral gluteal region using a 5-9 MHz multifrequency convex probe.

Results: There were 40 patients (20 male, 20 female) with a mean age of 43.1±12.7 years in the study group, and 40 healthy subjects (22 male, 18 female) with a mean age of 42.9±10.7 years in the control group ($p>0.05$). While blue (32.5%) and blue-green (47.5%) color codes were the most commonly observed in the involved side of LDH patients, green-yellow color codes were the most commonly observed in the non-involved side of LDH patients and both sides of healthy control subjects ($p<0.05$). The sciatic nerve stiffness assessed on both the axial and longitudinal planes of the involved side was significantly higher than that of non-involved side in the patient group and of both sides in the control group ($p<0.001$)

Conclusion: Patients with unilateral LDH have increased stiffness of the sciatic nerve compared to healthy control subjects. SE and SWE seem to be a convenient and informative imaging tool to evaluate LDH in daily practice

Keywords: Sciatic nerve, ultrasound, peripheral nerve, strain elastography, shear wave elastography, low back pain

O - 061

EVALUATION OF CORRELATION BETWEEN THE CLINICAL AND MRI FINDINGS OF PATELLAR CHONDROMALACIA:INITIAL RESULTS

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Abstract

Objective: Chondromalacia is a common disease, also a normal outcome of aging. Individuals with this condition are often referred to the physician with unexplained knee pain. The underlying problem cannot be identified most of the time so the sufferers go back with anti-inflammatory medications. Besides chondromalacia is identified with conventional MR imaging that is performed for many different reasons. Clinical diagnosis and its confirmation with imaging findings, in other words, their link seems improvable.

Materials and Methods: A total of 38 people including 26 female and 12 male were included in the study. Subjects with additional pathology that could be the cause of knee pain were excluded from the study for objectively evaluating the source of pain. Patients in pediatric age were also excluded from the study as maturation, patellar cartilage thickness, and signal intensity could be confusing. Visual analogue scale (VAS) and Kujala front knee pain score (AKPS) were recorded for clinical correlation. MR findings were assessed using a 1.5 Tesla MR device and knee coils. Axial, coronal and sagittal proton weighted (PW) and coronal T1 weighted sequences were obtained. The cross-sectional thickness was 4-5 mm without gaps. Chondromalacia classification system (MR grade), mean patellar thickness (MPT) were measured to evaluate the MR findings, and the patellar cartilage score (PCS) was defined to evaluate these two data together. PCS was defined as mean cartilage thickness / MR grade + 1. (+ 1 is aimed to avoid division by zero) Pearson correlation coefficient was calculated for correlation evaluation.

Results: Correlation coefficients are shown on the table.

Conclusion: When the correlation coefficients were compared, AKPS was found to be more valuable than VAS in evaluating the clinical correlations. This scoring is used to assess the pathology of anterior knee pain and is a more specific method. The most valuable finding in identifying patellar cartilage pathologies was PCS, in which the cartilage thickness and the signal intensity are evaluated together. We would like to inform that more objective results can be obtained after evaluating the cartilage thickness in addition to MR classification in patellar disease.

Keywords: Patellar chondromalacia, MR findings, clinical correlation

O - 062

QUANTITATIVE ASSESMENT OF PATELLAR CARTILAGE FOR EARLY CHONDROMALASIA BY USING T2 MAPPING AT 3T

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Abstract

Objective: The aim of the study was to evaluate the quantitative assessment of patellar cartilage for early chondromalasia by using T2 mapping at 3T magnetic resonance imaging (MRI).

Materials and Methods: Thirty patients (22 women, 8 men; mean age 47.67±9.557) with chondromalasia of ICRS (International Cartilage Repair Society) grade ≤2 and 69 normal subjects (43 women, 26 men; mean age 40.04±13.05) were examined by using a 3T MRI with an 15-channel knee coil. Chondromalasia was graded based on PD TSE images. T2 maps were calculated from a T2 star sequence. Medial and lateral facets of each patellar cartilage were divided into three zones. M1, M2, M3; for medial facet and L3, L2, L1; for lateral facet from medial to lateral. Region of interest (ROI) of 0.5 mm^2 for each zones and a single ROI for entire cartilage were drawn to analyse mean T2 relaxation times (ms) and compare for both groups. ROC curves and AUCs (Area Under Curve) were performed to evaluate the diagnostic value of quantitative assesment of patellar cartilage for early chondromalasia diagnosis. P<0.05 was considered significant.

Results: Mean T2 relaxation times (ms) of entire cartilage/M1/M2/M3/L3/L2/L1 zones of chondromalasia patients were significantly higher than the ones of normal subjects (21.98/21.66/23.97/23.61/23.85/23.64/25.23 and 19.71/18.38/19.34/18.41/18.91/21.22/20.98, respectively). The best predictive accuracies for diagnosis of early chondromalasia was obtained at M3 [(AUC: 0.734; %95 CI: 0.620–0.848) (p<0.001)]and L3 [(AUC: 0.724; %95CI: 0.612–0.836), (p<0.001)].

Conclusion: T2 mapping might be a useful method for the detection of early chondromalasia at the patella.

Keywords: Cartilage, chondromalasia, patella, T2 mapping

O - 063

MRI CORRELATION IN SECONDARY KNEE OSTEONECROSIS PATIENTS WITH CLINICAL BENEFIT FROM HIPERBARIC OXYGEN THERAPY

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Abstract

Objective: The purpose of this study was to examine the MRI findings in secondary knee osteonecrosis (ON) patients with clinical benefit from hyperbaric oxygen therapy (HBO).

Materials and Methods: Eleven symptomatic secondary knee ON patients (18 knees) who had no surgery and had clinical benefit from HBO between 2016-2018 were included in this study. Knee joint was divided into medial and lateral femorotibial compartments. ON areas were calculated in axial and coronal planes in pre and post-HBO fat saturated T2W images, and compared. Statistical analysis was done by Wilcoxon test.

Results: Of 11 patients 3 were male and 8 were female. Mean age was 29±6.2. Most common involvement sites were lateral femoral condyle (n:17, 94.4%) and medial femoral condyles (n:13, 72.2%). Tibia was less commonly affected with medial tibial involvement in 5 patients and lateral tibial involvement in 4 patients. ON area measurements showed no statistical difference between pre and post-HBO fat saturated T2W images in coronal and axial planes.

Conclusion: HBO enables clinical benefit in symptomatic secondary knee osteonecrosis patients. However, there was no statistically significant difference in ON area sizes between pre-HBO and post-HBO MRI images at the end of the treatment. Studies with longer follow-up imaging and with larger sample sizes may be more helpful in demonstrating the effect of HBO on ON.

Keywords: Knee, secondary ostonecrosis, hyperbaric oxygen therapy, magnetic resonance imaging

O - 064

WHICH IS THE MOST AFFECTED MUSCLE IN LOMBER DISC DEGENERATION? MULTIFIDUS OR ERECTOR SPINA?

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Abstract

Objective: The aim of the study is to evaluate the relationship between the lumbar disc hernias and fatty degeneration of the paravertebral musculature, especially erector spina and multifidus.

Materials and Methods: Lumbar MR images of 392 patients with back pain complaints were retrospectively reviewed. Cases between the age of 18 and 64, LDH was detected in 205 patients as case group and 187 patients without LDH as the control group. In the case and control groups, the erector spina and multifidus muscles were compared in terms of fatty degeneration. Also, fatty degeneration rates of these muscles were examined according to age and gender characteristics and LDH levels in the groups.

Results: There was no statistically significant difference between the cases (42.0±12.4) and controls (41.3±12.4)in terms of the mean age (p=0.465). In cases with no significant statistical difference about gender (0.465), herniation was detected in the lower lumbar level, in L4-5 and L5-S1, higher than the LDH detected in upper levels. In the case and control groups, the degree of fatty degeneration in the erector spina and multifidus in the patients older than 40 years, was higher than the younger ones (p<0.05). In patients with upper lumbar level herniation moderate degeneration was observed in both muscle groups, whereas in patients with lower lumbar level hernia, degeneration was observed mildly in the multifidus and moderately in the erector spina similarly to patients with herniation in all levels.

Conclusion: Low back pain can be seen in patients both with LDH or without LDH. In particular, the degree of fatty degeneration in multifidus and erector spina muscles must be taken into consideration as it can vary according to the level of disc herniation. In a diagnostic process or follow up treatment, indicating the detailed grading of degeneration in radiology reports will contribute to the rehabilitation process of the patients and therefore to the treatment management.

Keywords: Lomber disc herniation, multifidus, erector spina, MRI

O - 065

SUBSCAPULAR TENDON RUPTURE AND SUBCORACOID IMPINGEMENT SYNDROME:A MAGNETIC RESONANCE IMAGING STUDY

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Abstract

Objective: We aimed to investigate the diagnostic value of coracohumeral anatomic measurements and other associated pathologies that may be helpful in the subscapular tendon rupture and subcoracoid compression syndrome on shoulder magnetic resonance imaging (MRI) examination.

Materials and Methods: 982 shoulder MRI examinations between December 2016 and July 2017 were reviewed retrospectively. 51 patients diagnosed with subscapular tendon rupture (study group) and 50 patients without subscapular tendon pathology (control group) on MRI, were randomly selected from among patients who had MRI examinations due to shoulder pain between the same dates. Gender and age matched control group were included in the study. Patients and control groups were evaluated comparatively for coracohumeral distance (CHD), coracoid overlap(CO), coracoglenoid angle(CGA), coracoglenoid distance and acromiohumeral distance, subscapularis, supraspinatus, infraspinatus and biceps muscles pathologies, coracoid type and tuberculum cysts by a single operator

Results: For each group (control and study) 20 (39.2%) of the patients were male and 31 (60.8%) were female. The average age of the patients was 59.3 years(34-75 years). A statistically significant difference was found in the patients with transvers CHD, sagittal CHD, CGA and AHD values when compared to the control group ($p<0.001$). Concomitant supraspinatus, infraspinatus and biceps tendinosis and rupture were found in the patient group more than the control group ($p<0.001$). Also a statistically significant difference was found in the patient group compared to the control group in the protruded coracoid type and greater tuberosity cysts ($p<0.005$).

Conclusion: Coracohumeral distance and coracoglenoid angle measurements in routine shoulder MRI examination are important parameters for subcoracoid impingement syndrome. In addition, ancillary findings such as biceps tendinosis, rupture and tuberculum cysts help to diagnose the subscapular tendon tears.

Keywords: Subscapular tendon rupture, subcoracoid impingement syndrome

O - 066

MRI FINDINGS OF RARE SOFT TISSUE TUMORS

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Abstract

Objective: Soft tissue supports fat, muscle, nerves, subcutaneous and synovial structures. Percentages of benign and malignant soft tissue tumors (STT) are 0.3% and <%1 respectively. STTs are local aggressive with high metastatic potential. The purpose of this study is to evaluate magnetic resonance imaging (MRI) findings of rare STTs found in our archives.

Materials and Methods: Between 2010 January- 2017 December, patients who were diagnosed as STTs with MRI were included to study. Tumors were classified according to pathology, MRI findings (homogeneity-heterogeneity, T1-T2 signal), localization, fat, cyst, necrosis, hemorrhage contents and invasion. SPSS V.16 was used in statistical analysis; Chi-square and Mann-Whitney U tests were performed as descriptive tests.

Results: Eighteen patients were included in the study. Tumors were classified to 3 groups as malignant (angiomatoid fibrous histiocytoma, epithelioid angiosarcoma, clear cell sarcoma, Hyalinizing spindle cell tumor with giant rozette), benign (granuloma annulare, hibernoma, intramuscular myxoma, intraneural perineuroma, pleomorphic hyalinizing angiectatic tumor, cellular myxoma, solitary fibrous tumor, benign parosteal osteochondromatous proliferation) and infection (mycobacterium fortuitum, aspergilloma, cyst hydatid). Of 50% malignant lesions had necrosis, heterogeneity and invasion were 67%, hemorrhage was 33%. All malignant lesions located intramuscular region and none of them include fat tissue. Benign lesions had no necrosis and hemorrhage. Only cyst hydatid had specific MRI findings. There was no statistical significance in terms of age and size between benign-malignant tumors.

Conclusion: Although MRI is the most common method in diagnosis there is no specific MRI feature in STTs. However, MRI has prominent contribution in lesion localization, invasion degree, content of lesion and relation of lesions with surrounding tissue.

Keywords: Magnetic resonance imaging, rare, soft tissue tumors

O - 067

EVALUATION OF SLAP TYPE 5 LESIONS WITH OBLIQUE SAGITTAL MR-ARTROGRAPHY

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Abstract

Objective: The aim of this study is to compare conventional MR-artrography sequences and thin slice oblique sagittal sequence oriented to the labrum in detecting Bankart and SLAP type 5 lesions.

Materials and Methods: Consequent patients undergone MR-artrography and surgery with shoulder instability between January 2013 and January 2018 were analyzed retrospectively. Demographic data and MR-artrography images were retrieved from PACS archives. Conventional sequences (T1-wieghted fat-saturation coronal and axial images with 3 mm slice thickness) and oblique sagittal sequence oriented to the labrum with 1 mm slice thickness) were evaluated. MR-artrography was accomplished by an experienced musculoskeleteal radiologist. Results were compared with surgical outcomes. Sensitivity, specificity and positive predictive values (PPV) were calculated for both sequences.

Results: Bankart lesion (40 patients) and SLAP type 5 lesions (16 patients) were detected in 45 patients (40 patients male, 5 patients female; mean age 36.2 years). Sensitivity, specificity and PPV of conventional sequences in detecting Bankart lesion were 95%, 25% and 92%, respectively. These values for detecting SLAP type 5 lesion were 47%, 92.6% and 80%. Sensitivity, specificity and PPV of oblique sagittal sequences in detecting Bankart lesion were 75%, 100% and 100%, respectively. These values for detecting SLAP type 5 lesion were 82%, 100% and 100%.

Conclusion: While oblique sagittal MR-artrography sequence has lower sensitivity in detecting Bankart lesions when compared with conventional sequences, it has high accuracy in demonstrating anterior to superior extension of these lesions. For this reason, it has an important role in the evaluation of SLAP type 5 lesions.

Keywords: SLAP, Bankart lesion, MR-artrography

O - 068

EVALUATION OF SPINAL-PARASPINAL PARAMETERS TO DETERMINE SEGMENTATION OF THE VERTEBRAE

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Abstract

Objective: The purpose of the study is to compare the usefullness of parameters used for vertebra segmentation in lumbar MR examinations.

Materials and Methods: The lomber MR examinations of 143 patients were retrospectively evaluated. First images were evaluated for morphology and for the presence of transitional vertebrae, then counted from C2 vertebra to determine the exact segment of the vertebra.

Secondly, 14 parameters were evaluated in all cases: 1) Morphological characteristics - Vertebra corpus shape - Intervertebral disc shape (ODriscoll classification) -Lumbosacral angle - Dimensions of vertebra -Last costovertebral joint -Last facet joint 2) Levels of anatomic markers -Iliolumbar ligament Conus medullaris Celiac artery -Superior mesenteric artery Right renal artery -Aort bifurcation -Vena fava inferior confluence -Dural sac end-point

Results: Transitional vertebrae was detected in 13 patients. Percentage of errors made according to morphology was 11%. Levels and distribution differences of anatomic markers are shown in Table 1. In normal cases, the L5 vertebra is always rectangular, and the S1 vertebra is always trapezoidal. In the case of sacralisation, the difference between the end-plates of the transitional vertebra was significantly smaller than that of the actual S1, which is closer to the shaped rectangle, ie the true L5 vertebra (p=0.037). The S1-2 disc appears significantly more frequently in type 3 characteristics (p=0.013) than in the true L5-S1 disc. The mean of the lumbosacral angle is higher, although not statistically significant, in the case of variations. Therefore, if this angle increases, correlation with other findings can be made in terms of variation. The iliolumbar ligament is at the L5 vertebra level in all normal cases that can be evaluated.

Conclusion: Correct identification of vertebral levels is not always possible according to morphology. However, helpful parameters can be used to determine exact segmentation of the vertebrae.

Keywords: Vertebrae, lumbalisation, sacralisation

O-069

INCREASED PREVALENCE OF PELVIC VENOUS CONGESTION SIGN ON SACROILIAC MRI IN WOMEN WITH CLINICALLY SUSPECTED SACROILIITIS

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Abstract

Objective: Pelvic congestion syndrome (PCS) is the frequent condition that causes chronic pelvic pain in the reproductive women. MRI-defined pelvic venous congestion (PVC) sign is the important finding of PCS. The aim of this study is to compare the prevalence of PVC sign on sacroiliac and hip MRI in the reproductive women.

Materials and Methods: The study was performed with the retrospective basis and between January 2010 and December 2017, a total of 727 MRI examinations (401 sacroiliac joint MRI and 326 hip joint MRI) were included into the study. Incidental findings of musculoskeletal and genitourinary disorders were recorded. Besides 727 MRI examinations, after removing patients with the disorders that may cause pain, remaining 539 (322 sacroiliac and 217 hip) MRI examinations were analyzed separately.

Results: Four hundred one patients with sacroiliac MRI examination had 120 (29.9%) PVC sign and 326 patients with hip MRI examinations had 54 (16.6%) PVC sign (p<0.001, chi-square test). After removing patients with the disorders that may cause pain; 322 patients with sacroiliac MRI examination had 102 (31.7%) PVC sign and 217 patients with hip MRI examinations had 38 (17.5%) PVC sign (p<0.001, chi-square test). No significant differences were found between patients with acute sacroiliitis and patients without acute sacroiliitis in terms of PVC prevalence (p>0.05). There were also no significant differences between other comparable incidental findings.

Conclusion: The fact that a significantly increased PVC prevalence in patients with sacroiliac MRI may be attributed to that PCS may simulate clinically sacroiliitis.

Keywords: Sacroiliitis, pelvic congestion syndrome, pelvic venous congestion

O-070

MULTIPLE FACES OF LUNATE

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Abstract

Objective: Although the presence of an articular facet on lunate for hamate makes a type 2 morphology, correct assessment of lunate shape may be difficult since small facets are not always conspicuous on radiographs or routine MR images. The purpose of this study was to determine more precise parameters to assess lunate types and further evaluate their possible effects on triangular fibrocartilage (TFC), hamate and lunate articular surfaces.

Materials and Methods: Anteroposterior radiographs and T2-3D isometric DESS MRIs at 3.0 T MR of 118 cases with neutral ulnar variance were retrospectively analysed for articular cartilage effacement, presence of signs of hamatolunate degeneration and MRI findings at central part of TFC. The distance between cortices of lunate-hamate and capitate (C)-triquetrum (T) were measured on MRIs and radiographs and the LH/CT ratios were calculated. For statistical analyses a p value <0.05 was considered as significant.

Results: 72% of cases were female and 28% were male with a mean age of 38.5 (±13.5). The incidences of type 1 and type 2 lunates were 74.6% and 25.4% respectively. There were no statistical significance with respect

to lunate types and gender. Findings regarding hamatolunate degeneration were significantly higher in type 2 lunate group (p=0.003), however the LH/CT ratios showed no such correlation. When LH/CT ratios at MRI were analysed, a cut-off value of 0.907 showed high sensitivity and specificity in determining type 2 lunate with significantly more accuracy than radiographic ratios (p<0.001). TFC pathologies showed no correlation with regard to lunate types (p=0.935).

Conclusion: A ratio of 0.907 for LH/CT in MRI may be a helpful tool in determining the lunate type where type 2 morphology is significantly more associated with hamatolunate arthrosis. TFC changes and lunate morphology showed no correlation.

Keywords: Hamatolunate degeneration, MRI, TFC, type 2 lunate

O-072

DETERMINATION OF MORPHOLOGICAL CHARACTERISTICS OF PRIMARY BREAST CANCER BY FOCUS DIFFUSION-WEIGHTED MRI: COMPARISON WITH CONVENTIONAL DIFFUSION WEIGHTED IMAGES AND DYNAMIC CONTRAST-ENHANCED MRI

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Abstract

Objective: In this study, we aimed to compare the diagnostic accuracy and effectiveness of focus diffusion weighted imaging (f-DWI), conventional diffusion weighted imaging (c-DWI), and dynamic-contrast enhanced magnetic resonance imaging (DCE-MRI) in determining the morphological characteristics of primary breast cancer.

Materials and Methods: c-DWI, f-DWI and DCE-MRI of newly diagnosed 155 breast cancer patient's images were evaluated retrospectively. Morphological features of the lesions and image quality were compared between all three imaging protocols by two radiologists. Also apparent diffusion coefficient (ADC) values of the lesions were compared between f-DWI and c-DWI.

Results: Evaluation by the two readers of all primary breast cancers for the mean ADC values were 82.5 and 88 for f-DWI, and 92.5 and 94.5 by c-DWI, respectively and the difference was statistically significant (p< 0.001). The least distorted images were obtained in DCE MR images compared to c-DWI and f-DWI for both readers. The highest distorsion scores were obtained in c-DWI. Sharpness was rated as significantly higher for f- DWI and DCE MR images compared to c-DWI by all readers (p<0.001). Also, perceived SNR scores were significantly higher for f-DWI and DCE MR images than c-DWI for both readers (p<0.001).

Conclusion: f-DWI allows higher quality images than conventional one. This allows the morphological features to be identified at similar accuracy to dynamic contrast-enhanced images with high resolution.

Keywords: Diffusion-weighted imaging, focus, high resolution, magnetic resonance imaging

O-073

THE CONTRIBUTION OF 3 TESLA MRI TO THE PREOPERATIVE ASSESSMENT OF BREAST CANCER

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Abstract

Objective: To define the contribution of MRI to preoperative assessment of newly diagnosed breast cancer patients.

Materials and Methods: In this study 31 breast cancer patients whose diagnosis had been proven histopatologically and examined with breast MRI were evaluated retrospectively. The size and the kinetic properties of the tumor, additional foci in the same breast, the existence of tumor in the other breast, extension to the chest wall and axillary lymph node metastasis were noted. These findings were compared with postoperative histopathological findings.

Results: In 10 patients multifocal disease was identified but only in 3 patients it was proven pathologically. In 1 patient MRI couldn't identify the additional foci (sensitivity 66.6%, specificity 71.4%, positive predictive value (PPV) 20%, negative predictive value (NPV) 95.2%). In 2 patients MRI found multicentric foci and they were confirmed with pathology. Out of 6 patients with suspicious findings in the contralateral breast, 1 patient was diagnosed as cancer (sensitivity 100%, specificity 28%, PPV 16%, NPV 100%). 13 patients were evaluated as positive for axillary lymph node involvement. One of them didn't have axillary lymph node metastasis in the pathology specimens. In 1 patient MRI couldn't identify the axillary lymph node metastasis (sensitivity 92.3%, specificity 94.4%, PPV 92.3%, NPV 94.4%). Compared to histopathological measurements, we obtained a high reliability ratio (88%) for the lesion sizes.

Conclusion: MRI can be used to exclude additional foci in patients who have high risks for multifocal and contralateral disease. MRI may reveal false positive results and therefore the diagnosis must be proven with pathology before surgery.

Keywords: Breast cancer, breast MRI, preoperative assessment

O-074

MAGNETIC RESONANS IMAGING FEATURES OF TRIPLE NEGATIVE BREAST CANCER

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Abstract

Objective: To discuss the magnetic resonans imaging (MRI) features of triple negative breast cancer (TNBC)

Materials and Methods: Thirty-two patients with TNBC evaluated by MRI between 2010-2017 were identified via a radiology information system. Unifocal mass, rim enhancement and intratumoural T2 hiperintensity were evaluated. The scans were obtained on a 1,5-Tesla Optima 360 MR unit (General Electric Medical Systems, Milwaukee, WI, USA). Standard sequences were obtained which included T2 fat-supressed images, T1-weighted non-contrast images, dynamic contrast enhanced images, subtracted images and maximum intensity projection images.

Results: The mean age of patients was 51.3±12.4 years (range: 31-83 years). Sixteen of patients (50%) were invasive ductal carcinoma, 4 (12.5%) were invasive ductal carcinoma with ductal carcinoma in situ, 3 (9.4%) were invasive ductal and invasive lobular carcinoma and 9 (27.1%) were the other carcinomas (medullary, metaplastic, apocrine, adenoid cystic and saliva-like carcinoma). Unifocal mass was seen in 84.4% (27/32) of the patients. Non-mass like enhancement was seen in 3 (9.1%) patients and satellite malignant lesion was seen in 2 (6.5%) patients. Rim enhancement was seen in 60.3% (17/27), intratumoural T2 hiperintensity was seen in %68.75 (22/32) of the patients. Enhancement kinetic curve was washout pattern in 30 (93.5%) patients, and progressive pattern in 2 (6.5%) patients.

Conclusion: Triple negative breast cancers are receptor-negative and 11-20 percent of all breast cancers. Our study supports that TNBCs are most commonly seen as unifocal mass. Rim enhancement and intratumoural T2 hiperintensity were the other common MRI features and this finding was compatible with literature

Keywords: Triple-negative breast cancer, mri findings, enhancement

O-075

ASSOCIATION OF BREAST CANCER SUBTYPES AND 3.0 TESLA DIFFUSION TENSOR MR IMAGING PARAMETERS

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Abstract

Objective: To investigate relationship of breast cancer subtypes and the mean diffusivity (MD), fractional anisotropy (FA) measured by diffusion tensor imaging (DTI).

Materials and Methods: This retrospective study included 102 patients (age 51,37 ± 11,47 years) who underwent pre-operative contrast-enhanced 3T breast MRI and DTI, from september 2015 to february 2018. Patients were histopathologically confirmed invasive breast cancer. Histologic analysis parameters included tumor size, expression of estrogen receptor (ER), human epidermal growth factor receptor 2 (HER2). Breast cancer is divided into the following molecular subtype: estrogen receptor positive and HER2 negative (luminal A, n=46); estrogen receptor positive and HER2 positive (luminal B, n=24); estrogen receptor negative and HER2 positive (HER2 enriched, n=13); estrogen receptor negative and HER2 negative (triple negative, n=18). Comparisons were made using Kolmogorov Smirnov and Kruskal Wallis H tests.

Results: A statistically significant difference was found between MD values of four subtypes of breast cancer. According to the binary comparisons to find the group that makes the difference; MD measurements in Luminal A and HER2 enriched subtypes were significantly different (p=0,038; p<0,01). There was no statistically significant relationship between breast cancer subtypes and FA measurements (p>0.05).

Conclusion: These findings suggest that MD values of breast invasive tumours may be further assessed as potential predictors of molecular subtypes of breast cancer.

Keywords: Diffusion tensor imaging, breast cancer, HER2

O-076

BACKGROUND PARENCHYMAL ENHANCEMENT AND BREAST DENSITY ON BREAST MRI: CORRELATION WITH TUMOUR CHARACTERISTICS

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Abstract

Objective: To investigate the relationship between background parenchymal enhancement (BPE) and breast density (BD) at breast MRI and histopathological features of invasive breast cancers.

Materials and Methods: A total of 112 women with unilateral invasive breast cancer who preoperatively underwent contrast enhanced breast MRI were included in the study. MRI studies were performed within the second week of the menstrual cycle to reduce the enhancement of normal breast parenchyma. Two radiologists rated BD and BPE at breast MRI according to BI-RADS criteria in consensus. The relationship between BD and BPE was investigated, and compared with tumor subtype, ki 67 level and histologic grade of invasive breast cancers according to the level of BD and BPE.

Results: BPE was associated with breast density (p<0.01). Both breast density and BPE were not associated with molecular subtypes (p=0.309 and p=0.603). Women with high breast density tended to have increased rate of Her 2 positive tumours (p<0.01). No significant differences between BPE and reseptor positivity were found (p=0.315). Also no association between the histological tumour characteristics and BPE was observed.

Conclusion: We conclude that, in women with invasive breast cancer, there is an association between breast density and BPE on breast MRI. There is no correlation with BPE and reseptor positivity while high BD is associated with Her 2 positivity of the invasive breast cancer which is not suggested in the current literature.

Keywords: Breast cancer, MRI, background parenchymal enhancement, breast density

O-077

THE ROLE OF MRI FINDINGS WITH DIFFUSION-WEIGHTED IMAGING IN THE DIFFERENTIATING PURE MUCINOUS CARCINOMAS FROM FIBROADENOMAS

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Abstract

Objective: Although mucinous carcinoma is a rare breast cancer, distinction from fibroadenomas may sometimes be challenging. The purpose of this study to differantiate pure mucinous carcinomas (P-MCs) from fibroadenomas (FAs) on magnetic resonance imaging (MRI) using breast imaging reporting and data system (BI-RADS) descriptors (5th edition) and apparent diffusion coefficient (ADC) value.

Materials and Methods: The study included 14 patients with pathologically proven P-MCs and 16 patients with biopsy-proven FAs that was hyperintense on T2-weighted images between 2011 and 2017. All imaging studies were evaluated using the BI-RADS lexicon. Besides hyperintense signal on T2-weighted image, enhancing internal septation, the mean ADC values of masses and normal parenchyma were also evaluated.

Results: Irregular margins were observed more frequently in P-MCs (0/16, %0 vs. 6/14, %43 p<0,05) P-MCs also showed nonmass enhancement along with mass, septal enhancement, rim enhancement while none of FAs showed.(respectively; 4/14, %43; 4/14, %43; 7/14,%50, p<0,05) FAs showed circumscribed margins more frequently. (16/16, %100 vs. 6/14, %43, p<0,05). There was no statistically significant relation of mean ADC values between P-MCs and FA. (1,709±0,389 vs 1,757±0,213 m^2/s) However P-MCs and FAs both showed significantly higher mean ADC values compared with the parenchma. (p<0,05) Rim enhancement was significantly higher in P-MCs. (7/14, %50 vs 0/16, %0, p<0,05)

Conclusion: P-MCs were most commonly very hyperintense masses with irregular margin and rim enhancement on MRI. Also nonmass enhancement along with mass, septal enhancement can be used to differantiate P-MCs from fibroadenoma. These findings may separete P-MCs from FA, however ADC values had no discriminatory power for P-MCs versus FAs.

Keywords: Pure mucinous carcinoma, fibroadenoma, ADC, breast imaging

O-078

CORRELATION OF DYNAMIC 3 TESLA MAGNETIC RESONANCE IMAGING AND ULTRASONOGRAPHY FINDINGS WITH HISTOPATHOLOGICAL RESULTS, OUR FIRST 3 TESLA EXPERIENCE

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Abstract

Objective: The aim of this study is histopathological comparison with the identification of the findings of dynamic magnetic resonance imaging (MRI) and ultrasound (US) findings in breast masses.

Materials and Methods: Among the June 2016-February 2018, in the Harran University Faculty of Medicine Radiology department with 3 T MRI (Magnetom Skyra, Siemens Healthcare, Erlangen, Germany) breast MR images who had US reports, evaluated respectively. The patients who had breast masses without histopathologic evaluation or BI-RADS 6 excluded from the study. 40 patients with histopathological data choosed up for the study. The US reports and MR images evaluated according to American College of Radiology BI-RADS Atlas Fifth Edition Quick Reference criteria. US findings examined with regard to shape, orientation, margin, posterior features, architectural distortion, vascularity, ductal changes and US BI-RADS; MRI findings evaluated according to backround parenchymal enhancement, shape, margin, internal enhancement characteristics, architectural distortion and kinetic curve assesment.

Results: There are 31 patients with benign and 9 with malign histopathological features. Shape, orientation, margin, posterior features, architectural distortion and BI-RADS in US were compatiable with pathology results (p<0.05). Vascularization of mass in US showed close relationship with the pathology (p=0.086). In MRI shape, margin and architectural distortion showed significant relationship with the pathology (p<0.05), kinetic curve assesment showed close relationship with the pathology(p=0.079). But background parenchymal enhancement and internal enhancement characteristics have no significant relationship with the pathology (p>0.05).

Conclusion: The results of our first morphological and kinetic analysis with 3 Tesla dynamic breast MRI and US findings show a significant relationship with pathology.

Keywords: 3 Tesla, breast, MRI

O-079

DOES STRONG BACKGROUND PARENCHYMAL ENHANCEMENT ON MRI AFFECT THE TUMOR SIZE ESTIMATION WITH MRI IN BREAST CANCER PATIENTS?

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Abstract

Objective: The purpose of this study was to evaluate whether the level of background parenchymal enhancement (BPE) would affect the correct tumor size estimation on MRI or not.

Materials and Methods: From January 2016 to February 2018, 49 patients having breast Magnetic Resonance Imaging (MRI) prior to surgery and primarily surgically treated breast carcinoma were included in the study. The patients were divided into two groups based on the level of BPE with consensus (mild/strong BPE). The Bias (d) was defined as the difference between the tumor sizes measured by MRI and histopathology. Two readers independently measured the tumor sizes on MRI manually. Then the mean bias was compared between the two groups.

Results: 49 patients were included in the study with a mean age of 53.46 years. 28 of the patients had mild and 21 of the patients had strong BPE. Mean tumor size was 19.20±6.79 at histopathology. For reader 1 the

mean (b) was 3.12±2.14 and 3.36±3.16 (mild and strong BPE groups, respectively). For reader 2 the mean (d) was 3.43±2.68 and 3.57±3.22 (mild and strong BPE groups, respectively). When we compared the mean (d) among the patients with mild and strong BPE, it did not show any significant difference for both of the readers (p values were 0.78 and 0.43 for readers 1 and 2, respectively).

Conclusion: The level of BPE may not affect the correct tumor size estimation on MRI.

Keywords: Background parenchymal enhancement, breast carcinoma, MRI

O-080

CORRELATION BETWEEN MRI AND HISTOPATHOLOGICAL FINDINGS OF SPICULATED BREAST CANCERS

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Abstract

Objective: To compare the relationship between MRI and histopathological findings of spiculated and non-spiculated breast cancer.

Materials and Methods: Between January 2014 and January 2018, 90 women who had undergone image guide-biopsy with 50 spiculated and 40 non-spiculated masses were separated accoding to BI-RADS criteria on mammography. Estrogen receptor (ER), progesterone receptor (PR), HER2 and Ki67 were used as markers to identify molecular subtypes of breast cancer. Pearson chi-square test was employed to measure statistical significance of correlations.

Results: There was no difference for age between two groups (p=0.331). The size of the masses were not different between the two groups (p=0.244). More hypointense signal features were detected in T2-weighted images for the spiculated masses (p=0.004). There was no difference between the two groups in terms of multifocal or multicentric involvement, non-mass type enhancement, peripheral rim enhancement and axillary lymph node involvement in the MRI (p=0.237, p=0.622, p=0.096, p=0.295 and p=0.764, respectively). ER and PR positivity were higher in the spiculated masses (p=0.027 and p=0.03, respectively). For the Ki67 index and HER2 positivity, statistically significant a difference were not found between two groups (p=0.571 and p=0.596, respectively).

Conclusion: ER and PR positivity are more common in the spiculated masses. This could be helpful to predict the course of the disease as well as the effectiveness of the treatment.

Keywords: Breast, cancer, spiculated, MRI, histopathological

O-081

THE CONTRIBUTION OF MAGNETIC RESONANCE IMAGING IN THE DIAGNOSIS OF FAT NECROSIS THAT CLINICALLY UNCLEAR AND CONVENTIONAL RADIOLOGIC FEATURES ARE UNCLEAR CASES

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Abstract

Objective: Fat necrosis is a relatively common benign entity in the breast. The reason is unknown in many cases; most likely the underlying cause may be trauma. Our aim is to evaluate the contribution of magnetic resonance (MR) imaging to clinically uncertain fat necrosis cases and to describe MR imaging features of this type of fat necrosis of the breast.

Materials and Methods: Present study included 16 cases where diagnosis could not be made with certainly on ultrasonography and mamography. Fat necrosis detected with MR imaging was histopathologically proven using US-guided biopsies.

Results: Traumatic fat necrosis presented as mass in all patients on MR imaging. Lesions were superficially evaluated in five patients (31%). The shapes of the masses were mostly irregular 8/16 (50%) and round 5/16 (31%). In 10 patients (63%), fat signal was observed in the mass. Edema was seen around the mass in 4 patients (25%). The internal enhancement pattern of masses was heterogenous 9/16 (56%), homogenous 5/16 (31%). Complete enhancement of fat necrosis was seen as the same as partial in 8 patients (50%). Architectural distortion were seen in 5 patients (31%) on MR imaging.

Conclusion: MR imaging has a wide spectrum of findings for fat necrosis and the appearance is the result of the amount of the inflammatory reaction, the liquefied fat, and the fibrosis. MR imaging is an informative tool for evaluating and diagnosing fat necrosis especially in cases that clinic uncertain and mammography and ultrasonography are suspicious for malignacy.

Keywords: Fat necrosis, breast, imaging, magnetic resonance imaging, trauma

O-082

IDIOPATHIC GRANULOMATOUS MASTITIS DYNAMIC BREAST MRI AND DIFFUSION-WEIGHTED MRI FINDINGS: CLINICAL AND RADIOLOGICAL CORRELATION

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Abstract

Objective: Idiopathic granulomatous mastitis is a rare disease that simulates breast cancer clinically and radiologically. We aimed to determine the relationship between dynamic breast MR imaging and diffusion-weighted imaging findings and recurrence or residual disease prevalence in patients with pathologically diagnosed idiopathic granulomatous mastitis with core needle biopsy and to compare ADC values with contralateral healthy breast parenchyma in the same patients.

Materials and Methods: In our study, 17 female patients (mean age 36+8; 27-57 years) with pathologically diagnosed granulomatous mastitis between 2016 and 2018 were included. This retrospective study was approved by Cukurova University Department of Radiology that imaging with 3 Tesla (3T) whole body MR system (Philips Achieva) 8 channel breast coil. Idiopathic granulomatous mastitis ADC values were compared with contralateral healthy breast ADC values. On dynamic contrast imag-

ing, lesion type, shape, contrast distribution and contrast pattern, presence of reactive lymph nodes and presence of residual or recurrence in the follow-up of the patient and family history were evaluated.

Results: Diffusion weighted images showed significant decrease in ADC values compared to healthy breast tissue (p: 0,02). On dynamic contrast-enhanced MRI 5% of patients had mass like contrast enhancement, 52% of patient had segmental and 41% had diffuse contrast enhancement. %70 of patients had reactive lymph nodes. Recurrence or residual disease was observed in eight patients (47%) after treatment. There was no significant difference between contrast distribution, residual disease and presence of reactive lymph nodes with ADC values.

Conclusion: Idiopathic granulomatous mastitis generally has non-mass contrast enhancement and limited diffusion. No significant correlation was found between the contrast enhancement pattern and ADC value with residual disease or recurrence after treatment, family history, and lymph node presence.

Keywords: Breast, MRI, benign disease, ADC

O-083

COMPARISION OF MALIGNANT BREAST LESION SIZES ACCORDING TO MOLECULAR SUBTYPES

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Abstract

Objective: Breast cancer is the most common cancer diagnosed in the women. The tumor size plays an important role in determining the treatment method. The purpose of this study to compare preoperative tumor size measurements using digital breast thomosynthesis (DBT), ultrasonography (US), magnetic resonance imaging (MRI) with the size of the pathologic specimen according to molecular subtypes.

Materials and Methods: 52 patients with primary breast cancer were analyzed retrospectively between 2017 January and 2018 January. Patients were divided into four groups by molecular subtypes as "Luminal A", "Luminal B", "Triple (-)" and "Her2 enriched". Size of the pathologic specimen was chosen as the sizing reference. Wilcoxon sign rank test was used to evaluate the correlation between size of the pathologic specimen and tumor size for every imaging method.

Results: Although there was no significant correlation between specimen size and the tumor sizes of DBT and US; MRI showed significant correlation for "Luminal A" molecular subtype of breast cancer. For "Triple (-)" and "Her2 enriched" subtypes, there was significant correlation between sizes of the specimen and US, DBT and MRI. Although, for "Luminal B" subtype, there was no correlation between specimen and MRI tumor size; DBT and US showed significant correlation.

Conclusion: In breast cancer, the size of tumor at the time of diagnosis is decisive for optimal treatment planning. Breast tumors have different imaging findings according to molecular subtypes. In optimal treatment planning, for measuring the closest size to actual size of tumor, appropriate imaging method which is suitable for molecular subtypes should be chosen.

Keywords: Breast cancer, thomosynthesis, ultrasonography, MRI, molecular subtype

O-084

LACTATION EFFECT ON FINDINGS OF CONTRAST-ENHANCED AND DIFFUSION-WEIGHTED MAGNETIC RESONANCE IMAGING IN PATIENTS WITH IDIOPATHIC GRANULOMATOUS MASTITIS

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Abstract

Objective: Idiopathic granulomatous mastitis (IGM) is a benign chronic inflammatory disease of the breast, yet the etiopathogenesis is not clearly understood. Lactation is considered as one of the most important risk factors. We investigated the effect of lactation on the findings of contrast-enhanced (CE)and diffusion-weighted magnetic resonance imaging (DW-MRI) in IGM and aimed to identify the most observed findings.

Materials and Methods: CE and DW-MRI of 40 patients with lactation history in the last 5 years and of 35 patients reporting no lactation history had been reevaluated retrospectively. Morphological features, enhancement pattern and kinetics of lesions were assessed based on BI-RADS. The presence of diffusion restriction was evaluated and apparent diffusion coefficient (ADC) values were obtained. MRI findings depending lactation status were compared.

Results: Non-mass contrast enhancement (NMCE) ($p<0.02$), clustered ring pattern ($p<0.008$) and fistula formation ($p<0.035$) were more frequently seen in patients with a lactation history than in patients reporting no lactation history. Mass and NMCE combination and abscess formation were the most common MRI findings. NMCE was regional and heterogeneous and most of enhancement kinetics had type 2 contrast enhancement curve. Diffusion restriction was present in all of the lesions and the mean ADC values were $0.93\pm0.25\times10^{-3}$ mm^2/s.

Conclusion: Lactation status increases the incidence of NMCE, clustered ring pattern and fistula formation on MRI.

Keywords: Idiopathic granulomatous mastitis, contrast-enhanced magnetic resonance imaging, diffusion-weighted imaging, lactation

O-085 PROBLEM SOLVING BREAST MRI IS REALLY PROBLEM SOLVING?

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Abstract

Objective: Magnetic resonance imaging (MRI) is used as problem solving method for BI-RADS 0 lesions that are diagnosed with mammography

(MG) or ultrasonography (US) and for screening patients with family history. Our purpose was to evaluate the diagnostic capacity of breast MRI as a problem-solving and screening method.

Materials and Methods: In this retrospective study, 535 women included that had family history or were evaluated as BI-RADS 0 in MG and US and underwent breast MRI between July 2015 and July 2017. Patients were classified into two groups according to MG an US findings. BI-RADS 0 patients [patients with BI-RADS 0 lesions, asymmetric fibroglandular tissue (AFT) and dense breast tissue] were included to group 1 and patients with family story were included to group 2. MRI findings of groups were evaluated.

Results: Number of patients in group 1 was 398 [217 (40.6%) AFT, 80 (15%) BIRADS 0 lesion and 101 (18.9%) dense breast tissue] and in group 2 was 249 (46.5%). Fifty [8 (1.5%) malignant, 42 (7.9%) benign] patients were redirected surgery as a result of MRI. Forty of 80 patients with BI-RADS 0 lesions were directed for surgery. According to MRI findings there was no statistical significance in both groups. However, p value of statistics was 0.07 and near to statistical significance.

Conclusion: MRI is a problem solving method in patients with BI-RADS 0 on MG-US and with intense family history. Although there was no statistical significance in our study, for objective evaluation in patients with suspicious findings MRI is still a valuable diagnostic method.

Keywords: Breast MRI, family history, BI-RADS 0

O-086

MAGNETIC RESONANCE IMAGING FINDINGS IN LOBULAR PATHOLOGIES OF BREAST

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Abstract

Objective: In this study; it is aimed to discuss magnetic resonance imaging (MRI) findings of lobular type breast cancer and in situ cancer, which are relatively more difficult to diagnose among breast malignancies, and whose diagnostic accuracy is increased with magnetic resonance imaging (MRI) in particular.

Materials and Methods: We searched the 195 patients who have MRI and histopathological examination. Among these patients 14 with lobular pathological diagnosis were reviewed for MRI findings. Lesions' sizes, morphological, dynamic enhancement properties and diffusion weighted imaging findings were evaluated.

Results: In the pathological evaluation:11 patients had invasive lobular carcinoma; with some of them have invasive ductal carcinoma, lobular carcinoma in situ (LCIS) or Ductal carcinoma in situ (DCIS), 2 patients had LCIS and 1 patient had lobular type mastitis. Morphological findings: 4 irregular shaper mass, 2 speculated bordered mass, 1 microlobulated contour, 3 ring like enhancement, 3 non-mass enhancement, 2 conglomerating multiple masses, 1 ring like enhancing mass. Contrast enhancement patterns: 4 lesions Type2,8 lesions Type3, 1 lesion Type 1, 1 patient showed Type 3 (at invasive component) and Type 2 (at in situ component). When the diffusion weighted imaging properties were evaluated: 9 patients had restricted diffusion whereas 5 did not.

Conclusion: Lobular carcinomas may present as masses with irregular shape, speculated contours, non-mass enhancement and clustered-conglomerated lesions. Despite wash out is less common in lobular carcinoma in our patients Type 3 pattern was the most common kinetic property. This can be due to accompanying ductal component. Most of the lesions showed restricted diffusion. Non-mass enhancement was more frequent with LCIS and speculated border was with ductal component. Despite we found restricted diffusion in most of the lesions, lacking of this property does not exclude the diagnosis.MRI has an effective role with its high sensitivity in diagnosis of invasive lobular carcinoma and LCIS.

Keywords: Invasive lobular carcinoma, MRI findings

O-087

CAN ADC BE A PROMISING MAKER OVER CURRENT BREAST MRI PARAMETERS FOR EVALUATING BREAST MASSES?

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Abstract

Objective: The purpose of our study was to show the correlation between three of the breast magnetic resonance imaging (MRI) diagnostic parameters and the histopatology of breast masses and invastigate the limitations of the MRI parameters for improving the diagnostic accuracy of the breast MRI.

Materials and Methods: 49 female patients in whom breast mass diagnosis were made and MRI was performed as a further examination technique were enrolled to this study. The morphological properties, enhancement kinetics and apparent diffusion coefficient (ADC) values of the solid lesions were compared withtheir histopathological results prospectively.

Results: 51 lesions that were diagnosed by biopsy were included in the study; 23 (45.1%) of these lesions were malignant and 28 (54.9%) of these lesions were benign. Five of 28 benign lesions (17.9%) had irregular contour and contours of the other 23 lesions (88.88%) were smooth. In 23 malignant lesions, two lesions (8.7%) had smooth border and macrolobular shape, and contours of the other 21lesions (91.3 %) were spicular and irregular. Contrast enhanced MRI was performed in 47 lesions and the accuracy of type 3 enhancement was 92% and the accuracy of type 1 was 100%. The ADC values of 51 lesions demonstrated a good correlation with the histopathology; only in one patient the ADC value calculated as 1.1×10^{-3} mm^2/s was assessed in the benign group but the histopathology was reported as invasive ductal carcinoma (IDC) in correlation with the morphology.

Conclusion: We believe that the combination of ADC value, lesion morphological property and contrast kinetics features can provide a higher diagnostic accuracy in breast MRI.

Keywords: Breast, imaging, magnetic resonance

O-088

BIRADS CATEGORIZATION AND HISTOPATHOLOGIC CORRELATION OF LESIONS DEFINED IN BREAST MRI

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Abstract

Objective: In this study, it is aimed to compare BIRADS categorization of imaging features of lesions identified in mammary MRI with histopathologic data.

Materials and Methods: 120 breast MRI cases carried out in our centre between November 2017 and February 2018 were included in the study. Findings detected on MRI were recorded. Later, the results of the biopsied cases were correlated with the imaging findings. MRI images were obtained by means of 3 T MR (Magneto or Magnetom Avanto Skyrun A: Healtcare Siemens, Erlangen, Germany). T1 and T2 weighted axial, fat-suppressed T2 sagittal, dynamic series and diffusion weighted images were obtained.

Results: A total of 120 cases were retrospectively reviewed. Of these, histopathologic results of the MRI findings of 55 patients with histopathological examination were correlated. Additional focus investigations in 13 cases were aimed due to 13 BIRADS-6 lesions. In 5 cases, multifocal-multicentric breast Ca was detected. In 2 cases, additional focuses were detected on the opposite breast. There was only one focus in 6 cases, no additional focus was detected. Invasive ductal carcinoma in 11 cases, invasive lobular carcinoma in 2, and mixed type carcinoma in 1 were detected in 14 cases of BIRADS-5 lesions detected in MRI. Invasive ductal carcinoma in 12 cases and inflammation-mastitis in 8 cases were detected in 31 cases of BIRADS 4 lesions. Histopathological findings of no malignancy were reported in the remaining 11 cases.

Conclusion: Breast MRI is an important modality in directing the treatment approach when used in appropriate indications. Especially in determining multifocality-multicentricity, sensitivity and specificity of detecting chest wall invasion is high. It can also be used for screening purposes in high risk groups.However, it should be kept in mind that if there is no appropriate indication, it may lead to unnecessary anxiety and interventional procedures.

Keywords: Breast MRI, BIRADS, Breast carcinoma

O-089

ROLE OF NATIVE T1 MAPPING IN THE DIFFERENTIATION OF FIBROADENOMAS FROM PHYLLODES TUMOR OF THE BREAST; PRELIMINARY RESULTS

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Abstract

Objective: Fibroadenomas and phyllodes tumors of the breast are two different entities that have to be distinguished, because different treatment approaches are present for both lesions. T1 mapping without contrast administration (native T1 mapping) is a new MRI technique which is used for the detection of fibrosis in different studies. In this study we aim to evaluate the role of native T1 mapping in the differentiation of fibroadenomas from phyllodes tumors of the breast.

Materials and Methods: Twelve patients with histopathologically proven diagnosis of fibroadenomas (FA) (n=8) and phyllodes tumor of the breast (PT) (n=4) were included in this study so far. Breast MRI with native T1 mapping was performed to all patients using 1.5T MR scanner before the biopsy procedure (Siemens Aera, Siemens Healthcare, Germany). Images were analyzed in offline workstation and freehand ROIs belong the FA and PT groups were acquired. Different T1 relaxation times of both groups were compared statistically.

Results: Mean age of the study population was 46.7±5.6 years. Mean calculated T1 relaxation times for FA and PT groups were 948±236 and 1658±563 respectively. PT group had significantly higher T1 relaxations times compared to FA group ($p<0.001$).

Conclusion: According to our preliminary results, native T1 mapping is proved to be useful in distinguishing fibroadenomas from phyllodes tumors of the breast. We think that different T1 relaxation times belong to FAs and PTs reflect the diverse histologic natures of those entities which have different portion of fibrous tissue components. Further studies with larger patient series are required to confirm our findings.

Keywords: T1 mapping, fibroadenoma, phyllodes tumor

O-090

IS THERE A RELATIONSHIP BETWEEN MIGRAINE DISEASE AND SKULL BASE ANGLES?

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Abstract

Objective: The aim of the study was to determine whether there were variability in the skull base according to magnetic resonance images in migraine patients.

Materials and Methods: A total of 130 magnetic resonans images, including 65 migraine and 65 control groups were retrospectively in the age range 18-50 years. Migraine patients were selected from patients who were diagnosed migraine according to the diagnostic criteria of the International Headache Society (International Headache Society 2013). The study included all migraine patients and no distinction was made between subgroups. Modified basal angle, clivo-axial angle in migraine and control groups were measured by a radiologist in magnetic resonans images. The independent t test was used to compare between the groups. The level of significance was set at $p<0.05$. In addition, basilar invagination (according to McGregor and Chamberlain line) was evaluated.

Results: The migraine group was 13 male, 52 female (mean age of male 30.38±11.5, mean age of female 32.54±9). The control group consisted of 15 males and 50 females (mean age of male 34.4±8.6, mean age of female 33.14±9.7). In the migraine group; the modified baseline angle average was 123.78±6.06°, and the clivo-axial angle average was 142.65±8.73°. In the control group; the modified baseline angle average was 121.6±5.5°, and the clivo-axial angle average was 153.66±6.35°.

Significant differences were detected between the groups. There was no difference between the genders for both groups. In the migraine group; according to McGregor line in 3 patients and McGregor and Chamberlain line in 2 patients, basilar invagination was observed. Basilar invagination was not detected in the control group.

Conclusion: Changes in the skull base angles (modified basal angle and clivo-axial angle) are observed in migraine patients according to magnetic resonance images.

Keywords: Magnetic resonans imaging, migraine, skull base

O-091

MAGNETIC RESONANCE SPECTROSCOPY FEATURES OF THE VISUAL PATHWAYS IN PATIENTS WITH GLAUCOMA

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Abstract

Objective: Our aim is to investigate any metabolic changes on MRS throughout the visual pathway of the brain in patients with Glaucoma between patient and control group and correlate the results with clinical findings.

Materials and Methods: 87 cases were enrolled; 30 healthy controls, 25 glaucoma, 16 glaucoma suspect (GS) and 16 ocular hypertension (OHT) patients. A single voxel MRS on TE; 30 ms was performed by placing VOI on the Corpus Geniculatum Laterale (CGL) and primary visual cortex (VC). We enrolled peak values of metabolites as NAA, Cr, Cho and Ins on MRS. Thereafter, we correlated MRS results with age, intraocular pressure (IOP), retinal nerve fiber length (RNFL), mean deviation (MD) and cup disk ratio (CD).

Results: NAA values obtained from CGL in glaucoma and GS cases were lower than the healthy control group. Cho values at CGL in glaucoma are lower than GS and control. There was a negative correlation between NAA values of VC and CD in glaucoma cases. Additionally, there was a negative correlation between age and RNFL in both glaucoma and GS cases.

Conclusion: MRS may reveal neurodegeneration in LGB and VC in patients with glaucoma. Depiction of metabolic changes throughout the visual pathways via MRS will guide the treatment planning and follow-up in glaucoma and glaucoma suspect cases.

Keywords: Glaucoma, visual pathway, magnetic resonance spectroscopy, corpus geniculatum laterale, visual cortex

O-092

PERMEABILITY MRI IN GLIOMA GRADING

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Abstract

Objective: MRI is successful in showing the anatomy probable pathologies of central nervous system. However, it can be inadequate in revealing physiologic and metabolic changes. Further MRI techniques, perfusion and permeability MRI, are the key to overcome the limitations. We intend to detect the efficacy of permeability and perfusion MRI techniques. And also, we want to enlarge the usage of permeability MRI

Materials and Methods: The patients who had a pathology result as primary brain glioma, at least one perfusion and permeability MRI study, performed before the surgery are included. Population consists of 38 patients. The permeability MRI (Ktrans, Ve), perfusion MRI values (CBV, CBF), and pathology results are noted. The patients are classified into two main groups:high and low grade.

Results: High grade group consists of 22 patients, low grade group 16 patients. Patients' age varies between 9-79years, with a mean of 46.8 years. Mean CBV and CBF, median Ktrans and Ve is higher in high grade group. All parameters tend to elevate with grade, and have positive correlation. CBV >2.25, with a sensitivity and specificity of 100%, CBF >2.02, with a sensitivity and specificity of 100%, Ktrans>0.043, with a sensitivity of 81.82%, and specificity of 100%, and Ve>0.255, with a sensitivity and specificity of 100% can predict high grade.

Conclusion: To conclude, perfusion and permeability MRI, can be used safely for discriminating high and low-grade gliomas, and predicting glioma grades.

Keywords: Permeability, MRI, glioma, grading

O-094

ANALYSIS OF ADVANCED NEURORADIOLOGICAL IMAGES BY SPM8 AND VBM

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Abstract

Objective: Radiology is the seeing eye of medicine and should lead the innovation. Radiologists are facing to technology more than any other branch of medicine. Unfortunately either due to non familarity or lack of interest, use of advanced softwares is generally exception among radiologists. Our aim was introducing SPM and VBM which allow us voxelwise analysis of images to our collegues willing to get familarity.

Materials and Methods: Voxelwise analysis of two or more groups of either structural MPRAGE or DTI or fMRI data were demonstrated step by step by screenshots of the process.

Results: Familarity to apply voxelwise analysis methods and resources to construct the environment for such analysis are provided.

Conclusion: Leading the innovation and pushing thel lead further away should be one of the skills of the radiologist in order to survive in the era of field competitions and artificial intelligence thread. We should make friends with technology and opportunities it offers.

Keywords: Voxelwise, spm, vbm, group analysis

O-095

MRI STUDIO, VOLBRAIN AND MRICLOUD: FREE RESOURCES FOR PROCESSING BRAIN MRI

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Abstract

Objective: Changes in volume of certain structures of brain in health and disease may be measured and analysed. Also construction and visualisation of fiber tracts and obtaining quantitative data such as fractional anisotropy or mean diffusivity may add some benefits to our research. Our aim was providing the ways to free resources and demonstrating how to use them efficiently.

Materials and Methods: MRI studio which allows construction of fiber tracts or determine numeric values such as FA or MD or provide visualisation tools obtained from group analysis of data and allow them to be projected onto anatomical images is introduced and a pipeline for analysis is demonstrated. Also obtaining volume information of various cortical, subcortical and white matter structures via Volubrain and MRI cloud is demonstrated.

Results: New opportunities for research on MRI of brain in health and disease by free resources is demonstrated step by step with accompanying screenshots.

Conclusion: Volbrain, MRIcloud and MRI studio are free applications which provide important tools for neuroradiological research

Keywords: Volubrain, MRI studio, brain volumes, fiber tracts

O-096

FLOW EVALUATION WITH 3D SPACE T2 AND 3D CISS SEQUENCES IN CASES WITH CYSTOCISTERNOSTOMY IN 3T MRI

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Abstract

Objective: This study aimed to evaluate stoma and flow patency with 3D SPACE T2 and 3D CISS sequences in cases with cystocisternostomy in 3T MRI.

Materials and Methods: Sixty two patients (23 female, 39 male) with endoscopic cystocisternostomy who underwent 3T MRI units to determine flow patency between 2007 and January 2018 were reviewed retrospectively. The examination was evaluated together with the patients previous examinations. Primarily,flow and function in cystocisternostomy stoma, preoperative and postoperative arachnoid cyst volume difference and postoperative complications were evaluated. Findings were classified as open and functional, minimal flow, closed. It was compared with postoperative results in cases we reported as closed. Arachnoid cysts were classified according to localization.

Results: The mean age of patients was 12.2 years (age range 2-44). A total of 106 examinations of 63 patients were evaluated. Flow pattern in 1 patient was not evaluated optimally due to motion artifact. It was excluded from study. In 13 patients, cystocisternostomy stoma was noted as closed.

Conclusion: 3D SPACE T2 and 3D CISS sequence in cases with cystocisternostomy are effective for evaluation of flow patency.

Keywords: Cystocisternostomy, 3D SPACE T2, 3D CISS, magnetic resonance imaging, cerebrospinal fluid

O-097

DIAGNOSTIC VALUE OF APPARENT DIFFUSION COEFFICIENT (ADC) IN DISTINGUISHING HAEMANGIOMAS FROM MALIGNANT VERTEBRAL LESIONS

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Abstract

Objective: The aim of the study was to assess the values of ADC in vertebral haemangiomas and malign vertebral deposit in correlation with conventional MRI sequences.

Materials and Methods: A total of 81 patients with vertebral metastasis in 33 and vertebral haemangioma in 48 on abdominal MRI at our unity between January 2016 and Agust 2017 were retrospectively evaluated in this study. All imaging procedures were performed at 1.5T and 3T MRI scanners. The vertebral lesions categorized as an malign deposit or haemangioma on conventional MRI sequences. To investigate the association between ADC values and lesion types, ADC values of malign deposits and the haemangioma were compared between the two groups. Mann-Whitney U test between the two groups were performed. Discriminative values of ADC for haemangioma and malign deposit were assessed using ROC curves analysis.

Results: Mean ADC values were higher in the haemangioma group ($1.22906\times10^{-6}mm^2/s\pm29.34$) than the malignant group ($0,42994\times10^{-6}mm^2/s\pm29,03$) ($p<0.01$). There was a statistically significant difference between mean ADC of haemangiomas and malign lesions in 1,5T and 3T MR, respectively ($p<0.01$, $p<0.01$). There was no statistically significant difference in the mean ADC of vertebral haemangiomas on 1,5T and 3T MRI ($p=0.85$). Similiarly, there was no statistically significant difference in the mean ADC of malign deposit on 1,5 T and 3T MRI ($p=0.85$). The best cutoff values for mean ADC were $0,956\times10^{-6}mm^2/s$. The AUC was 0.95 with 83.3% sensitivity and 93.9% specificity.

Conclusion: First, there is statically mean ADC difference in the haemangiomas and malign deposit. Second, there is no difference haemangiomas and malign deposit mean ADC values on 1.5T or 3T MRI.

Keywords: Haemangioma, ADC, malign deposit

O-098

UNUSUAL CEREBELLOPONTINE ANGLE MASS: MRI FINDINGS GUIDE

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Abstract

Objective: Imaging is necessary to make differential diagnosis of cerebellopontine angle masses (CPA), describe extent of lesions and effect to cranial nerves, planning to surgery. Menengiomas and vestibular schwannomas are most common lesions. However some rare masses, only account for less than 1% each, like cavernoma, metastasis, chordoma, vascular lesions like aneurysm or paraganglioma can occur that location. The aims of this presentation are characterization and differentiation of unusual CPA masses with computer tomography (CT) and magnetic resonance imaging (MRI).

Materials and Methods: CPA is subarachnoid space, centered by internal auditory canal contains cranial nerves (from 5. cranial nerve to 9. Cranial nerve) and associated vessels. CPA lesions cause similar symptoms according to effect of cranial nerves and vascular structures related to mass effect, so preoperative diagnosis is possible only by imaging and unusual lesions are challenging to diagnose.

Results: CT and MRI are the modalities of choice for diagnosis of CPA lesions. It is important to begin with assessment of its intra or extra-axial origin to narrow the differential diagnosis. CT attenuation, adjacent bone reaction, signals characteristics at conventional and advanced MRI techniques and contrast enhancement are key imaging features to differentiate these lesions. After that we need to describe to origin location of masses, skull base or cistern.

Conclusion: Radiologist plays major role to diagnose CPA masses, especially unusual ones. Contrast enhancement, shape, and origins with CT, conventional MRI and data from advanced technique like diffusion-weighted imaging (DWI) and perfusion imaging, it is easy to evaluate CPA lesions.

Keywords: Cerebellopontin angle, cisternography, internal auditory canal

O-099

COMPARISON OF FETAL BRAIN MRI AND POSTNATAL BRAIN IMAGING FINDINGS: WHERE DID WE GO WRONG?

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Abstract

Objective: To compare fetal brain magnetic resonance imaging (fbMRI) with the postnatal brain imaging findings (transfontanel ultrasound (TFUS), MRI, computed tomography (CT)) and to demonstrate the strengths and shortcomings of fbMRI in the clinical management of the neonatal period.

Materials and Methods: In this retrospective institutional review board (IRB) approved clinical study, we analyzed fbMRIs and included fetuses with postnatal (1st year) imaging findings. Exclusion criteria were non-diagnostic image quality of the fbMRIs. The mean gestational age of the fetuses was 28.4 weeks at the time of the fetal MRI. The images were retrospectively analyzed by two experienced radiologists in consensus.

Results: Twenty-six cases were included in this study. For postnatal imaging 19 of them had TFUS, 6 had brain CT, and 5 had brain MRI. 3 cases had normal pre and postnatal brain imaging findings. 15 cases had central nervous system anomalies (CNS) in the fbMRI and normal postnatal brain imaging findings. CNS anomalies in the fbMRI and postnatal brain imaging were the same for 6 cases. 2 cases had additional anomalies in the postnatal brain imaging. The most common pathologies on the fbMRIs were ventriculomegaly (VM) (n=12), mega cisterna magna (n=3), and choroid plexus cysts (n=2). Of the 12 cases with VM, 10 had normal postnatal imaging findings.

Conclusion: Although fbMRI is a well-established and widely used valuable prenatal imaging, it has shortcomings. Therefore, the clinicians should be notified about the potential cases that have postnatal follow-up imaging indication.

Keywords: Fetal brain magnetic resonance imaging, central nervous system anomalies, postnatal brain imaging, transfontanel ultrasound

O-0100

3T MR ANGIOGRAPHIC EVALUATION OF WILLIS POLYGON VARIATIONS USING VOLUME RENDERED-3D IMAGES

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Abstract

Objective: To evaluate the Willis polygon variations using 3T MR angiography volume-rendered 3D (VR-3D) images.

Materials and Methods: We retrospectively reviewed the cranial MR angiography (CMRA) images of 153 patients who were referred to our radiology clinic between January 2017 and February 2018 for various initial diagnosis such as headache, stroke. The axial images obtained with the TOF-3D-multislab method were transferred to a separate workstation. Volume-rendered 3D (VR-3D) images were created for each patient on this workstation using 3D software (Synapse, Fuji Medical Systems, Tokyo, Japan). These images and axial slices were analyzed for variations as posterior communicating artery (PcoA) hypoplasia / aplasia, anterior cerebral artery (ACA) A1 segment hypoplasia / aplasia, fetal posterior cerebral artery (FPCA), infundibular dilatation of PcoA, anterior communicating artery (AcoA) variations and other rare variations.

Results: The mean age of the patients was 36.65±21.70 (aged 1-79), 70 (45.8%) were female and 83 (54.2%) were male. Initial diagnosis included headache in 50%, stroke in 26%, epilepsy in 5.2%, aneurysm in 2.6% and ptosis and vasculitis in lesser proportions. 75 patients (49.01%) had a complete Willis polygon. 22.3% of the patients had unilateral and 22.9% had bilateral hypoplasic / aplasic PcoA. Unilateral hypoplasic / aplasic A1 was observed in 14.3% of the patients. FPCA was unilateral with 12.4% and bilateral with 5.2%. In addition, infundibular dilation of PcoA in 4 patients, H-shape AcoA in 3 patients, Y-shaped AcoA in 1 patient and fenestration in different localizations in 4 patients were detected.

Conclusion: CMRA images are widely evaluated with 3D MIP images. VR-3D images along with CMRA images can be used to evaluate Willis polygon variations.

Keywords: 3T MRI, Willis polygon, volume rendered

O-0101

MRI FEATURES AND ASSOCIATED ANOMALIES OF TETHERED CORD SYNDROME

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Abstract

Objective: Tethered cord syndrome (TCS) is a congenital childhood disease, which can also be seen in adults. If it is isolated, named as the primer, if accompanied by other anomalies, named as the secondary TCS. The aim of this study was to describe magnetic resonance imaging findings and accompanying anomalies with TCS of 240 patients.

Materials and Methods: MRI examination and associated anomalies of 240 patients with TCS were evaluated retrospectively between 2012 and 2017. Pediatric and adult age groups were assessed separately also.

Results: There were 114 pediatric and 126 adult patients. The female to male ratio was 2,2 (74 male, 166 female). The mean age was 25 years. The most frequent localization level of the conus was L4 (22%). Syringohydromyelia was found in 91 patients (37%), diastematomyelia in 85 patients (35%), lipoma in 29 patients (12%), myelomeningocele in 25 patients (%10), lipomeningomyelocele in 3 patients (1%), dermal sinus in 24 patients (10%), perinoeural cysts in 18 patients (7%), hemivertebrae in 16 patients (7%) and butterfly vertebra in patients (4%).

Conclusion: TCS is a complex syndrome may be associated with spinal abnormalities. MR is very useful in the evaluation of the TCS, identify accompanied lesions and evaluate associated bony dysraphisms.

Keywords: Magnetic resonance imaging, spinal dysraphism, tetheret cord syndrome

O-0102

PARAVERTEBRAL MUSCLE VOLUMES WITH TYPE I ADOLESCENT IDIOPATHIC SCOLIOSIS PATIENTS

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Abstract

Objective: Adolescent idiopathic scoliosis (AIS) is the most common abnormality effecting spine in pediatric patients. Muscle imbalance has been suggested as a factor affecting the static and dynamic mechanical properties. Previous studies including patients with high Cobb angles showed the fatty infiltration of muscles at different levels. The aim of this study was to compare the paravertebral muscle volumes at convex and concave sides and to analyze the relationship between the Cobb angles and the paravertebral muscle volumes among patients with type I ASI.

Materials and Methods: The magnetic Resonance Imaging (MRI) studies of the 24 patients having a diagnosis of type I ASI with a Cobb angle lower than 25 ° from January 2015 to January 2018 were retrospectively included in the study. Measurements were done at at the level of the apical vertebra, upper end vertebra, and lower end vertebra.

Results: 12 of the patients demonstrated thoracic convexity to the right and 12 of the patients showed thoracic convexity to the left. The mean Cobb angle of the major thoracic curve was 22,21°.When the mean paravertebral muscle volumes at convex and concave sides were compared, it only showed significant difference at lower end vertebra level ($p=0.01$). There was a negatively ($r=-0.31$, $p\leq0.05$) correlation between the Cobb angle and the paravertebral muscle volume at concave side. There was also a good positive correlation at the lower end vertebra level on convex side ($r=0.78$, $p\leq0.05$).

Conclusion: Our results suggested that muscle volumes could be affected among patients with type I ASI.

Keywords: Magnetic resonance imaging, paraspinal muscles, scoliosis

O-0103

1P36 DELETION SYNDROME: NEURORADIOLOGIC FINDINGS

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Abstract

Objective: 1p36 deletion syndrome is the most common subtelomeric chromosomal deletion syndrome, with an estimated incidence of 1/5000-1/10000 at birth. Beside skeletal, genitourinary, gastrointestinal and cardiac anomalies patients often have severe neurological deficits. Diagnosis is suggested by clinical findings like characteristic facial appearance, global developmental delay and confirmed by detection of deletion of the most distal band of the short arm of chromosome 1(1p36). In previous studies polymicrogyria and periventricular nodular heterotopia have been linked to critical regions within 1p36. In this study we present the neuroradiologic analysis of our cases of 1p36 deletion syndrome.

Materials and Methods: We evaluated retrospectively MR examinations of patients with 1p36 deletion syndrome confirmed with genetic analysis who were followed up and treated by our Pediatric Genetic Department.

Results: The study group consisted of 9 patients (F/M: 7/2) with a mean age of 17 months (min/max: 0.5/51months).We detected hypoplasia of the corpus callosum in all patients, abnormal multifocal T2 patchy signal in cerebral white matter in 7 patients (77%), ventriculomegaly in 7 patients (77%), enlargement of subarachnoid space in 5 patients (55%), delayed myelination in 2 patients (22%), cerebral atrophy in 1 patient and basiocciptal hypoplasia in 1 patient. 2 patients (22%) had bilateral frontoparietal and perisylvian polymicrogyria.

Conclusion: Neuroimaging reveals bilateral polymicrogyria, hypoplasia of the corpus callosum, ventriculomegaly and abnormal patchy T2 hyperintensities

in the cerebral white matter. In patients with characteristic facial appearance, global developmental delay, neurological deficits and bilateral polymicrogyria, 1p36 deletion syndrome should be included in differential diagnosis.

Keywords: 1p36 deletion syndrome, magnetic resonance imaging, polymicrogyria

O-0104

PERFUSION MRI OF PRIMARY CENTRAL NERVOUS SYSTEM LYMPHOMAS; WHAT PERFUSION GRAPHICS TELL US?

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Abstract

Objective: Differentiation of malignant brain tumors using MRI is still a challenging problem in routine clinical practice. Primary central nervous system lymphomas (PCNSL) and glioblastomas (GB) may show similar imaging features in conventional MRI. Perfusion MRI is adjunctive tool for evaluating brain tumors. DSC perfusion MRI is the mostly used perfusion MRI technique for brain tumor characterization. Diagnostic utility of contrast leakage patterns in DSC perfusion MRI is shown in brain neoplasms. The aim of this study was to analyze rCBV values of PCNSLs and GBs and, also evaluate perfusion graphics in DSC perfusion MRI.

Materials and Methods: A retrospective study was performed including 21 patients with 26 brain tumor lesions. Mean rCBV of tumor core and peritumoral region in 13 PCNSL and 13 GB lesions were evaluated. Perfusion graphics were generated from ROIs placed in solid and/or enhancing part of tumor and peritumoral T2 hyperintense region. Perfusion curves were classified as returning to baseline, T1 dominant contrast leakage and T2* dominant contrast leakage. The curve types were compared with histology.

Results: Mean rCBV of tumor core in PCNSLs and GBs were 1.59 and 3.11 respectively. Mean rCBVof peritumoral areas in PCNSLs and GBs were 0.67 and 0.98 respectively. Nine lesions showed T1 dominant leakage, 4 lesions showed a curve patern of returning to baseline, and 13 lesions showed T2* dominant leakage.

Conclusion: Tumor core and peritumoral regions show higher rCBV values in GBs. T1 dominant leakage is predominantly seen in PCNSLs. This may be a useful sign for differentiation PCNSLs from GBs.

Keywords: Perfusion, glioblastoma, lymphoma

O-0105

MICROSTRUCTURAL WHITE MATTER ABNORMALITIES IN PATIENTS WITH MODERATE OBSTRUCTIVE SLEEP APNEA: A DIFFUSION TENSOR IMAGING STUDY USING TBSS ANALYSES

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Abstract

Objective: Previous diffusion tensor imaging (DTI) studies showed axonal and myelin damage in multiple white matter (WM) fibers in patients with severe obstructive sleep apnea (OSA). However, it is not clear whether there are WM changes in OSA people with moderate disease. The aim of this study is to investigate microstructural WM abnormality using DTI in untreated and newly diagnosed moderate OSA patients.

Materials and Methods: The study included in 21 moderate OSA patients (5 females, 16 males, mean age: 44.3±7.6 yr, mean AHI: 21.3 events / hour) and 21 age and sex matched controls, (16 males, mean age: 45.1±8.1 y). Following DTI, tract-based spatial statistics (TBSS) were used to investigate differences in fractional anisotropy (FA), apparent diffusion coefficient (ADC), axial diffusivity (AD), and radial diffusivity (RD) between the moderate OSA patients and control group.

Results: Compared with the control group, TBSS showed significant ADC reduction in corpus callosum, corona radiata, internal / external capsule, and superior longitudinal fasci- ulus in patients with moderate OSA ($p<0.05$). Compared with the control group, in addition to ADC reductions in white matter in moderate OSA patients, FA decrement and RD increment were detecded in extensive white matter tracts including cerebral peduncle, posteior thalamic radiations, fornix, superiorfronto-occipital fasciculus and sagittal stratum. Additionally FA reductions were also observed on middle cerebellar peduncle, tapetum and corticospinal tract ($p<0.05$). There was no difference in AD values between the control group and moderate OSA patients ($p>0.05$).

Conclusion: In our study, we showed an injury in the white matter tracts that regulate memory, attention, respiratory, autonomic, cognitive, and emotional functions in the patients with moderate OSA. The results of this study showing the increase in RD values without any AD change sassociated with loss of myelin integrity in moderate OSA patients suggests that myelin is more affected than axons and susceptible to hypoxia in moderate OSA patients.

Keywords: Obstructive sleep apnea, diffusion tensor imaging, tract-based spatial statistics, fractional anisotropy, apparent diffusion coefficient, radial diffusivity

O-0106

DIAGNOSTIC CONTRIBUTION OF SUSCEPTIBILITY-WEIGHTED IMAGING IN CENTRAL NERVOUS SYSTEM SUPERFICIAL SIDEROSIS

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Abstract

Objective: Superficial siderosis (SS) is a rare condition defined as hemosiderin deposition along the leptomeninges in the superficial layers of the

brain as a result of recurrent subarachnoid hemorrhage. This study aimed to investigate the contribution of SWI to the diagnosis of SS and to determine underlying causes of it.

Materials and Methods: T2-weighted turbo spin-echo (TSE) and SWI images of 16 patients with SS were evaluated retrospectively. Distribution, involvement pattern, the possible etiological cause of SS were reviewed on both T2-weighted TSE and SWI images. Diagnostic performance of T2-weighted TSE and SWI images were compared in the light of literature.

Results: SS pattern was diffuse in 14, focal in 2 patients. The localization of SS was limited in posterior fossa in 6, supratentorial compartment in 9 patients. One patient had involvement on both sides. A total of 16 patients, the cause of SS was found as vascular pathologies in 4, cerebral amyloid angiopathy (CAA) in 5, prior brain surgery in 2, brain metastasis in 1, methotrexate treatment in 1, and neurocysticercosis in 1. The cause of SS in two patients was not found. SS along with the leptomeninges in 616(37.5%) and parenchymal microhemorrhages in all CAA patients (31.2%) were only seen on SWI images. SWI also showed one developmental venous anomaly and one cavernous malformation in separate patients which have not been seen in T2-weighted TSE images.

Conclusion: SWI is an essential MRI technique for determining the presence of SS and its spread. It may also be useful in detecting microhemorrhage and additional vascular anomalies.

Keywords: Susceptibility weighted imaging, superficial siderosis, MRI, Hemorrhage

O-0107

EVALUATION OF TOXIC EFFECTS OF CHEMOTHERAPY IN NON-SMALL CELL LUNG CANCER ON CEREBRAL WHITE MATTER USING DIFFUSION TENSOR IMAGING (DTI)

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Abstract

Objective: Examination of cerebral white matter alterations caused by chemotherapy (CT) in non-small cell lung cancer patients using DTI.

Materials and Methods: Patients are divided into three groups according to the received chemotherapy regimen: patients who took Cisplatin (group1), Carboplatin (group 2), and the other medications (group 3). Patients were scanned with a 1.5T MR equipment. Regions of interest along the following localizations were drawn bilaterally for evaluation of FA and ADC: inferior longitudinal fasciculus (ILF), superior longitudinal fasciculus, forceps minor (FM), anterior thalamic radiation, anterior corona radiata, external capsule, inferior fronto-occipital fasciculus, genu and splenium of corpus callosum, cerebral white matter in frontal (FWM) and parieto-occipital regions (PWM). AD, MD and RD indices were calculated using eigenvalues.

Results: In the analysis of pre-and postCT DTI data of the group 1, there was a significant increase in FA value of the right ILF. (p=0.028). There was significant change in FA and RD values of the right FM (p=0.025 and p=0.017, respectively), and AD and MD values of right FWM (p=0.006 and 0.029, respectively) in the group 2. In the analysis of the differences between group 1 and 2 we found increase of FA in the right ILF (p=0.053), and AD in the right FWM (p=0.021).

Conclusion: We concluded that in comparison of two CT regimens in NSCLC, WM changes like axonal degeneration and de-/dysmyelination may be more prominent in the fasciculi involving executive and cognitive functions in patients who received Cisplatin.

Keywords: Cancer chemotherapy protocols, carboplatin, cisplatin, diffusion tensor imaging, lung neoplasia

O-0108

CAN UNENHANCED MRI BE AN ALTERNATIVE FOLLOWING INCIDENTALLY DISCOVERED MENINGIOMA

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Abstract

Objective: Incidentally discovered small meningiomas are usually followed. Contrast enhanced CT and MRI are generally used in imaging for meningiomas. In the last time, There are some concerns about the use of gadolinium-based contrast agents. The purpose of this study is to investigate whether there is a difference in measurement between contrast enhanced T1W and the T2W series in MRI. Contrast-enhanced MRI images of 30 consecutive meningioma patients (20 female, 10 male, 33-85 years, mean 64.1 years) were evaluated by two independent radiologists. Meningioma sizes were measured as three dimensions by each observer in contrast T1A and T2E sequences. The average volume was calculated from the three-dimensional measurement with the formula AxBxCx0.52. Interobserver (contrast enhanced T1W and T2W) and intersequensiel correlations were performed for each observer from the calculated volumes.

Results: Two observers were found to have an average meningioma size of 10.43 cm^3 (0.15-148). The p value was 0.995 ($p < 0.01$) between contrast enhanced T1W and T2W series for the first observer and 0.997 ($p < 0.01$) between contrast enhanced T1W and T2A series for the second observer. The interobserver r value for both T2W series and T1W series were calculated to be 0.994. Correlations were quite good.

Conclusion: If the use of gadolinium is concerned, even if the renal function is borderline or abnormal, kidney functions are normal even in cases of meningioma planned for follow-up (previously known), unenhanced imaging follow-ups can be discussed as an alternative if side effects of using multiple contrasts are to be avoided

Keywords: Meningioma, follow-up, unenhanced MRI

O-0109

PATTERNS OF HEMORRHAGE OF RADIATION NECROIS IN BRAIN

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Abstract

Objective: To investigate the patterns of hemorrhage encountered on susceptibility-weighted imaging (SWI) in patients with radiation necrosis (RN) affecting brain parenchyma.

Materials and Methods: SWI images of patients who were diagnosed with RN between 2010 to 2017 were included in the study. The patients had received radiotherapy due to brain or head/neck tumors. The diagnosis of RN was made based on histopathological findings or by the lesion course on follow-up imaging. Only SWI sequence was used for detecting hemorrhage.

Results: Twenty-six lesions were detected in 21 patients. The indications for radiotherapy were brain metastasis (n=8), high grade glial tumor (n=5), low grade glial tumor (n=4), head/neck malignancies (n=3), and squamous cell carcinoma of the scalp (n=1). The mean time interval between RN and radiotherapy was 15.5 months (range, 3-84 months). The mean follow-up was 20.4 months (range, 1-84 months) following the diagnosis of RN. Petechial hemorrhages were found extending from center to periphery of the lesion with ring appearance on SWI images in twenty-two lesions (85%). In the remaining four lesions we detected nonspecific nodular foci of hemorrhage.

Conclusion: Differentiation of RN from tumor progression could be challenging. We found a unique hemorrhage pattern on SWI images that could be characteristic for RN. We consider that this pattern of hemorrhage occurs as a consequence of perivenular petechial hemorrhages which are reported to be encountered in patients with RN in the literature. However, further studies investigating the imaging differences between the patients with RN and histologically proven tumor recurrence, are warranted to support our results.

Keywords: Radiation necrosis, hemorrhage, brain

O-0110

MORPHOMETRIC STUDY OF BRAIN STRUCTURES IN FULL-TERM NEONATES BY CRANIAL SONOGRAPHY AND MAGNETIC RESONANCE IMAGING

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Abstract

Objective: Cranial sonography (CS) was introduced into neonatology in the 1970s, the non-invasive nature of ultrasonography makes it an ideal imaging technique. The ability to be performed at bed side without disturbing infants and other is produce images without radiation. Structural brain abnormalities and intracranial findings in premature infants are routinely evaluated on CS. However, routine morphometric measurements are uncertain in full-term healthy infants. The aim of this study was to evaluate and compare the normal morphometric measurements of third, right and left lateral ventricles (LV), biventricular (BV) diameter, diameter of the genu, body, splenium of corpus callosum (CC), anteroposterior (AP) diameter of CC and biparietal (BP) diameter with CS and magnetic resonance imaging (MRI).

Materials and Methods: 131 healthy fullterm infants prospectively examined with CS through the anterior fontanelle on coronal and sagittal images by two radiologists. 46 fullterm infants brain retrospectively examined with MRI by a neuroradiologist.

Results: The mean value of the genu, body, splenium and AP diameter of CC was 4,8 mm, 3 mm, 4.4 mm, 43.54 mm on CS and 4.5 mm, 2.9 mm and 4.3 mm, 42.39 mm on brain MRI, respectively. The mean value of the BP, BV, third, right and left LV was 87.2 mm, 24.57 mm, 2.35 mm, 1.48, 1.48 on CS and 87.76 mm, 22.65 mm, 2.4 mm, 1.8 mm, 1.9 mm on MRI, respectively.

Conclusion: Routine morphometric measurements have not compared with CS and MRI yet. In our study, both techniques significantly permit safe and multiple serial scans to evaluate intracranial structures ($p<0.001$).

Keywords: Cranial sonography, brain MRI, morphometric measurement

O-0111

SPINAL FRACTURE CHARACTERISTICS IN ANKYLOSAN SPONDYLIT AND THE CONTRIBUTION OF MR IMAGING

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Abstract

Objective: Susceptibility to weak trauma has increased due to severe ankylosis that occure at the spine in Ankylosing spondylitis. The trauma affects the anterior-medial and posterior vertebral column due to the change of mechanical load distribution on the spine. We aimed to describe the fracture patterns and the contribution magnetic resonance imaging of ankylosing spondylitis trauma cases in our study.

Materials and Methods: Computed tomography (CT) and magnetic resonance (MR) images of 16 ankylosing spondylitis patients which with archived recorded trauma history were evaluated. Localization of fractures, affected bones and joints were classified. Spinal cord injury, presence of epidural hemorrhage, and ligament rupture associated with fractures were evaluated on MR images. Data were analyzed using SPSS 18.

Results: In 16 male patients, the most frequent cervical region (43%), the second most affected thoracic region (31%), 43% of the cases were listesis developed and 75% had the entire anterior-mid-posterior vertebral column. Fractures of the facet joints were most detected in the posterior column fractures (68%). It was seen that 5 of 8 cases with vertebra corpus fracture were in the cervical region. In cases of compression fracture, the cervical and thoracic regions are affected by 94% more. CT and MR examinations were performed in 50% of the cases. 37% cord pressure, 31% myelopathy, 37% ligament damage and 25% epidural hemorrhage were determined.

Conclusion: Fractures affecting the Vertebra corpus in Ankylosing spondylitis, extending into the posterior elements and take in the whole vertebral column. Ankylosing spondylitis fractures are instable, and therefore CT imaging is important to define the localization of the fractures, MR imaging is important to define spinal cord injury and epidural hematoma.

Keywords: Ankylosing spondylitis, trauma, computed tomography, magnetic resonans imaging

O-0112

THE MESENCEPHALONE INDEX CONTRIBUTION TO DIFFERENTIAL DIAGNOSIS OF PARKINSONISM SUBGROUPS

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Abstract

Objective: Early distinction between parkinsonian disorder subgroups is important because of differences in prognosis and treatment response. An accurate method for the diagnosis is needed. The purpose of our study was to assess morphologic changes of brainstem in the evaluation of parkinsonian disorders.

Materials and Methods: MRI of 14 patients with possible PSP, 43 patients with PD, 8 patients with probable MSA-P, and 45 age-matched controls were recruited in this retrospective study. Diagnoses were confirmed clinically. The pons area (P), mesencephalon area (M), middle peduncle width (MCP), superior peduncle width (SCP), and peduncle angle (PA) were measured from T1-MPRAGE images. In additon to this the P/M ratio, MCP/SCP ratio, the previously defined MR Parkinsonism Index [PI=(P/M).(MCP/SCP)] and also index that we termed the Akdeniz Index was calculated [AKI=(P/M).(PA/180)]. Two blinded radiologists evaluated all MR images. Interrater and interobserver variations were also measured.

Results: There was a statistically significant difference among the three groups. Further statistical evaluations showed that significant difference was due to results of PSP and PD patients. M and SCP were significantly smaller in PSP patients than PD patients otherwise P/M ratio, MCP/SCP ratio and PA were significantly larger in patients with PSP. PI and AKI indices were significantly higher in the PSP group than in the PH and MSA groups. When PI and AKI were compared, similar sensitivity and specificity values were obtained.

Conclusion: AKI ande PI can help distinguish patients with PSP from those with PD. However, because of the easy of measurement and the higher agreement between measurements, we believe that the use of AKI is appropriate.

Keywords: Parkinsonian disorders, PSP, progressive supranuclear palsy

O-0113

HISTOPATHOLOGICAL AND IMMUNOHISTOCHEMICAL ANALYSIS OF THE EFFECTS OF MAGNETIC RESONANCE CONTRAST AGENTS ON THE SPINAL CORD TISSUE OF RATS

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Abstract

Objective: Since the end of the 1980s, gadolinium-based contras agents (GBCAs), which are commonly used as contrast agents in magnetic resonance (MR) imaging systems, have been reported to cause accumulation in tissues, primarily the kidneys. Although linear nonionic (Gadodiamide) GBCAs were reported to play a role in multiple organ toxicity, it has been reported in recent studies that macrocyclic ionic (Gadoteric acid) GBCAs also cause toxicity in tissues. Under the light of this information, we aimed in this study to investigate histopathological and immunohistochemical effects of linear nonionic and macrocyclic ionic GBCAs on the spinal cord connecting the central nervous system and the peripheral nervous system.

Materials and Methods: In the study, 32 male Sprague dawley rats were used and were divided into four groups. No attempt was made to the healthy control group (Group 1). Serum physiologic 0.2 ml/kg was applied on the serum physiologic group (Group 2). After applying the contrast agent to the Gadodiamide group (Group 3) and Gadoteric acid group (Group 4) for five weeks with 0.2 ml/kg for four days a week from the tail vein, the groups were left untreated for five weeks. At the end of the tenth week, the rats were anesthetized, and samples were taken from the spinal cord. Measurements of gray-white ore areas in hematoxylin and eosin-stained spinal cord incisions after fixation (10% formalin) and routine histological follow-up were performed by two blinded histopathologists who were not at the tissue tracing stage. The data obtained by measurement of 40 different fields in each incision were evaluated by one-way ANOVA and Duncan test. $p<0.05$ was considered significant for all measurements.

Results: Control group neurons and oligodendrocytes cells were observed to be in normal structure. Perikaryons of neurons and oligodendrocytes cells were observed to be normal in the serum physiological group samples. In the samples of Gadodiamide and Gadoteric acid groups, perikaryons and oligodendrocytes were present in typical structure and no pathology was found.

Conclusion: Repeated use of GBCAs does not cause pathological findings in the spinal cord tissue of rats. These findings do not differ according to the chemical composition of the contrast material (linear or macrocycles).

Keywords: Gadolinium-based contras agent, linear, macrocycles, spinal cord

O-0114

POSTERIOR REVERSIBLE ENCEPHALOPATHY SYNDROME FOLLOWING BONE MARROW TRANSPLANTATION

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Abstract

Objective: Following bone marrow transplantation (BMT), severe neurological complications are significant causes of morbidity and mortality. In children, hematologic diseases (esp. Acute leukemia), renal disorders, and cytotoxic drugs increase posterior reversible encephalopathy syndrome (PRES) prevalence. The limited literature of PRES in pediatric allogenic BMT patients reports a prevalence of 5.2%.

The aim of our study is to determine the prevalence of (PRES) in patients with neurological complications following BMT performed in our hospital and correlate this entity with clinical and radiological findings.

Materials and Methods: We retrospectively evaluated cranial CT and MR images 24/150 pediatric patients with neurological complications who received BMT in our hospital between January 2014-February 2018.

Results: In 8 out of 24 patients with post-BMT neurological complications, (7 males and 1 female; average=15.2 years) PRES neuroradiological findings were present. In Table 1, clinical and MRI findings are summarized. In literature, seizure symptoms are more frequent in the pediatric group of PRES cases. In our cohort symptoms of seizure were diagnosed in 5 of 8 post-BMT cases along with severe headache in 3 of 8. Hypertension with correlating MRI finding was present in 7 of 8 cases. In the first 400 days following BMT, the prevalence was reported as 20%. In our study, PRES was clinically and radiologically diagnosed in 7 cases in the first 100 days and in 1 case on the 120th day after BMT. In cranial MRIs, holohemispheric involvement was observed in 3 of 24 patients, parieto-occipital in 5 of 24, cerebellar in 3 of 24, and brain-stem in 1 of 24. Hemorrhage was present in 2 of 24. Contrast enhancement in 2 of 24. There was no diffusion restriction excluding cytotoxic edema in all our cases, in keeping with the reported literature cases.

Conclusion: In hemato-oncologic diseases, especially when hypertension, change in consciousness, or seizure is present, PRES should be considered, and appropriate supportive care should not be delayed to prevent permanent neurological sequelae.

Keywords: Bone marrow transplantation, PRES, seizure

O-0115

COMPARISION OF THE DIAMETER OF TEMPORAL HORN OF LATERAL VENTRICULE IN THE PATIENTS WITH T2 HYPERINTENSE WHITE MATTER LESIONS TO NORMAL PATIENTS

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Abstract

Objective: Our aim is to compare temporal horn of lateral ventricule of the patients with nonspecific T2 hyperintense white matter lesions to the normal patients.

Materials and Methods: There were 40 patients (28 female and 12 male patients between the ages of 30-49) with cranial magnetic resonance imaging (Siemens; Era, Erlangen, Germany). Their neurological examinations were normal.

Results: There were T2 hyperintense white matter lesions in the cranial imaging of 23 patients. Seventeen patients had no abnormal lesion in the gray and white matter.

Conclusion: The diameter of temporal horns were calculated as the average of two horns. The mean value of temporal horn was 2,6 mm in the patients with T2 hyperintens white matter lesions. The diameter of temporal horn was detected 2,3 mm in normal patients. Nonspesific T2 hyperintense white matter lesions might be a sign of early aging of the brain.

Keywords: Aging, T2 hyperintense white matter lesions, cranial magnetic resonance imaging

O-0116

THE USEFULNESS OF SUSCEPTIBILITY WEIGHTED IMAGING FOR THE DIAGNOSIS AND EVALUATION OF THIS SEQUENCE WITH THE OTHER SEQUENCES

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Abstract

Objective: My aim is to search the role of the susceptibility weighted imaging (swI). I also searched the role of the other sequences.

Materials and Methods: There were 108 cranial imaging (Siemes Era, Erlangen, Germany) of the patients with the ages of 0-92.

Results: There were 8 new lesion with hemorrhage or calcification. I cannot detect 3 of them in the other sequences. Four of them (grater than 4 mm) were detected in the b0 of diffusion weighted imaging and T2 wighted imaging. One lesion (a capiilary telangiectasia) was only detected swi and T1 imaging after contrast material.

Conclusion: Swi is useful for the detection of the lesions with calcification or hemorrhage especially lesser than 4 mm.

Keywords: Swi, cranial magnetic resonance imaging, diffusion

O-0117

ROLE OF PERITUMORAL APPARENT DIFFUSION COEFFICIENT VALUES IN DIFFERENTIAL DIAGNOSIS OF GLIOBLASTOMA FROM SOLITARY METASTASIS

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Abstract

Objective: It is often difficult to differentiate a solitary brain metastasis from glioblastoma based on conventional magnetic resonance (MR) imaging characteristics alone. On the other hand, some features like peritumoral edema volume and mass effect can be used in differential diagnosis. Pathological researches showed that there are malign tumor cells in peritumoral edema of glioblastom, while there is none

in peritumoral edema of metastasis. Based on this information, we can expect that "apparent diffusion coefficient" (ADC) values may differ in peritumoral area of glioblastoma and metastasis. The purpose of our study to evaluate the effect of peritumoral ADC values in differential diagnosis.

Materials and Methods: We retrospectively reviewed MR images of patients with glioblastoma (n=26) or metastasis (n=18). Only patients with intra-axial supratentorial solitary metastatic lesion were included to metastasis group. ADC values measured in peritumoral area (adjacent to tumor border) in three different location using region of interest (ROI) in 1 cm diameter and mean values were calculated. Additionally, cerebrospinal fluid (CSF) ADC values were measured with same ROI for correction. Statistical analyses were performed with SPSS 15.

Results: Mean peritumoral ADC values were found 1.1×10^{-3} mm^2/sn in glioblastoma group and 1.4×10^{-3} mm^2/sn in metastasis group. Mean corrected values (peritumoral ADC/CSF ADC) were 0.38 in glioblastoma group and 0.11 in metastasis group. There was statistically significant difference between two groups in corrected ADC values (p=0.001).

Conclusion: Measurement of peritumoral ADC values may contribute to the differential diagnosis of solitary brain metastasis from glioblastoma.

Keywords: Apparent diffusion coefficient, glioblastoma, metastasis, differential diagnosis

O-0118

ASSESSMENT OF HEMORRHAGE AND PARAMAGNETICAL SUBSTANCE ACCUMULATION IN BRAIN METASTASES BY SUSCEPTIBILITY WEIGHTED IMAGING (SWI)

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Abstract

Objective: It has been reported that differential diagnosis of cerebral metastases can be made by evaluating intratumoral susceptibility signals (ITSS) in susceptibility weighted imaging (SWI). In our study, we aimed to make a differential diagnosis of cerebral metastases by measuring the ITSS in the SWI sequence.

Materials and Methods: In our study, MRI images were acquired from 77 patients between October 2012 and October 2017 with intracerebral metastases (23 patients with breast carcinoma (BC), 4 patients with malignant melanoma (MM), 42 patients with lung cancer (LC) and 8 patients with gastrointestinal adenocancer (GIS)) at 1.5 T MRI in our unit. On contrast-enhanced T1 weighted images, all enhancing lesions were carefully delineated and the outline transferred to the coresponding SWI images. On SWI images, the number of the pixels containing ITSS and the number of the pixels of entire lesion were recorded. The reference value to determine pixels containing ITSS was the average intensity value of the lateral ventricle. Subsequently, the ITSS percentages of all metastases were calculated.

Results: ITSS percentages in metastases were found 22.52% in LC, 47.61% in GIS, 11.85% in BC and 60.75% in MM. When the diagnostic value of ITSS percentages were compared in between tumor types, the area under the curve between LC-GIS was 0.734, the sensitivity was 0.61 and the specificity was 0.79. Values were found respectively 0.808, 0.75, 0.76 between LC-MM; 0.589, 0.83, 0.40 between LC-BC; 0.634, 0.50, 0.92 between GIS-MM; 0.818, 0.83, 0.69 between GIS-BC and 0.884, 0.95, 0.75 between MM-BC.

Conclusion: In terms of differential diagnosis of the ITSS percentages measured in the SWI sequence, the diagnostic performance was very good between MM-BC, good between MM-LC, GIS-LC and GIS-BC, and poor between LC-BC and GIS-MM. Percentages of ITSS has high sensitivity and specificity values to make a differential diagnosis between GIS-LC, GIS-BC, MM-BC and MM-LC

Keywords: SWI, malign melanoma, brain metastases, hemorrhage

O-0119

ABSENT NIGROSOME 1: DIAGNOSTIC ACCURACY IN PARKINSON DISEASE

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Abstract

Objective: Newly recognised anatomic structure called nigrosome 1 include intense dopaminerjic neurons and absent in Parkinson disease (PD) bilaterally or unilaterally was depicted especially in 7 Tesla MRI researchs. We aim to demonstrate diagnostic accurancy of absent nigrosome 1 on substantia nigra in PD at 3 Tesla.

Materials and Methods: 46 subject including 26 healty control and 21 parkinson disease enrolled to the study. All subject underwent MRI scan include susceptibility weighted imaging (SWI) in addition to conventional sequences. SWI sequence was obtained parallel to the fourth ventricle.

Results: All healty control subject except one subject was showed nigrosome 1 bilaterally. In PD group 1 patient showed bilateral nigrosome 14 showed controlateral absent nigrosome and in 6 patient showed absent nigrosome bilaterally. Absent nigrosome 1 showed high sensitivity and specificity in PD diagnosis ($p<0.05$).

Conclusion: Altough PD diagnosis was based on clinical findings newly recognised anatomic structure nigrosome 1 could be used in PD diagnosis in controversial cases.

Keywords: Nigrosome, parkinson disease, SWI

O-0120

A COMPARATIVE STUDY ON MAGNETIC RESOANCE VENOGRAPHY WITH T2SPACE SEQUENCE MRI

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Abstract

Objective: The relationship between MR venography MRI using TOF (time of flight) sequence and T2Space sequence MRI technique was investigated in this study.

Materials and Methods: 37 patients with the clinical preliminary diagnosis of sinus vein thrombosis who applied to the radiology clinic evaluated 55 intracranial sinus veins. The hypoplasia of the vein, hypoplastic vessel diameters, determine to the thrombotic vessel and thrombosed vessel diameters were investigated by two radiologists. Statistical analysis was performed using SPSS after the data were collected.

Results: There was no significant difference between two tests with McNemar test in vessel hypoplasia study. The hypoplastic vessel diameters were analysed by Student-T test and no statistical difference was found (p=0.519). There was no significant difference in the analysis of dependent groups by the McNemar test in the thrombosis detection study (p=0.375). There was no significant difference between the two tests with Wilcoxon test to finding thrombosed veins.There was no significant difference between the T2Space and MR venogram tests in the measurement of thrombosed vessel diameters. There was significant correlation between two tests (p=0.001).

Conclusion: There was no significant difference between T2Space sequence and MR venogram obtained with TOF MRI technique in the hypoplastic vein, the detection of the thrombotic vein and thrombotic and non-thrombotic vessel diameters. There was no superiority between two MRI sequences. According to the obtained results, both MRI technique can be used instead of each other.

Keywords: Sinus vein thrombosis, T2space, venography, MRI

O-0128

EVALUATION OF GRAY MATTER HETEROTOPIES WITH MRI IN THE PEDIATRIC AGE GROUPS

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Abstract

Objective: Gray matter heterotopes are neuronalmigration disorder that describe the abnormal location of cortical neurons. We aimed to determine gray matter heterotopes causing epilepsy, developmental retardation and mental retardation in children by magnetic resonance imaging (MRI) examination, and classification possible additional malformations.

Materials and Methods: In our center, brain MRIs of the cochleas evaluated with the pre-diagnosis of epilepsy, mental retardation and developmental retardation between 2013-2017. Conventional MRI images were obtained with a 1.5 T or 3-T MR device (MagnetomAvantoorMagnetomSkyra: Siemens Healtcare, Erlangen, Germany). Patients were studied by obtaining spin echo T1AG, T2AG and FLAIR (fluid attenuated inversion recovery) AG images on axillary, coronal and sagittal planes with coils suitable for the imaging table. General anesthesia was applied to some age groups for imaging.

Results: A total of 400 cases pre-diagnosed with epilepsy, mental retardation and developmental delay were reviewed. Gray matter heterotopy was detected in 21 cases (5%). 10 of them were male, 11 of them were female. The cases were between 1-18 years of age (mean age 6.5 years). 13 of them were nodular, 3 of them were laminar and 4 of them were band heterotopia group, 1 had both nodular and laminar koponent. There were additional anomalies in 5 of the patients. 2 of them had polymicrogri-pachygly, 2 of them had schizencephaly and corpus callosum agenesis and only one had corpus callosum agenesis. Six of the heterotopic gray matter foci were located in the periventricular white matter, 11 in the subepandimal wall, and 4 in the subepandimal wall and periventricular white matter. Nine of the cases had both hemispheres and 12 had single hemispheres.

Conclusion: Heterotopes may be clinically asymptomatic; but may cause epilepsy, developmental delay, and mental retardation. These patients need to be recognized by radiologists.

Keywords: Heterotopia, MRI, gray matter

O-0129

PRELIMINARY STUDY: WHAT IS T1 TIME MEASUREMENT IN PATIENTS WITH NORMAL CONVENTIONAL CORONARY ANGIOGRAPHIC EXAMINATION BUT ISCHEMIC SYMPTOMS?

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Abstract

Objective: To evaluate the possible changes in myocardium with native T1 mapping method in patients with normal coronary angiography examination but with chest pain and positive exercise stress tests.

Materials and Methods: Cardiac MR examinations were performed in 1.5 tesla MR machine (OPTIMA MR 450, GE) for 20 patients with ischemic symptoms but normal conventional coronary angiography between December 2016 and June 2017. Myocardial T1 maps were acquired by SMART T1 (saturation method using adaptive recovery times for cardiac T1 mapping) in short-axis orientations. Native T1 times were evaluated manually. Patients with any additional (amyloidosis, DM, hemochromatosis, cardiomyopathies) disease that may affect myocardial native T1 time of study were excluded. The age range of the patient is between 22-56 years and the average age is 40 years.

Results: On short axis images obtained from the apical, midventricular, and basal levels, it was noted that the T1 time was significantly higher than normal myocardium as a result of manual measurements made to 17 cardiac segments.

Conclusion: Patients with positive exercise stress tests and chest pain but with normal conventional coronary angiography examination shows myocardial tissue T1 time prolongation. In these patients, even if fibrosis with late myocardial enhancement is not observed in myocardium, early treatment and close monitoring should be applied.

O-0130

INVESTIGATION OF EFFECTIVENESS IN DETERMINING HEMORRHAGE, CALCIFICATION AND VASCULAR ANOMALIES IN MRI OF CHILD BRAIN WITH ADDING SUSCEPTIBILITY WEIGHTED IMAGING TO CONVENTIONAL SEQUENCES

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Abstract

Objective: To investigate the efficacy of adding SWI sequence to conventional sequences in pediatric brain imaging to demonstrate calcific or hemorrhagic focus and abnormal venous structures, the usage areas of SWI in pediatric patients, the characteristics of SWI signals, sequence-specific artifacts and pitfalls.

Materials and Methods: We retrospectively examine the images of pediatric patients who had pathologic signal foci on SWI sequence, with different pre-diagnosis MRI between 31.07.2017 and 22.01.2018. The foci are classified as homogeneous paramagnetic, primer paramagnetic, homogeneous diamagnetic and primer diamagnetic. Classification of lesions as calcification or hemorrhage was made in the context of CT and conventional MR images, medical history and clinical information including laboratory, pathology results. These foci have been investigated in conventional sequences. The focus higher than 100 HU on CT were accepted as gold standard for calcification. Descriptive statistical methods were used to classify the data. Chi-square test was used for agreement of conventional sequences and SWI. Chi-square test was used to compare the calcific foci observed on CT with conventional sequences and SWI. In the chi-square test, values below $P < 0.05$ were considered to be statistically significant.

Results: On SWI images 287 hypointense focuses were found. 135 of these foci were classified as diamagnetic or calcification, 149 as paramagnetic or hemorrhagic focus, and 13 as vascular anomaly. There are 6 signal changes on T1 WI, 11 signal on T2 WI and 7 signal on FLAIR the presence of foci that support calcification. Totaly 13 (approx. 9.6%) of the 135 diamagnetic focus were appeared in conventional sequences. There are 19 signal changes on T1 WI, 20 signal on T2 WI and 15 signal on FLAIR the presence of foci that support hemorrhagi. Twenty-five (approx. 16.7%) were selected on conventional sequences from a total of 149 signal changes. Only one of the vascular anomalies observed in thirteen patients on the conventional sequences was showed. There are 143 calcification focus on CT images. On SWI this was 135. Eight calcified foci could not be distinguished on SWI. A Chi-square test was used to compare the efficacy of SAG-added conventional sequences in detecting calcification with the efficacy of conventional sequences only in detecting calcification, and the p value was found to be 0.001. The signal is more heterogeneous proportional to the increasing dimension on phase images.

Conclusion: We observed that on SWI calcification or bleeding products have significant determined, because of the nature of hemorrhagi focus may be heterogeneous, involve some artifacts and have been shown heterogeneity is associated with the focal dimension of the foci and at the same time the sequence may be an important diagnostic tool in the diagnosis of venous anomalies.

Keywords: Pediatric neuroimaging, susceptibility weighted imaging, paramagnetism, diamagnetism

O-0131

QUANTITATIVE ANALYSIS OF HEALTHY LIVER AND KIDNEY USING A NATIVE T1 MAPPING IN CHILDREN

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Abstract

Objective: T1 mapping is a technique to quantify tissue T1 relaxation time for assessing fibrosis of organs. The purpose of this study is to determine native T1 relaxation times of liver and kidney in healthy children with MOLLI T1 magnetic resonance imaging(MRI).

Materials and Methods: Healthy subjects referred for abdominal MRI were examined with MOLLI T1 sequence. Native T1-maps were acquired in a single axial slice through liver and coronal slice through kidneys. Reference values were recorded with region of interest measurements by two radiologists for assessing interobserver reliability.

Results: Mean native T1 values for liver were 709.47±126.54 and 691.43±80.02 msec, for right kidney cortex(RKC) were 1111.33±170.19 and 1178.63±192.71 msec, for right kidney medulla (RKM) were 146786±177.58 and 1441.88±258.64 msec, for left kidney cortex (LKC) were 1174.81±207.18 and 1501.54±254.64 msec, for left kidney medulla (LKM) were 1508.57±182.99 and 1166.04±180.14 msec, respectively. Interobserver reliability was good for liver measurements (ICC: 0.512), were moderate for RKC and LKC and LKM (ICC: 0.772, 0.705, and 0.684, respectively), and excellent for LKM (ICC:0.89) with statistically significant differences ($p<0.05$ for all parameters). There were no significant correlation between age, body mass index (BMI) and T1 relaxation times.

Conclusion: T1 mapping is a reliable method for assessing pediatric liver and kidney parenchyma without using a contrast media and may be used as a diagnostic tool to distinguish between normal variants and pathological conditions.

Keywords: T1 mapping, children, liver, kidney, pediatric T1 mapping

O-0132

ASSESSMENT OF BRAIN DIFFUSION-WEIGHTED IMAGES AT 3 TESLA MRI IN CHILDREN WITH NEPHROTIC SYNDROME, PRELIMINARY RESULTS

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Abstract

Objective: To compare ADC values obtained from different regions of brain parenchyma in normal children with children with nephrotic syndrome (NOS) via brain diffusion-weighted images.

Materials and Methods: This prospective study was planned from January 2017 to July 2017 with 15 children with a mean age of 10.8±2.3 (7-15) who were diagnosed with nephrotic syndrome at the pediatric nephrology clinic and 15 healthy children of the same age group that accepted as a control group. We performed non-contrast brain MR and diffusion MR examinations with 3T MRI scanner (Magnetom Skyra, Siemens Healthcare, Erlangen, Germany) in both groups. Brain MRI scans were evaluated for parenchymal lesions. The diffusion images obtained with b0 and b1000s/mm2 were analyzed with 0.25 cm^2 ROIs for ADC measurements bilaterally from perirolandic white matter, anterior and posterior centrum semiovale, anterior and posterior corona radiata, periatrial white matter, internal capsule anterior and posterior limbs, corpus callosum genu and splenium, mesencephalon, dorsal and ventral pons, caudate nucleus, putamen, thalamus, cerebellar white matter and dentate nuclei. ADC values were compared for differences between the NOS group and the control group.

Results: There was a significant difference between the ADC values measured from right internal capsule, left perirolandic white matter, left thalamus, left cerebellar dentate nuclei ($p<0.05$ for all). The ADC values in these regions were lower in the patient group.

Conclusion: Nephrotic syndrome, as a primary renal pathology, may also cause diffusion changes in some areas of the brain parenchyma. Further research with more patients is needed to better define this issue.

Keywords: Nephrotic syndrome, 3T MRI, DWI

O-0133

THE UPPER ABDOMEN MR-MR CHOLANGIOGRAPHY AND CT FINDINGS OF THE CHILDREN WHO HAD PANCREATITIS

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Abstract

Objective: The study aims to evaluate the imaging findings of children with pancreatitis, especially MR cholangiography.

Materials and Methods: The upper abdomen MR-MRCP and CT images of the children who had pancreatitis between 2008-2018 in the pediatric gastroenterology clinic of Dr. Sami Ulus Children's Hospital were retrospectively reviewed.

Results: The mean age of the 46 patients who were diagnosed with pancreatitis was 10,5 years (2-17,5) and 52,1% were male. 22.2% of the patients had recurrent episodes of pancreatitis (≥2). The most common etiologies were 39% idiopathic, 13% stone, 10,9% infection, 10,9% congenital anomaly, 6,5% drug, 6,5% trauma, 6,5% dyslipidemia, 6.5% other were noted. Upper abdominal MR-MR cholangiography was performed in 20 patients (43.5%) and CT images were obtained in 9 patients (19.6%). Along with the findings of MRCP and CT, ERCP were performed under an intention to treat in eleven patients (23.9%). Seventeen patients (36.9%) were followed up with USG and recovered in a short time, and no further imaging was performed. Upper abdomen MR-MRCP and CT images revealed 75.9% pancreatic thickening, 48.3% parenchymal heterogeneity-T2AG signal increase. Additionally images showed peripancreatic dirty fat tissue in 72.4%, peripancreatic collection in 58.6%, and intraabdominal ascites in 48.2% of the patients. MRCP and CT findings explained the stones in the biliary tract and/or pancreatic duct in 24.1%, dilated biliary ducts in 27,6%, and dilated pancreatic ducts in 34.5% of the patients. Pseudocyst formation occurred in 2 patients (6.9%).

Conclusion: The comprehensive assessment of pancreatitis is based on clinical, laboratory and imaging evaluation. MRI is an excellent noninvasive modality to detect and to stage the severity of inflammatory processes. The development of complications of pancreatitis such as hemorrhage, pseudocysts, abscesses, and venous thrombosis are well-demonstrated by MRI which is an inalienable radiological modality by the clinicians.

Keywords: Pancreatitis, MR cholangiography, children

O-0134

COEXISTENCE OF PERSISTENT FALCINE SINUS AND VARIOUS CLINICORADIOLOGICAL CONDITIONS: MRI FINDINGS

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Abstract

Falcine sinus is a rare variation of the venous pathway between the dural layers of the falx cerebri, and it is a normal anatomic structure that typically closes before birth. Persistent falcine sinus (PFS) extremely rarely occurs in isolation from sinus thrombosis and congenital anomalies. PFS is associated with absent or hypoplastic straight sinus. PFS has been widely reported in pediatric patients. In the literature, it has been reported that persistent falcine sinus may coexist with various conditions including atretic parietal encephalocele, galen vein malformations, arteriovenous malformations, corpus callosum agenesis, osteogenesis imperfecta, acrocephalosyndactyly, dysplastic or absent tentorium cerebelli, bilateral giant parietal foramen, and Chiari type II malformation. In this presentation, we aimed to report the MRI findings of 16 patients with various pathological conditions accompanying the rarely encountered PFS. Five patients had atretic parietal encephalocele, 3 had arteriovenous malformation, 1 had total corpus callosum anomaly, 1 had osteogenesis imperfecta, 1 had cloverleaf skull anomaly, 1 had cerebellar hypoplasia, 1 had Apert syndrome, 1 had focal gray matter heterotopia, and 1 had Chiari type II malformation. One patient had isolated PFS. The patients had an age range of 1 month to 15 years. Nine patients were male and 7 were female. Five patients underwent MR venography examination in addition to conventional MRI. MR imaging, particularly with the help of sagittal images, greatly helps for making the diagnosis of PFS, and it can also detect most of the underlying malformations. It should be remembered that PFS may coexist with many different clinical conditions.

Keywords: Anomalies, brain, magnetic resonance imaging, persistent falcine sinus

O-0138

"PULMONARY VEIN SIGN" IN PATIENTS WITH SUSPECTED PULMONARY EMBOLISM ON MAGNETIC RESONANCE IMAGING

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Abstract

Objective: In pulmonary embolism (PE), hypodense filling defect in pulmonary veins due to decreased perfusion on computed tomography angiography was defined as "pulmonary vein sign (PVS)". Herein, we aimed to evaluate PVS for PE diagnosis in magnetic resonance imaging (MRI) sequences.

Materials and Methods: Sixty-four patients who underwent MRI both with unenhanced steady-state free precession (SSFP) and contrast-enhanced 3-dimensional gradient echo (3D-GRE) sequences for suspected PE constituted the study population. The PVS was defined as the presence of > 2 cm hypointense filling defect in a pulmonary vein. Two observers who were unaware of the patients clinical findings and final diagnosis (PE +/-) assessed images for the presence of PVS by consensus. Diagnostic performance of PVS was calculated using patients final diagnoses for PE as reference. In addition, presence of pleural effusion and atelectasis-linear bands were investigated.

Results: Forty-one patients (64%) had a final diagnosis of PE. The PVS was detected in one patient (2.4%) on 3D-GRE and 6 patients (14.6%) on SSFP. Sensitivity, specificity, accuracy, positive and negative predictive values of PVS on SSFP were 15%; 95.8%, 45.3%, 85.7%, and 40.3%, respectively. A statistically significant correlation was found between atelectasis-linear bands and presence of PE ($p=0.011$, $r=0.313$) .

Conclusion: We suggest that presence of PVS and atelectasis-linear band on MRI may contribute the diagnosis of PE in patients with suspected PE, especially in unenhanced MR images.

Keywords: Pulmonary vein sign, embolism, MRI