384. CT findings: educational posters

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The evaluation of pulmonary involvement pattern in high resolution computerized tomography of patients with rheumatoid arthritis in Iran from 2010-2011

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RA is a chronic systemic disease Pulmonary involvement is the most frequent manifestations of rheumatoid arthritis. The goal of this study was to assess pulmonary involvement pattern in patients with RA by HRCT Scan in Bandar-abbas.

Methods: In this prospective study fifty patients with RA referred to rheumatology clinic in Bandar abbas were evaluated. Data were obtained included: age, sex, duration of disease, methotroxate usage, smoking, pulmonary chronic disease, clinical symptoms of pulmonary involvement and patient self assessment. After clinical and laboratory investigations, HRCT were performed.

Results: Mean age of 49.3 years. Three patients with respiratory symptoms and 47 patients without pulmonary complaint. The most frequent pulmonary involvement in HRCT findings sub pleural fibrosis (26%) and followed by air trapping and mosaic pattern (20%), pleural thickening (14%), honey combing (10%), pulmonary nodules (8%), pribronchial thickening (8%), ground glass pattern (8%). Bronchiectasis (8%), Alveolar (2%) and reticular pattern (2%). There was no statistically significant relationship between lung involvement pattern and, rheumatoid factor positivity, Anti ccp and methotroxate usage but correlation between HRCT findings and age, duration of the disease, disease activity (DAS 28) and respiratory symptoms was significant ($P<0.05$).

Conclusion: The results of our study indicate HRCT was useful for evaluation of pulmonary involvement in patients with RA although these patients had no respiratory symptoms. Larger and prospective studies are needed to assess of lung involvement pattern in HRCT in asymptomatic RA patients.

P3560

Computed tomography findings of pulmonary nocardiosis at diagnosis

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Computerized tomography (CT) plays an important role in the diagnosis of pulmonary nocardiosis (PN), allowing earlier detection and better characterization of the abnormalities than does chest radiography. The aim of the present study was to review reported radiographic clues to the diagnosis of PN at the time of initial presentation. A computerized database search was performed to find all cases of PN, confirmed positive culture, in patients at our institution over the last 11 years. Twenty six patients (n=26) with PN were identified. Patients without CT scan available at initial presentation (n=2) and patients with concurrent diseases involving the lungs and pleura were excluded (n=2). For the remaining 22 patients [median age: 46 years (range, 21 to72 y)], standardized radiographic features were recorded. Some form of immunosuppression was present in 95% of the cases. Preexisting structural abnormalities of the lung were uncommon (COPD: 2). CT features of PN included one or more nodules/masses (16 patients, 73%), airspace consolidation/infiltrates (12 patients, 55%), pleural effusion/thickening (9 patients, 41%), mediastinal lymphadenopathy (6 patients, 27%), diffuse interstitial pattern (4 patients, 18%), chest wall extension (2 patients, 9%). Cavitary lesions with/without internal low attenuation including nodules, masses, or airspace disease, occurred in 64% of the patients. CT findings of PN in immunocompromised patients are pleomorphic and not specific. CT findings consist predominantly of nodules/masses and cavitary lesions without any significant zonal or anatomic distribution. Diffuse interstitial patterns also occur. Pleural effusions are quite common, and lymph nodes may be enlarged.

P3561

Impact of aspiration pneumonia in community-acquired pneumonia and healthcare-associated pneumonia

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Background: Aspiration pneumonia is ranked as a considerable etiology in community-acquired pneumonia (CAP) and healthcare-associated pneumonia (HCAP). However, its frequency and role have not been fully evaluated due to difficulties in the diagnosis.
Objective: To determine the frequency of aspiration pneumonia in CAP and HCAP, and to evaluate its impact on the outcome among these patients with acute pneumonias.
Methods: We defined aspiration pneumonia as the following conditions: having risk factors for aspiration pneumonia, including dysphagia due to neurological disorder, mechanical obstruction of the airways and disturbance of consciousness, and also showing lung gravitational opacities in chest CT. Clinical features, microbiology, and outcomes in total 637 patients with CAP (n=417) and HCAP (n=220) were retrospectively analyzed.
Results: Forty-six (11%) patients with CAP and 102 (46%) patients with HCAP met the definition of aspiration pneumonia ($p<0.001$). The severity score (CURB-65) was higher in HCAP patients (median 3.0, interquartile range; IQR 1.0) than in CAP patients (median 2.0, IQR 1.0; $p<0.001$). The treatment failure due to resistant pathogens was more frequently seen in HCAP (9.5%) than in CAP (3.4%, $p=0.001$). In the entire patients with pneumonias, a multivariate analysis indicated that aspiration pneumonia was associated with 30-day mortality (adjusted hazard ratio 4.263, $p=0.001$) after adjusting for other variables.
Conclusion: Aspiration pneumonia may be a significant predictor of mortality in both patients with CAP and HCAP. Therefore, it would be better for the treatment guidelines for CAP and HCAP to adopt a concept of objectively-defined aspiration pneumonia.

P3562

Thin-section computed tomography findings of patients with acute Streptococcus pneumoniae pneumonia with and without concurrent infection

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Objectives: To compare the pulmonary thin-section computed tomography (CT) findings of patients with acute Streptococcus pneumoniae pneumonia with and without concurrent infection.
Methods: The study group comprised 86 patients with acute S. pneumoniae pneumonia, 36 patients with S. pneumoniae pneumonia combined with Haemophilus influenzae infection, 26 patients with S. pneumoniae pneumonia combined with Pseudomonas aeruginosa infection, and 22 patients with S. pneumoniae pneumonia combined with methicillin-susceptible Staphylococcus aureus (MSSA) infection. We compared the thin-section CT findings among the groups.
Results: Centrilobular nodules and bronchial wall thickening were also significantly more frequent in patients with pneumonia caused by concurrent infection (H. influenzae: $p<0.001$ and $p<0.001$, P. aeruginosa: $p<0.001$ and $p<0.001$, MSSA: $p<0.001$ and $p<0.001$, respectively) than in those infected with S. pneumoniae alone. Cavity and bilateral pleural effusions were significantly more frequent in cases of S. pneumoniae pneumonia with concurrent P. aeruginosa infection than in cases of S. pneumoniae pneumonia alone ($p<0.001$ and $p<0.001$, respectively) or with concurrent H. influenzae ($p<0.05$ and $p<0.001$, respectively) or MSSA infection ($p<0.05$ and $p<0.05$, respectively).
Conclusions: When a patient with S. pneumoniae pneumonia has centrilobular nodules, bronchial wall thickening, cavity or bilateral pleural effusions on CT images, concurrent infection should be considered.

P3563

The features of high resolution CT (HRCT) in patients with respiratory symptom due to gastroesophageal reflux disease (GERD)

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Rationale: GERD is well known as one of cause for chronic cough. Gastric acid refluxed stimulates the esophagus and airways, then it induce cough with or without inflammation. This study aimed to evaluate the features of HRCT in patients with GERD.
Materials and methods: Ten consecutive patients (6 males and 4 females) with various symptoms, 7 of cough, 3 of sputum, 2 of heart burn, and one of sore throat. They underwent HRCT using a MDCT. Eight of them underwent gastrointestinal fiberscopy and were diagnosed, 4 of GERD with reflux esophagitis, one of sliding hernia, and 3 of normal findings. All of patients were medicated with proton pump inhibitor, H2 blocker, and mosapride citrate hydrate, and improved with their symptom after two weeks.
Two radiologist (H.I. and M.I.), who were board-certified by Japan Radiological Society, diagnosed and estimated image quality with their consultation. They observed some findings, ground glass opacity (GGO), bronchial wall thickening (BWT), centrilobular nodule (CLN), consolidation, and esophageal sliding herniation (ESH), expected definitely old inflammatory change.
Results: One of the patients was observed a finding as normal in HRCT. HRCT depicted the features, 6 of GGO, 5 of CLN, 2 of BWT, one of consolidation, one of SH in 9 patients. GGO were frequently observed in 5 of 7 patients with chronic cough. The findings of GGO existed in bilateral in all of 5, in lower lobe in 4, in upper lobe in 2, and in middle lobe in one.
Conclusion: The HRCT findings of GGO were frequently observed in patients with chronic cough due to GERD.

P3564

Chest CT findings in patients with angioimmunoblastic T-cell lymphoma

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Background: Angioimmunoblastic T-cell lymphoma (AILT), a subtype of peripheral T-cell lymphoma, is an aggressive disorder representing approximately 2% of non-Hodgkin lymphomas. Most of the patients with AILT present with pyrexia, weight loss, lymphadenopathy, splenomegaly, skin rushes, and various thoracic involvements. However, there have been few reports of thoracic images in patients with AILT.
Objective: To determine the characteristics of the thoracic involvements in AILT.
Method: The clinical and radiological data of 7 patients [6 males and 1 female, median age: 74 (65-78) years old] with pathologically-diagnosed AILT between 1998 and 2011 were retrospectively analyzed.
Results: The most common manifestations in onset were pyrexia and swelling of the cervical lymph nodes. Radiographic findings of the chest included mediastinal and hilar lymphadenopathy (seen in 7/7 patients), pleural effusion (5/7), thickening of the bronchovascular bundles (5/7), ground-glass opacities (5/7), consolidation (2/7), and pericardial effusion (1/7). Two patients (2/7) developed interstitial pneumonia after chemotherapy-induced remission, and one of the two patients underwent a surgical lung biopsy and showed cellular and organizing interstitial pneumonia.
Conclusion: AILT is a rare type of non-Hodgkin lymphoma, however, chest physicians should be aware that thoracic involvements are frequently seen in this disease.

P3565

Chest HRCT findings in non-smoking, asymptomatic elderly subjects with normal echocardiogram and pulmonary function tests

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Background: The study of the normal ageing process is becoming more important as life expectancy increases. To our knowledge, no studies reporting chest HRCT findings in asymptomatic, non-smoking elderly subjects with both normal echocardiogram and PFTs were conducted.
Objectives: To describe chest HRCT findings in a population of asymptomatic, non-smoking elderly subjects with normal echocardiogram and PFTs.
Methods: After institutional approval, patients over 65 years old recruited from the Geriatrics outpatient clinic were studied and compared with normal volunteers under 50 years old. Written consent was obtained. Participants were submitted to a questionnaire, echocardiography and PFTs for assessing absence of disease, and afterwards submitted to chest HRCT. Scans were interpreted and findings were scored, including pulmonary nodules, cysts, parenchymal bands, interlobular septal thickening, reticular opacities and bronchiectasis. Non-parametric tests were used for the statistical analysis, with $P<0.05$ representing statistical significance.
Results: The HRCT findings of 53 asymptomatic subjects over 65 years old (mean age 74,6 yrs) were compared with those of 24 volunteers under 50 years old (mean age 35,7 yrs). The prevalence of abnormal scans was higher in the elderly (84,9% vs 12,5%, $P<0.001$). Comparing both groups, significantly more elderly subjects had scans with parenchymal bands (35 vs 3; $P<0.001$), interlobular septal thickening (12 vs 0; $P=0.014$) and lung nodules (10 vs 0; $P=0.026$).
Conclusion: Parenchymal bands, interlobular septal thickening and lung nodules are present in asymptomatic elderly subjects and may represent normal ageing of the lungs.

P3566

Thoracic manifestation of myeloperoxidase-antineutrophil cytoplasmic antibody (MPO-ANCA)-related disease: CT findings in 149 patients

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Objective: The purpose of this study was to assess pulmonary CT findings in patients with myeloperooxidase-antineutrophil cytoplasmic antibody (MPO-ANCA)-related disease.
Materials and methods: The pulmonary CT scans of 149 patients with elevated serum MPO-ANCA levels (77 with microscopic polyangiitis, 18 with Churg-Strauss syndrome, 12 rapidly progressive glomerulonephritis and 42 with unclassified disease) were retrospectively assessed with regard to parenchymal and mediastinal abnormalities.
Results: The CT findings consisted of ground-glass attenuation in 110 Patients (74%), consolidation in 67 patients (45%), traction bronchiectasis in 46 patients (31%), and honey combing in 46 patients (31%).Consolidation, thickening of bronchovascular bundle, interlobular septal thickening, and pleural effusion were more frequently observed in patients with classified disease than in those without an unclassified disease. Honeycombing was more frequently observed in patients with unclassified disease than in those with classified disease.
Conclusions: The CT findings in patients with MPO-ANCA consisted mainly of ground-glass attenuation, consolidation, and traction bronchiectasis. Consolidation, thickening of bronchovascular bundle, interlobular septal thickening, and pleural effusion were more frequently observed in patients with classified disease than in those with unclassified disease. In contrast, honeycombing was more frequently observed in patients with unclassified disease than in those with classified disease.

P3567

Sarcoidosis; the great mimicker: A CT study

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Purpose: Assessing manifestations of sarcoidosis in chest CT to make clinicians and radiologists consider this disease in daily practice.
Material and methods: CT and HRCT scans of 59 patients with biopsy-proven sarcoidosis were reviewed.
Results: Many of the classical findings including bilateral hilar and paratracheal adenopathy and parenchymal involvement like bronchovascular bundle thickening, nodularity, fibrobronchiectatic and fibrocavitary changes affecting upper and middle zones as well as pleural thickening were noted as previously mentioned by others.
But what highlights our study, is the interesting uncovering of 30.5% unilateral and 45.8% bilateral asymmetric parenchymal involvement, also scattered parenchymal metastasis-like nodules (20.3%), Patchy ground glass opacities mimicking BOOP (33.9%), the galaxy nodular pattern (11.9%) and enlargement of main pulmonary artery (23.7%).

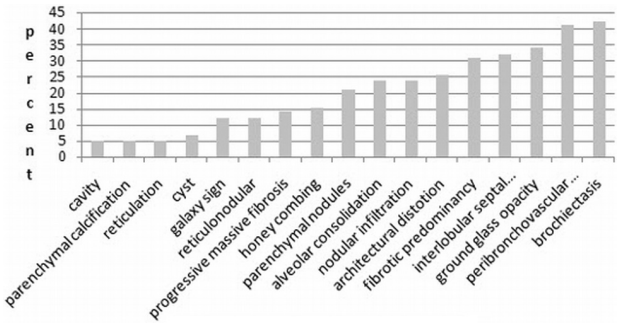

Figure 1. Parenchymal manifestations.

Parenchymal manifestations are shown in Fig. 1.
In addition to the usual widely known mediastinal lymphadenopathy stations, we found a considerable amount of involvement in subcarinal (55.9%), paraesophageal (22%), and 6.8% intraparenchymal lymph nodes and the least common pulmonary ligament lymph nodes (1.7%).
Conclusion: Sarcoidosis can present with unusual findings in uncommon sites so whenever looking at a pulmonary CT we should ask: "Am I dealing with sarcoidosis?

P3568

MDCT differences between cardiac edema, viral pneumonia and ARDS

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Purpose: Acute respiratory distress syndrome (ARDS) is a type of severe, acute lung dysfunction affecting all or most of both lungs that occurs as a result of illness or injury. The main radiological problem is to see differences with cardiac edema or viral pneumonia. Main purpose is to show possibilities of MDCT in detection of important differences.
Methods: We examined 356 patients with ARDS, 656 with viral pneumonia and 456 with cardiac edema. Patients were examined by 16/64 MDCT using virtual bronchoscopy, perfusion and pulmonary angiography. There were 194 male and 162 female patients from 13 to 82 years with ARDS; 303 male and 353 female with viral pneumonia, 9 to 54 years; 201 male and 255 female, 54 to 76 years old.
Results: ARDS was caused by injury in 204 cases and with acute illness in 148 cases. 6 cases were without known cause, probably drug abuse. Patients were with hypoxia, PF ratio was less than 200 and all had bilateral x-ray changes. The usual diagnostic approach is to perform standard x-ray of the lung but in cases of bilateral pneumonia it is impossible to determine changes from ARDS and from pneumonia; also if patients have cardiac problems in history it is not necessary that they do not have ARDS. There are 2 major radiological differences: first is quality of alveolar fluid and second is condition of alveolar wall. Also important differences are in condition of airways and blood vessels.Different diagnosis was made in 18.9% of patients.
Conclusion: Fast diagnoses for patients in critical care units are vital to patient life. MDCT with virtual bronchoscopy, perfusion and pulmonary angiography can give us fast answer and prediction. MDCT can be performed in patients with mechanical ventilation.

P3569

Unusual form of pulmonary sequestration – Make your diagnose from abdominal ultrasound

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Introduction: Bronchopulonary sequestration is a rare congenital malformation of the lower respiratory tract consisting of non-functioning lung tissue that recieves its blood supply from the systemic circulation.
Aims and objectives: To evaluate clinical and diagnostic aspects in a case diagnosed primarily by abdominal US.
Methods: Evaluation was done by US, color doppler, MRI and Xray.
Results: A 12 year old girl was admitted to US due to unspecific abdominal pain and a systolic auscultation.
In US and CCDS a stenosis of aorta, renal arteries and mesenteric arteries could be excluded. A thick, aberrant arterial vessel was seen, running paravertebal up to the diaphragm (Fig.1).
MR and MR-A showed an atypical artery running from the celiac axis to a sequestrated lung tissue area and than communicate to lung veins.
Discussion: Sequestrations are characterized by their location, connection to pulmonary or other structures, vascular supply, and association with other abnormalities. If the celiac axis is envolved a bronchopulmonary-foregut malformation (BPFM) should be considered.
Differential diagnosis, clinical consequences and therapeutic options will be discussed.

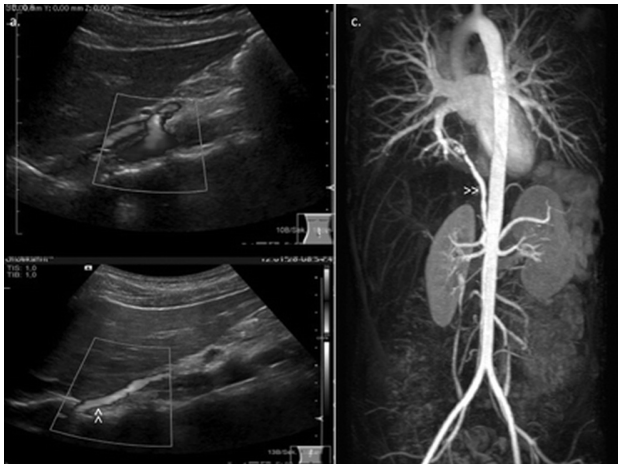

Figure 1. Abdominal Ultrasound (CCDS) and MR-Angiography showing an aberrant vessel from the celiac trunk to a lung sequester in the right lower lobe.

Conclusions: In cases with aberrant vessels going up to the diaphragm a sequestration of the lung should be considered.