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OP/C/1

Diagnostic value of connective tissue disease related CT signs in usual interstitial pneumonia pattern of interstitial lung disease

Dr Antony Augustine	Christian Medical College, Vellore
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Background: Usual interstitial pneumonia (UIP) pattern of interstitial lung disease (ILD) can have varied aetiology, with connective tissue disease (CTD) being a common known cause. The anterior upper lobe (AUL) sign, exuberant honeycombing (EHC) and straight edge (SE) sign are recently described CT signs in CTD related UIP.

Aim: We test the diagnostic value of these CT signs for CTD in patients with UIP and compare the incidence of these signs between CTD related UIP and non CTD related UIP.

Methods: Retrospective study of all patients who had UIP pattern of ILD on CT thorax done from 1st January 2016 to 31st January 31 2019 was grouped into two groups: non CTD related UIP or CTD related UIP. CT thorax was reviewed for presence of these signs- AUL, SE, and EHC. The diagnostic values of these signs in diagnosing CTD related UIP was assessed.

Results: Of the 156 patients included, 76 had CTD. The incidence of CT signs were significantly higher in CTD related UIP . The specificity of AUL, EHC and SE were 82.5 %, 75% and 85 % respectively. The EHC sign had highest sensitivity of 48.7%. Inclusion of more than one sign increases the specificity of diagnosis of CTD related UIP, however the sensitivity decreases

Conclusions: Presence of SE, AUL and EHC signs in cases with UIP pattern are specific imaging markers to diagnose underlying CTD, however due to its low sensitivity, absence of these signs cannot exclude the same.



OP/C/2

Quantifying severity of Idiopathic ILD: Semiguantitative and quantitative methods with PFT correlation.

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	Delhi

Background:

Interstitial Lung Disease (ILD) is a heterogenous group of disorders affecting pulmonary interstitium. Disease severity is evaluated by clinical grades of shortness of breath, pulmonary function tests (PFTs) and imaging. Several imaging based scoring methods have been used to quantify the disease and prognosticate the patients.

Aim:

In this study, we assessed the correlation of visual semiguantitative scoring technique and quantitative scoring (using Pulmo 3D software) in assessing the disease severity, in comparison to PFTs.

Methods:

This was a prospective study conducted for 2 years (Nov 2017- Nov 2019). Adult ILD patients with no known aetiology (e. g. proven connective tissue disorder (CTD), known occupational exposure) were included. All patients underwent HRCT chest, pulmonary function tests (PFT), diffusion lung capacity(DLCO) and 6minute walk test(6MWT). Semiguantitative scoring for the extent of involvement of lung parenchyma was done using a visual scoring system (VSS) described by Scleroderma lung study. CT densitometry analysis was done using the Pulmo 3D CT application of Syngovia (Siemens Healthineers).

Results:

The mean age of the cohort of 122 patients was 53 years (M=59, F= 63). Higher global fibrosis scores in semiquantitative scoring were associated with poorer PFT, DLCO, 6MWT parameters (r= 0.23- 0.53(p value<0.05)). CT densitometry analysis using Pulmo 3D CT yielded parameters such as Mean Lung Density (MLD) and Standard Deviation Lung density (SD-LD). Higher values of MLD and SD-LD were associated with higher global fibrosis score (r= 0.26- 0.35(p value< 0.05)) and poorer PFT parameters (r= 0.22-0.33(p value< 0.05)).

Conclusion:

The semiquantitative scoring is a reliable technique which can be used for routinely assessing extent of disease and also in follow-up. CT densitometry analysis done using Pulmo 3D software also shows promising results. They are faster and objective methods which help in serial follow up assessment of cases. 6



OP/C/3

Diagnostic Accuracy of MRI with respect to HRCT in Connective Tissue Disease Related Interstitial Lung Disease

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Background Recent studies have shown effectiveness of MRI in differentiating inflammatory from fibrotic pulmonary changes in connective-tissue-disease related interstitial-lung-disease (CTD-ILD). But these studies have not compared MRI with clinical parameters, and no single study has validated all sequences for all morphological findings and compared their accuracy. HRCT based severity scores remain to be validated for MRI, and an MRI-ILD protocol remains to be proposed. Aims			
To determine diagnostic acc	uracy of MRI with respect to HRCT in CTD-ILD.		
To correlate MRI severity scores with clinical parameters. To propose MRI-ILD protocol			
Prospective single-center diagnostic study including 31 patients of CTD-ILD, underwent chest HRCT and MRI(1.5T) for lung evaluation. PFT and 6-minute-walk-test were recorded. Warrick-scores (sum of morphology and extent-score) were calculated for HRCT and MRI and compared. Warrick-score is sum of morphology-score & extent-score. Morphology-score includes presence/absence of ground-glass-opacity, irregular-pleura, subpleural-line, honeycombing & subpleural-cyst. Extent-score is calculated for each morphology based on number of bronchopulmonary-segments involved. Each MRI sequence was scored independently and in combination.			
Results MRI showed significant agree honeycombing(46.67%;p=0.4 ground-glass-opacities(50% honeycombing, subpleural-of 4-minute postcontrast-seque p=0.0031). Among non-contr combined-score derived from Combined-MRI-score showe FEV1/FVC(r=0.4086;p=0.02), score(0.4639;p=0.01) Conclusion	ement with HRCT for extent of subpleural-line(50%;p=0.0015), 0004), subpleural-cysts(60%;p<0.0001) and ;p=0.003). Best sequences to look for subpleural-line, cyst and ground-glass-opacities were STIR(46.67%; p=0.0194), ence(61.11%; p=0.0290), BTFE(50%; p=0.0003) & STIR(50.00%; rast MRI combined-scores, only 1/31 cases had different score than all MRI sequences (including postcontrast-sequence). ed significant correlation with FEV1(r=0.3484;p=0.05), MEF50(r=0.4203;p=0.03) & post-walk test fatigue		
MRI shows moderate, statistically-significant, agreement with HRCT and clinical-parameters in morphological and global assessment of ILD extent in CTD patients. Abbreviated MRI protocol for ILD assessment including T2, STIR, BTFE in axial planes show closest correlation with the CT-scores. Post-contrast sequences didn't contribute significantly to global-score. Thus, MRI is an attractive option for serial follow-up of CTD-ILD patients.			



OP/C/4

To assess the value of absolute signal intensity, lesion to spinal cord ratio (LSR) and apparent diffusion coefficient (ADC) values obtained from the solid and necrotic components of indeterminate pulmonary lesions in differentiating benign from malignant lesions.

Dr Shweta Singh

Christian Medical College, Vellore

Objective: To assess the value of absolute signal intensity, lesion to spinal cord ratio (LSR) and apparent diffusion coefficient (ADC) values obtained from the solid and necrotic components of indeterminate pulmonary lesions in differentiating benign from malignant lesions.

Materials and Methods: 47 patients with indeterminate pulmonary lesions detected on contrast enhanced CT of the thorax (diagnosis confirmed by histopathology/ sputum culture/ short term follow up after antibiotics), underwent MRI with T2WI and DWI (b= 0, 500, 1000 s/mm2). On DWI, the absolute signal intensity (SI), SI of the lesion as compared subjectively to that of the thoracic skeletal muscles (hypointense, isointense or hyperintense) and the LSRs were obtained following which ADC values of the solid and necrotic parts of the lesion were assessed. The values for benign and malignant lesions and were compared using the independent samples T- test. Receiver operating characteristic curves (ROC) were plotted to obtain diagnostic cut-off values. Results: Qualitative analysis comparing SI of the lesion on DWI (b=500 and 1000 s/mm2) to that of the thoracic skeletal muscle showed that most benign (N=27) and malignant lesions (N=20) were hyperintense on DWI with no significant difference between the two groups (p value = 0.590). A significant difference was seen between the absolute SI values of benign and malignant lesions on DWI (b=1000 s/mm2; p value =0.002), LSR (b=500 s/mm2; p value=0.002) and b= 1000 s/mm2; p value= 0.001) and ADC of the solid component (p value= 0.006) with no significant difference between absolute SI of the two groups on b=500 s/mm2 images (p value= 0.059).

ROC curves for LSR on DWI b=500 s/mm2 yielded a cut-off value of 1.234 with 70.0% sensitivity and 74.1% specificity (AUC= 0.761) and on DWI b=1000 s/mm2 yielded a cut-off value of 1.141 with 70% sensitivity and 85.2% specificity (AUC = 0.765). ADC values of the solid component yielded a cut-off value of 1.248 x 10-3 mm2/s with 80% sensitivity and 74.1% specificity (AUC= 0.735) with no significant difference in the ADC of the necrotic components (p value= 0.132). Higher LSR values and lower ADC values were suggestive of malignancy.

Thus, DWI is a useful, safe, non-invasive tool for evaluation of pulmonary lesions which are indeterminate on CT. In patients with high risk of complications associated with lung biopsy, these methods can help assess the likelihood of malignancy and help direct further management.

Keywords: diffusion weighted magnetic resonance imaging, b factor, absolute signal₈ intensity, lesion to spinal cord ratio, apparent diffusion coefficient, indeterminate pulmonary lesions



OP/C/5 CORRELATION BETWEEN 25 POINT CT SEVERITY SCORE AND THE INFLAMMATORY MARKERS OF COVID-19 PNEUMONIA IN ADULT PATIENTS

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ABSTRACT

BACKGROUND:

The recurrent pandemic waves of COVID-19 pneumonia is causing higher mortality and morbidity. There is need for detection of severity of disease radiologically and clinically. The study attempts to correlate the same.

AIM OF THE STUDY:

To correlate the severity of the pneumonia as represented by the deranged inflammatory markers with 25 point CT severity score.

OBJECTIVES OF THE STUDY:

1)To evaluate the role of 25 point CT severity score in screening and diagnosing of COVID-19 pneumonia.

2) To correlate the 25 point CT severity score(radiologically) with the inflammatory markers(clinically).

METHODS:

Retrospectively, the clinical and radiological data of 100 Covid-19 RTPCR positive and also the suspect patients, evaluated at Father Muller Medical College, Mangalore, over a period of 6 months (September 2020 to February 2021), were collected. Laboratory parameters which included Serum D-dimer values, Serum LDH, Serum CRP levels, Serum Ferritin levels and ESR were collected from an electronic medical record system (Back bone). The 25 point CT severity scores of the same patients reported by experienced Radiologists and the images were collected from Picture Archiving and Communication Systems(PACS). The data collected was analyzed to know if the radiological CT severity score and clinical severity were correlating.

RESULTS: The clinical data, inflammation-related laboratory results, and CT imaging features of 100 patients were summarized and analyzed. The 100 patients were divided into mild, moderate and severe according the Radiological CT Severity score (<7- Mild, 8-17-Moderate, 18-25-Severe). The patients with higher score exhibited signs of significant systemic inflammation in the form of deranged inflammatory markers like Serum LDH, Serum CRP levels, Serum Ferritin levels, ESR and deranged coagulation profile.

CONCLUSIONS:

On comparing the severity status of COVID 19 pneumonia patients radiologically and clinically, the CT severity score and the systemic inflammatory markers correlated well and CT scan of chest proved to be a noninvasive decisive method to predict the severity of disease, need for prolonged hospital stay and the prognosis.



Correlation of chest radiographic severity score with serum inflammatory biomarkers in patients with COVID-19 infection

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Background: Severe acute respiratory syndrome coronavirus (SARS-CoV)-2 is a new variant of RNA coronavirus. Majority of the data available on COVID-19 infection in the literature is focused on pulmonary Computed Tomography (CT) imaging features. However, multiple cons of using CT as an imaging adjunct have cropped up namely infection control issues due to patient transport to CT areas, lockdown of CT room after immediate decontamination especially in centres with a single CT unit, and also the lack of access to CT scan certain remote areas. Portable chest radiography (CXR) alleviates most of the aforementioned concerns and can even be used for serial follow up of disease without subjecting the patient to repeated heavy doses of radiation incurred during a CT scan. The ACR has also postulated that using portable chest radiography can play a significant role in minimizing the risk of cross-infection.

Aims: To use the chest radiographs to assess the severity of lung injury and correlate them with various serum inflammatory biomarkers.

Materials and methods:-

Inclusion criteria: Any patient over the age of 18 years with positive RT-PCR nasopharyngeal–oropharyngeal throat swab. Laboratory values of Serum Ferritin, C reactive protein, Lactate Dehydrogenase, Procalcitonin, Interleukin 6 and D-dimer. To quantify the extent of lung involvement Brixia severity scoring system was used. The lung fields were divided into six zones on frontal chest projection (AP or PA) and a score (from 0 to 3) is assigned to each zone based on the lung abnormalities detected. The scores of the six lung zones are then added to obtain an overall "CXR SCORE" ranging from 0 to 18.

Statistical Analysis: done using SPSS v25 and for the analysis, linear mixed effects regression model was applied. Non-parametric tests (Spearman Correlation) and Wilcox-Mann-Whitney U test were used to explore the correlation between the variables, as at least one of the variables was not normally distributed. The results were considered statistically significant at a p value <0.05.

Results: A total of 346 patients having 544 radiographs were included in the study out of which multiple of them were monitored under serial radiographs. The lab values for each parameter were plotted against the total lung score for 544 radiographs. All biomarkers were significantly associated (p<0.05) with the variable 'Total Lung Score'(TLS).

Our study has demonstrated a positive and statistically significant correlation between the levels of serum ferritin and total lung score such that the median TLS was higher (a value of 8) in observations with raised ferritin levels as compared to observations with normal ferritin levels (a value of 4). Significant correlation between the levels of IL-6 and total lung score has also been discovered in our study as the median TLS was higher (a value of 9) in the group with raised IL-6 levels when compared to the group with normal levels (a value of 4).

Moderate positive correlation was found between Procalcitonin and Total Lung Score such that for every 1 unit increase in Total Lung Score, the Procalcitonin decreased by 0.31 units. The median Total Lung Score was highest in the group with raised CRP levels (median value of 7) and there was also a moderate positive correlation between CRP and Total Lung Score, such that for every 1 unit increase in Total Lung Score, the CRP (mg/L) increases by 9.66 units. Similarly, the median total lung score was higher in the group with raised D-dimer levels and there was a moderate positive correlation between D-Dimer (μ g/mL) and Total Lung Score, in that that every 1 unit increase in Total Lung Score, the D-Dimer (μ g/mL) increases by 0.32 units.

Conclusion: Our study has proven a statistically significant association between the total lung score and all the serum inflammatory biomarkers thus helping in grading the severity of illness and guiding the clinicians to exercise close watch over patients with elevated severity score and biomarkers and help direct patient management. We go a step further and demonstrate that each of the biomarkers is statistically correlated with each other such that a unit change in the value of one parameter produces changes in other parameters as well as the total lung severity⁰ score.



OP/C/7

CORRELATION OF CT FEATURES WITH MOLECULAR SUBTYPES OF NON-SMALL CELL LUNG CARCINOMA

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Background: Non-small cell lung cancer is one of the most common malignancies worldwide and the main cause of cancer-related mortality. It is a clinically heterogeneous disease, with different molecular subtypes having an impact on prognosis and the probability of response to systemic therapies.

Aim: To retrospectively identify the relationship between CT characteristics and molecular mutation status in lung biopsy specimens in a cohort of the Indian population

Method: The computed tomography images of non-small cell lung carcinoma between January 2016 to January 2020 were reviewed for tumor location, size, shape, margins, internal characteristics (air bronchograms and bubble-like lucency), external characteristics (pleural tail, pleural retraction, peripheral focal emphysema, peripheral focal fibrosis), satellite nodules, pleural effusion, and lymphadenopathy. The individual features were then correlated with molecular mutation status.

Results: Among 97 patients with non-small cell lung cancer, 45 were EGFR positive, 23 ALK-positive, and 29 KRAS positive.

It was found that non-smoker females with small (p <0.01) peripheral (p <0.018) tumors showing air bronchograms (p <0.04) and bubble-like lucency (p<0.03) within are more likely to have EGFR mutation.

Round lesions (p<0.02) seen in a smoker associated with tumor nodules in the non-tumor lobe (p<0.05) are more likely to show KRAS mutation.

Young patients with a centrally located (p <0.01) tumor and large pleural effusion (p <0.002) with the absence of pleural tail (p <0.03) are more likely to have ALK mutation.

CONCLUSION: This study disclosed associations between CT features and alterations of EGFR (air bronchogram, bubble-like lucency, small lesion size), ALK (pleural effusion), and KRAS (round lesion shape, nodules in non-tumor lobes) genes.



OP/NC/1

Myriad of thoracic manifestations in systemic lymphoma

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Abstract title - MYRIAD OF THORACIC MANIFESTATIONS IN SYSTEMIC LYMPHOMA

BACKGROUND : Lymphomatous involvement of thoracic structures include nodal and extranodal manifestations. Lymphnodal involvement is most common thoracic manifestation followed by lung parenchymal involvement. Lung parenchyma shows multiple patterns with considerable overlap of manifestations which comes as a diagnostic challenge to the radiologist. Pulmonary lymphoma can be primary or secondary. Primary pulmonary lymphomas are rare and represent 0.5% of all primary lung neoplasms and 3-4% of primary extranodal NHL. The incidence of pulmonary involvement in association with extrathoracic or diffuse lymphoma is more common than primary pulmonary lymphoma – NHL is far more common disease and represents 80-90% of all secondary pulmonary lymphoma cases. Systemic lymphoma can also involve other thoracic structures like pleura, pericardium, oesophagus, heart, airway and breast.

AIM – To determine the morphological pattern of pulmonary involvement, presence of thoracic lymphadenopathy and other thoracic extrapulmonary findings in systemic lymphoma.

METHODS – Contrast enhanced computed tomography with HRCT reconstructions in 128 slice CT (SIEMENS SOMATOM) was done in patients with biopsy proven cases of lymphoma. We analysed the morphological characteristics of the pulmonary lesions and associated secondary extrapulmonary findings. RESULTS – A total of 46 patients were included in this study, out of which 31 patients [67.3%] showed nodal disease, which was the most common site of involvement. 16 patients [34.7%] showed pulmonary involvement which showed four patterns. Pulmonary nodules was the most common pattern [57%], followed by consolidation [18.7%], GGO's [18.7%] and interstitial septal thickening [6.2%]. 18 patients showed extrapulmonary involvement which included the pericardium [6.5%], pleura [15.2%], breast [2.1%], esophagus [4.3%] and vascular thrombosis [10.8%].

CONCLUSION – Contrast enhanced CT with HRCT reconstructions is a good modality to identify the different thoracic manifestations and their involvement patterns in systemic lymphoma.



OP/NC/2

Retrospective analysis of post COVID-19 sequelae on CT Thorax

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Christian Medical College, Vellore

Background:

We are presently in the midst of COVID-19 pandemic. Although CT findings in acute COVID-19 has been extensively studied, there is inadequate research about post COVID-19 sequelae and their associated findings on CT imaging.

Aim: This is a cross sectional study aimed to describe the post COVID -19 computed tomographic findings of the thorax. The primary objective is to assess the proportion

of various CT abnormalities in patients who underwent CT imaging of the thorax at least 4 weeks after the date of RT PCR confirmation of COVID-19 infection and to assess the severity of lung involvement using a semi quantitative CT scoring system. In a subgroup of patients, we will correlate the lung function tests with CT imaging parameters.

Methods:

We retrospectively analyzed all CT thorax scans done for assessing post Covid findings performed between April 2020 and August 2021, excluding those with already established lung disease. The study sample was acquired using word search from the RIS-PACS database. The data obtained was analyzed statistically to derive at the results.

Results:

In our study, we analyzed the CT imaging of the thorax for 90 patients done at least 4 weeks after their RT PCR confirmation of COVID-19 infection. The ages of the patients ranged from 21 to 89. Ground glass opacities were seen in 88.88% of the cases, subpleural bands were seen in 71.1%, rediculations in 66.66% and tractional bronchiectasis in 61.1% of the cases. Acute pulmonary embolism was present in 17.7% of these individuals.

Conclusion:

There is increasing evidence of pulmonary sequelae following COVID-19 infection. Common CT abnormalities include ground glass opacities, reticular opacities, subpleural bands, tractional bronchiectasis, consolidation. This knowledge will help in optimizing the plan for follow up of such patients.



OP/NC/3

DIFFUSE PARENCHYMAL LUNG DISEASE - THE RADIOLOGIST'S ROLE IN MAKING THE DIAGNOSIS

Dr NITISHA JAIN BJ MEDICAL COLLEGE AND CIVIL HOSPITAL AHMEDABAD

AIMS AND OBJECTIVE:

o Characterisation of pattern and distribution of various DPLD on HRCT.

o Compare the consistency rates of HRCT diagnosis and Histopathological diagnosis (Radio-Pathological correlation).

o Investigate the influence of predominant HRCT pattern and distribution on diagnostic accuracy.

MATERIALS AND METHODOLOGY: A prospective correlational study was conducted over a period of 1 year on 50 clinically and radiographically suspected cases of DPLD. They were subjected for HRCT examination on SIEMENS SOMATOM 128 multi slice CT Scanner,

Known cases of lung malignancies and previously treated cases of DPLD were excluded.

RESULTS AND CONCLUSION: HRCT is now a days considered the best imaging tool for interstitial lung diseases, as it plays a crucial investigative role. It is routinely used with excellent results to detect and assess diseases and to predict the response to therapy and likelihood of survival. A confident and accurate diagnosis of the type of DPLD can be arrived at in the appropriate clinical setting by HRCT in majority of DPLD, particularly UIP and Occupational lung diseases, where in lung biopsy can be avoided. In rest of the DPLD, HRCT can significantly narrow the differential diagnosis to direct the management.

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OP/NC/4

COMPUTED TOMOGRAPHIC IMAGING OF DEVELOPEMENTAL ANOMALIES OF PULMONARY VEINS

Dr Sanjay L Chhodvadiya

BJMC Ahmedabad

TITLE:-

COMPUTED TOMOGRAPHIC IMAGING OF DEVELOPEMENTAL ANOMALIES OF PULMONARY VEINS

AUTHOR-:- Dr. Sanjay L Chhodvadiya (final year resident)

CO-AUTHOR -Dr. P A Amin (HOD & Professor)

INSTITUTE – B. J. Medical College And Civil Hospital, Ahmedabad.

Ahmedabad, Gujarat.

CATEGORY: Oral scientific Paper presentation

OBJECTIVE:-

The goal of this study is to review pulmonary venous embryology and to present the imaging findings of a spectrum of anomalies of pulmonary venous developmental. MATERIAL & METHODS:-

100 paediatric subjects with suspected pulmonary venous abnormalities coming to U.N.Mehta institute of cardiology and research centre, affiliated to BJ Medical College and Civil Hospital Ahmedabad, underwent both 2-D echocardiography and MDCT pulmonary angiography on 128 slice SIEMENS Somatom definition AS + CT scanner machine with i.v.injection of 1-1.5 ml/kg non-ionic contrast agent and injection rate of 1.5 to 2.5 ml/sec.

Axial, coronal and sagittal reformatted images were analysed systematically for various anomalies and then data were transferred to the extended work station of Syngovia for 3D reconstructions.

RESULTS:-

From 100 cases of pulmonary venous abnormalities detected on echocardiography, CT pulmonary angiography accurately demonstrated the echocardiography findings and provided additional anatomical details and variations of surgical relevance. The results were confirmed at surgery/intervention.

MDCT provided accurate information regarding types of abnormal venous drainage in TAPVC- namely supracardiac, cardiac, infracardiac or mixed, exact course of abnormally draining veins, pulmonary vein stenosis and hypoplastic pulmonary veins. It proved more valuable as compared to 2-D echocardiography in guiding further management.

Other associated thoracic anomalies, anatomical variations; lung fields as well as visceral situs were also accurately demonstrated by MDCT.



OP/NC/5

OUT OF FIRE INTO THE FLAME: A RETROSPECTIVE STUDY OF SECONDARY LUNG INFECTIONS IN COVID PATIENTS

Dr SHAILVI	ALL INDIA INSTITUTE OF MDICAL SCIENCES,
SINGHAL	RISHIKESH

AIM:

• To look for incidence of secondary infections in patients post COVID infection.

BACKGROUND:

Covid 19 infection is a pandemic spread worldwide primarily affecting the respiratory system caused by SARS-CoV-2. It has been seen that many patients developed secondary bacterial or fungal pneumonias associated with or after recovery from Covid infection. This has further increased the morbidity and mortality related to Covid infection. HRCT chest plays an important role in identification of these secondary infections.

METHODS:

HRCT chest of 400 patients done in the month of March to June were retrospectively reviewed and correlated with microbiological results to look for development of secondary infections. Further, other complications like pneumothorax and pneumomediastinum were also evaluated.

RESULTS:

Out of 400 patients, 79 patients developed bacterial infection and 28 patients developed fungal infection which were confirmed on sputum or BAL testing. In superimposed bacterial infection, areas of lobar consolidation were see on HRCT, in fungal pneumonia, areas of cavitation were seen in most of the cases.

CONCLUSION:

As incidence of secondary infection is high in covid patients, it is essential to diagnose them early on imaging, so that appropriate early treatment can be initiated.



MDCT in Pulmonary Sarcoidosis - Typical and Atypical imaging findings

Dr. Vignesh D

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OP/NC/6

BACKGROUND - Sarcoidosis is a chronic inflammatory disease characterized development of sterile noncaseating epithelioid granulomas, diagnosis of which is made often with a combination of clinical, radiological and histological testing. The lungs are involved in approximately 95% of patients. Pulmonary sarcoidosis may manifest with various radiologic patterns of which Bilateral hilar lymph node enlargement is the most common finding, followed by interstitial lung disease. At high-resolution CT, the most typical findings of pulmonary involvement are micronodules with a peri lymphatic distribution, fibrotic changes, and bilateral perihilar opacities. Atypical manifestations, such as honeycomb-like cysts, miliary opacities, mosaic at¬tenuation, and pleural disease.

AIM - Recognizing the typical and atypical cross-sectional imaging features of pulmonary sarcoidosis.

METHODS – Computed tomography on a 128 slice SIEMENS SOMATOM scanner with high resolution reconstructed images was performed on the participants of this study, in end-inspiratory position. Contrast was administered whenever necessary.

RESULTS – 26 participants with histopathologically proven sarcoidosis were included in the study. Typical imaging features were found in 45% of the scans, with mediastinal lymphadenopathy [right paratracheal and bilateral hilar] being the most common finding found in 20% of the scans, followed by micro and macronodular pulmonary nodules in 12%, fibrotic changes in 7%, features of peri-lymphatic distribution in 3% and perihilar opacities seen in one percent. Atypical features were seen in 55% of the scans, of which interstitial septal thickening seen in 8%, followed by bronchiectasis and ground glass opacities seen in 7.4%, pleural thickening in 4%, consolidation seen in 3.7%, mosaic perfusion, pleural effusion military and solitary pulmonary nodule seen in 2.4% scans each. Only 1.2% of the scans showed emphysema, honeycombing and pneumothorax.

CONCLUSION – Sarcoidosis is often misdiagnosed as tuberculosis in the Indian population. Computed tomography with high resolution reconstruction is a good modality to improve the detection and help in characterization of subtle parenchymal abnormalities, contributing to increased diagnostic accuracy of 17 pulmonary sarcoidosis.



OP/NC/7

ROLE OF HIGH RESOLUTION COMPUTED TOMOGRAPHY IN INTERSTITIAL LUNG DISEASES

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BACKGROUND-The term ILD encompasses a heterogeneous group of disorders that are characterised by diffuse cellular infilterates in a periacinar location. .The spectrum of conditions included is broad.The ILD have been subcategorised as follows-

1.ILDs with known cause(Connective tissue disorders, Rheumatoid arthritis, Hypersensitivity pneumonitis, Asbestosis,)

2.Idiopathic Interstitial Pneumonia(Usual interstitial pneumonia,Non specific Interstitial Pneumonia,Respiratory Bronchiolitis ILD, Desquamative Interstitial Pneumonia, Acute Interstitial Pneumonia)

3.Granulomatous ILDs(Sarcoidosis,Silicosis,Drug induced)

4.Other ILDs(Langerhans Cell histiocytosis, Lymphangioleimyomatosis, Alveolar proteinosis)

HRCT for a variety of reasons is helpful in diagnosing Interstitial Lung Diseases.In patients with Idiopathic pulmonary fibrosis(histologic pattern of UIP),the HRCT appearance are characteristic enough to render biopsy unnecessary.

AIM-Characterisation of Interstitial Lung Diseases using High Resolution Computed Tomography.

METHODS-HRCT on 128 slice (SIEMENS SOMATOM) was done in all patients suspected to have ILD based on patients history and preliminary examinations. RESULTS- A total of 40 patients were included in this study ,out of which 22 patients (55%) showed Idiopathic Interstitial Pneumonias which included Usual Interstitial Pneumonia (45%),Non specific Interstitial Pneumonia (45%),Cryptogenic organising pneumonia(9%).

10 patients (25%) showed ILDs with known cause which included Hypersensitivity pneumonitis (80%),Rheumatoid arthritis(10%),Mixed connective tissue disorder(10%).

6 patients (10%) showed Granulomatous ILDs which included Sarcoidosis(50%),Sjogren syndrome(33%),Lymphocytic Interstitial lung diseases(16%).

2 patients (5%) showed Other ILDs which included Langerhans Cell histiocytosis(50%), Pulmonary alveolar proteinosis(50%).

CONCLUSION-HRCT plays a central role in differential diagnosis of ILDs.The HRCT differential diagnosis of ILDs is based on systematic analysis of predominant CT pattern, ancillary CT findings and distribution of findings. ¹⁸



OP/NC/8

MDCT in evaluation of mediastinal masses

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Background:

The most widely accepted division of the mediastinum is the modified anatomical division which divides the mediastinum into anterior, middle and posterior compartments. Localizing the lesion to a compartment helps in narrowing down the diagnosis. Around 50% of mediastinal mass originate from anterior mediastinum including thymoma, lymphoma, teratoma and thyroid disease. Mass of middle mediastinum are commonly metastatic lymphadenopathy, vascular pathology and congenital cyst. Mass arising from posterior mediastinum are often neurogenic tumor. Aim:

To identify mediastinal masses and characterize them based on location, imaging features and invasion.

Methods:

A total of 80 patients were included in the study based on clinical suspicion of mediastinal mass or radiography indicating a mediastinal mass. All the patients underwent MDCT of chest along with contrast administration in end inspiratory position in our 128 slice SIEMENS SOMATOM scanner.

Results:

In the 80 patients who underwent the study 33(41.3%) were anterior mediastinal masses, 21(26.3%) were middle mediastinal masses, 11(13.8%) were posterior mediastinal masses and 15(18.8%) involved multiple compartments. Of the anterior mediastinal masses 13(16.3%) were thymic masses, 6(7.5%) were lymphoma, 4(5%) were retrosternal goitre, 6(8.5%) were germ cell tumors, 5(6.3%) were lymphadenopathy and 1(1.3%) was morgagnian hernia. The middle mediastinal masses are 11(13.8%) lymphadenopathy, 5(6.3%) aortic aneurysm, 3(3.8%) bronchogenic cyst, 1(1.3%) pericardial cyst and 1(1.3%) dilated pulmonary artery. The posterior mediastinal masses were 4(5%) neurogenic tumors, 6(7.5%) esophageal carcinoma and 1(1.3%) teratoma. Multiple compartment involvement is seen in 15 cases (18.8%) in the form of lymphadenopathy. Lymphadenopathy is the most common form of mediastinal mass seen in 31(28.9%) cases.

Conclusion:

Due to fast acquisition, high spatial resolution, volumetric imaging with multiplanar and 3D reconstruction and better evaluation of vascular anatomy and their relation with the mass contrast enhanced MDCT is the best for evaluation and characterization of anterior mediastinal masses.



OP/NC/9

Patterns of pulmonary disease in Systemic Sclerosis on MDCT

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rora

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BACKGROUND- Systemic sclerosis (SSc) or scleroderma is a chronic multisystem disease characterized by progressive fibrosis of skin and internal organs as well as widespread vascular dysfunction.

Major manifestation of scleroderma is skin disease, however there is a broad range of organ involvement, disease severity and outcomes.

Lung disease, seen in upto 75% cases of scleroderma is the most common cause of mortality in such patients. Lung involvement can be defined in terms of extrapulmonary features (such as respiratory muscle weakness or skin fibrosis of chest wall) and intrapulmonary manifestations (lung fibrosis and pulmonary hypertension). Patients with pulmonary involvement typically present with breathlessness on exertion and nonproductive cough.

AIM- to study the findings of lung involvement in patients of scleroderma.

METHODS- A total of 16 patients with clinical and laboratory diagnosis of systemic sclerosis presenting with breathlessness were included in our study. They underwent computed tomography with HRCT reconstructions in 128 slice SIEMENS SOMATOM scanner in end inspiration position and were analyzed to identify pulmonary involvement.

RESULTS- The mean age of participants was 45.6 yrs with female gender comprising of 81.2% of participants. Reticular opacities in peripheral distribution were noted in all cases (16/16) with apicobasal gradient. Upper lobe involvement was also noted in 8 cases (50%). Ground glass opacities were found to be present in 8 cases (50%) with subpleural sparing present only in 2 cases (12.5%). Honeycombing was noted in 6 cases (37.5%).

6 cases were found to have NSIP pattern while 5 cases had UIP pattern of lung involvement. We were unable to classify 5 cases in either NSIP or UIP pattern of disease. Apart from pulmonary manifestations, pulmonary artery dilation was noted in 2 cases (12.5%) and mediasinal lymphadenopathy was observed in 5 cases (21.2%); with calcific foci present in all cases showing lymphadenopathy.

Dilation of thoracic esophagus was seen in 9 cases (56.2). 1 case also demonstrated patulous gastroesophageal junction.

CONCLUSION- MDCT Chest is a useful modality to characterize pattern of pulmonary involvement in systemic sclerosis and classifying the disease in UIP or NSIP pattern of disease; thus helping in identification of patients likely to respond to treatment, assessing treatment efficacy and prognosis of disease. Apart from pulmonary involvement, CT can also detect extrapulmonary manifestations like pulmonary artery hypertension, esophageal abnormalities and exclusion of other diseases.



OP/NC/10 MDCT IN IMAGING OF PLEURAL PATHOLOGIES – BENIGN AND MALIGNANT

BACKGROUND - A number of benign and malignant diseases may cause diffuse or focal pleural abnormalities that can involve either the pleural layers or the pleural space. The commonly encountered diseases of the pleural cavity include pleural effusion, empyema, pneumothorax, hydropneumothorax. The pathologies affecting the pleural layers are relatively uncommon which include focal or diffuse pleural thickening, due to either benign (effusion, empyema, calcified plaques following chronic infections and occupation related diseases like asbestosis) or malignant causes (primary or secondary). Metastatic adenocarcinoma is the commonest cause of malignant pleural disease, while malignant mesothelioma is the most common primary pleural tumour.

AIM – To identify pleural and pleural space pathologies and to characterize diffuse pleural diseases into benign and malignant varieties.

METHODS - A total of 102 patients underwent contrast enhanced computed tomography with HRCT reconstructions in our 128 slice SIEMENS SOMATOM scanner in end inspiratory position and were analysed to identify the pleural and pleural space diseases.

RESULTS – Diseases of the pleural space was found in 66 [64.7%] and pleural pathology was found in 36 [35.3%] patients. The most common pleural space disease was effusion which was found in 35[34.3%] secondary to benign or malignant pathologies, followed by empyema found in 16[15.6%] patients, pneumothorax in 11[10.7%] and haemothorax in 4[3.9%]. Pleural thickening was found in 17[16.6%], of which 9[8.8%] were smooth and 8[7.8%] were nodular. Calcified pleural plaques were found in 8[7.8%] cases (1 in asbestosis and 7 as a sequel to previous pathologies). 1[1%] case of pleural lipomatosis was encountered in our study. Pleural nodules were found in 6[5.9%], which were all proven to be metastatic deposits. 2[1.9%] cases of malignant etiology were seen, one each of malignant mesothelioma and solitary fibrous pleural tumour.

CONCLUSION – MDCT with HRCT reconstruction is a good modality to identify and characterize pleural and pleural space pathologies.



OP/NC/11

RADIOLOGICAL EVALUATION OF PATIENTS WITH POST VACCINATION COVID-19 BREAKTHROUGH INFECTION: A COMPARATIVE STUDY BETWEEN COVISHIELD AND COVAXIN BASED ON CT SEVERITY SCORE.

Dr.Pravalya Chaparala	Alluri sitaramaraju academy of medical sciences
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INTRODUCTION:CT has been an important imaging modality in assisting the diagnosis and management of patients with coronavirus disease 2019 (COVID-19) pneumonia, and reports on the radiological appearances of COVID-19 pneumonia are emerging.Despite of 14 days waiting period post-vaccination, there were RT-PCR positive SARSCoV2 cases reported.6

There were chances of postvaccination breakthroughSARSCoV2 infections because COVID19 vaccines do not offer 100percent protection.

In the present study an attempt will be made to study the severity level in these breakthrough SARS-CoV-2 infections using the standardised CT severity scoring system and look for the variation in the severity levels between the RT-PCR positive covishield and covaxin vaccinated patients.

AIMS &OBJECTIVES: To study the post-vaccination lung involvement of COVID-19 positive patients based on CT SEVERITY scores.

To compare COVISHIELD and COVAXIN vaccines in relation to the CT severity scores among the COVID-19 positive patients' post-vaccination.

To determine the association in patients with pre-existing comorbidities(DM,HTN,BRONCHIAL ASTHMA AND SMOKING) and severity of disease in both COVISHIELD & COVAXIN vaccinated patients.

INCLUSION CRITERIA: Post-vaccination RT-PCR positive COVID-19 symptomatic patients admitted at Andhra Pradesh state covid hospital (ASRAMS).

Timing of scan greater than 5 days of symptoms onset.

Both genders and >18 years of age patients.

Patients who had completed single or both doses of vaccination 14 days from date of vaccination. METHODOLOGY:Data collection will be carried out by using a standardized pre designed proforma. Initially, all the vaccinated individual's data who were admitted will be identified from the medical records, permission will be obtained from the concerned department after explaining the study details.

Computed tomography(CT) chest scan for the admitted individuals was done using GE REVOLUTION ACT CT MACHINE (32 SLICE) with a low dose exposure protocolduring the study period.

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OP/NC/12

MULTITUDE OF AORTIC ARCH ANOMALIES AND VARIANTS : A CASE BASED REVIEW

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Background:

Congenital aortic arch malformations present a large spectrum of variants and anomalies that emerge from abnormal embryogenesis of the branchial arches. These may be clinically silent or present with severe respiratory or esophageal symptoms, especially if associated with complete vascular rings. These are commonly isolated, however association with congenital heart diseases and chromosomal abnormalities can be seen. They are seen in pediatric age group, but can sometimes be discovered later in adulthood. Cross-sectional imaging, especially CT Angiography allows isotropic 3D reconstructions that aid in understanding complex anatomy for surgical planning and endovascular interventions. Therefore, CT Angiography is essential for elucidating these diverse aortic arch anomalies, abnormal branching patterns and relationship with esophagus and trachea.

Aim:

To assess the role of Computed Tomography Angiography in detecting and classifying aortic arch variants and anomalies.

Methods:

This was a cross-sectional observational study comprising of 25 patients in the age range of 1month to 15 years conducted over 18 months (January 2020-July 2021). Patients with aortic arch anomalies detected on CT angiography with prospective ECG gating, performed on 128-slices spiral CT scanner (SEIMENS SOMATOM) were retrospectively reviewed.

Results and conclusion:

Of the 25 patients included in the study, 7 had juxtaductal coarctation of aorta (28%), 4 had right aortic arch with mirror image branching (16%), 3 had aortic isthmus hypoplasia (12%), 2 had bovine arch (8%), 2 had right aortic arch with aberrant left subclavian artery (8%), 2 had truncus arteriosus (8%), 2 had aberrant right subclavian artery (8%), 1 had Interrupted aortic arch (4%), 1 had double aortic arch (4%), 1 had right aortic arch with aberrant left subclavian artery (4%) and 1 had patent ductus arteriosus (4%).

CT Angiography accurately characterized the diverse aortic arch anomalies, abnormal branching patterns and relationship with esophagus and trachea for₂₃ precise diagnosis and pre-operative planning.



OP/NC/13

Percutaneous drainage of infected pleural fluid collection: correlation of imaging features, microbiology and clinical outcome.

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Background: Pleural infection is a frequent clinical problem associated with high mortality and morbidity. Prompt evaluation and therapeutic intervention appears to reduce morbidity and mortality as well as healthcare costs. The earliest recommended treatment was open thoracic drainage but carried an associated mortality of up to 70%. Current practice advocates appropriate antimicrobial therapy, pus drainage with a closed chest tube, avoidance of early open drainage and obliteration of pleural space.

- To study the effectiveness of percutaneous drainage of IPFC in terms of radiological and clinical outcome
- To study the morphological changes in lung parenchyma associated with IPFC and effect of pleural drainage on these changes
- To determine the organism responsible for infection and its impact on pleural drainage

Methodology:

Twenty six patients who underwent percutaneous drainage of IPFC in our department from January 2021 to July 2021 were assessed with serial radiographs, pleural fluid analysis, sputum examination, BAL, blood counts and cultures to determine the causative organism and effectiveness of pleural drainage in management of IPFC. Results:

Out of 26 patients 16 were males and 10 were females. Average age was 45 years(12-91 years). Most of the effusions were bilateral 12(46%) out of 26 followed by right side 10(38%). Majority of the effusions were moderate in quantity 15(56%).Twenty four patients (92%) had exudative effusion. Majority of effusions were sterile 17(65%). Major organism implicated was gram negative bacteria 6(23%) followed by mycobacterium tuberculosis 2(7.6%).Twelve patients(46%) had loculated effusion. Pleural thickening was seen in 10(38%) patients. Passive collapse was seen in 19(73%) patients. Three patients (11%) had frank liver abscesses with rupture in pleural cavity in two patients. Two patients had granulomas in liver and one of them had splenic granulomas as well. Chest wall invasion was seen in one patient. Average hospital stay was 23 days (1 -70 days). Majority of the patients were cured and discharged from hospital 23(88%) of 26.Three patients died during hospital stay not related to drainage procedure Conclusion:

Majority of patients were effectively managed by catheter drainage irrespective of the nature and amount of fluid. Gram negative bacteria were the main organisms responsible for empyema followed by mycobacterium tuberculosis. Significant number of patients with right sided effusion had liver abscess



OP/NC/14

LOOKING BEYOND THE GGOs - A STUDY OF INCIDENTAL FINDINGS IN COVID RELATED CHEST CT SCA

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AllMS, Rishikesh

BACKGROUND: HRCT of chest is being commonly performed nowadays due to the ongoing pandemic resulting in a significant increase in the caseload of such scans. This retrospective, descriptive study was done to identify and classify the various incidental findings seen in routine HRCT chests. The challenge is to determine which of these findings are significant and warrant a mention in the report. AIMS AND OBJECTIVES:

o To image and interpret the incidental findings detected on HRCT chest scans done for COVID positive/suspect cases.

MATERIALS AND METHODS: HRCT chest scans were retrospectively studied in IPD/OPD patients which were done in last 6 months and incidental findings were noted for all patients with a CORADS score of >=4.

RESULTS: We reviewed 500 HRCT thorax scan done during the COVID pandemic. 140 scans belonging to COVID positive/suspect with CORADS score >= 4 were included in our study. 46 scans showed evidence of pneumothorax, 24 showed pneumomediastinum while 8 scans showed features of both. A total of 74 scans had incidental findings involving organs other than lungs out of which 32 showed a life threatening/ treatment altering findings. Most common organ system involved was musculoskeletal system followed by GIT/GUT system.

Incidental findings on imaging:

1. Musculoskeletal- Wedge collapse of vertebra, Bony metastasis, Burst fracture, spondylodiscitis, rib fracture, DISH.

2. Gastrointestinal and Genitourinary-AKI, kidney stones, liver abscess, hydatid cyst, pancreatitis.

3. Endocrine-Thyroid nodule/carcinoma, adrenal adenoma/myelolipoma.

4. Cardiac and vascular-Enlarged main pulmonary artery, aberrant right subclavian artery, right sided aortic arch, situs inversus.

5. Others-eventration of diaphragm, fibro adenoma in breast, malignant lung mass.

6. COVID disease related-Pneumothorax, pneumomediastinum, aspergilloma, pneumatocele.

CONCLUSION: It is important to systematically review other organs/structures while interpreting routine HRCT chest scan. Findings directly related to the disease alter the disease course while the significant incidental findings alter the overall patient outcome. Other findings, albeit clinically insignificant, must still be mentioned in the report to document an existing condition and for medico-legal purposes.



OP/NC/15

Air leaks in Covid pneumonia: an under-recognised menace

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Background: In addition to more well interstitial fibrosis and p pneumothorax (PT) and an important cause of in recurrent hospitalisation	recognised complications of Covid-19 pneumonia such as pulmonary thromboembolism, air leaks causing pneumomediastinum (PM) have also emerged. These are acreased morbidity in patients as well as prolonged or n.
To evaluate the causes of differentiating features of Methods: Retrospective analysis of current or past Covid-19 presence of air leaks. Clinical details such as requirement of assisted include the compartment abnormality. Drainage p imaging was also record Results:	of air leaks in patients with Covid-19 pneumonia and their on imaging of high resolution CT and radiographs of patients with o infection (within 3 months) was undertaken to record the severity of Covid infection, time since onset and ventilation were recorded. Imaging features assessed at of leak as well as the presence of predisposing lung rocedure performed and lung expansion on follow up ded.
Sixteen adult patients w presentation was hydro patient had bilateral PT) All patients with PM only ventilation. Among patie necrotising pneumonia Large bore intercostal d catheters were placed in 5 (71.4%) patients with H found on imaging in 4 (8 Conclusion: Air leaks in Covid pneur	rere included in the analysis. The most common pneumothorax (HPT) in 7 patients, followed by PT in 5 (one , PM in four and combined PM and PT in one patient. y had received high flow oxygen therapy or assisted ents with PT or HPT, pneumatoceles, lung cavities and were seen in three (42.8%) patients each, respectively. rainage tubes were placed in 9 (75%) patients, while pigtail a 2 (18.2%). There was persistent non expansion of lung in HPT. Among these, bronchopleural fistulae (BPF) were 80%) patients.

of these patients. Pneumothorax is the most common presentation, and B important cause of non expanding lung and persistent morbidity.



OP/NC/16

Correlation of classification of CXR patterns and CXR-based disease severity score with clinical outcome, in patients with COVID-19 pneumonia

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Background

Chest radiograph (CXR) is a valuable tool for management of patients during the COVID-19 pandemic, owing to its advantages in terms of availability, ease of use, and sanitization of the equipment and use in portable settings such as in COVID-19 wards, intensive care units (ICUs) and screening areas. Several CXR patterns in COVID-19 pneumonia are observed. In addition, CXR is being used more frequently than CT to monitor the day-to day progression of the pulmonary involvement and hence CXR based visual scoring system is essential for rapid assessment of extent of lung involvement.

Aim

To compare CXR patterns with clinical outcome measures in COVID-19 patients.

• To compare semi-quantitative disease severity score on CXR with clinical outcome measures in COVID-19 patients.

Methods

After approval from Institute Ethics committee, a retrospective study of patients admitted in/discharged from dedicated COVID-19 centre (JPNA trauma centre), AIIMS, New Delhi, between April 2020 to July 2020 was undertaken. Patients with covid-19 confirmed status for whom CXR was available on PACS; and clinical outcome information as death or discharge were included. The first performed CXR of the patient was selected for assessment of pattern and disease severity score using a proposed semiquantitative visual score. Various CXR findings noted were ground glass opacities, consolidation, cavity, nodules, distribution (central / peripheral, apical / basal), laterality, pleural effusion. CXR pattern was categorized into seven patterns –

Pattern 1 -Peripheral airspace opacities

Pattern 2 - Bilateral lower zones consolidation/ Ground glass opacity (GGO)

Pattern 3 -Peribronchial consolidation

Pattern 4 -Multifocal airspace opacities/ consolidation/ GGO

Pattern 5 - Large nodule or 'mass-like' opacities ('ball pattern')

Pattern 6 - Diffuse mid and lower zones consolidation/ airspace opacities

Pattern 7 - Uncommon/rare patterns- cavitation, upper and middle lobe partial collapse

Severity score was classified into mild (1-25%),moderate(26-75%) and severe(>75%).

Results

455 patients' CXR were analysed. Mean age of the study population was 44.85 years, 309(67.9%) were male and 146(32.1%) were females. 96 (21.1%) of the CXRs were normal and 359 (78.9%) were abnormal. Most frequent finding was presence of ground glass opacities (351[77.1%]) and consolidation (310[68.1%]). Nodules were found in only 7 cases and cavitation in 1. Most of the findings were bilateral (350/359 [97%]) and unilateral involvement was found in 9 cases (2%). Distribution of abnormality were basal predominant in 100/455[22%] cases and apical in 9 (2%); peripheral distribution in 134 (29.5%) and central in 99 (21.8%). Most common pattern encountered was pattern 4 (106, 23.3%), followed by pattern 2 and 3. Most of the CXRs were having moderate severity score (227/455, 49.9%). Clinical outcome of death was in 154 (33.8%) cases and others were live discharge 301 (66.2%). Multiple logistic regression analysis showed that presence of consolidation (OR 2.77 [95% Cl 1.95-7.28] p=0.039), CXR pattern 3 (OR 0.359 [95% Cl 0.172- 0.748]p=0.006) and severity score (OR 3.39 [95% Cl 2.22-5.16] p=<0.001)showed statistically significant difference in clinical outcome for mortality.

Conclusions

Presence of consolidation, Pattern3 (Peribronchial) CXR pattern are associated with increased risk for mortality. The semiquantitative severity score on CXR was associated significantly with clinical outcome, suggesting with increase in the score, the odds of mortality also increased.



OP/NC/17 RETROPERITONEAL HEMATOMA IN ECMO PATIENTS.

DR SWARNA BHARDWAJ

APOLLO MAIN CHENNAI

RETROPERITONEAL HEMATOMA IN ECMO -A STUDY OF FIVE CASES BACKGROUND: ECMO is the form of extracorporeal life support, its an alternative to mechanical ventilation. Three types VENO VENOUS, VENO **ARTERIAL &VENO-VENO ARTERIAL ECMO.COMMON SIDE EFFECTS:** Bleeding-psoas hematoma(20-30%)/retroperitoneal hematoma.Others include :gut ischaemia, clots in arterial and venous system.sepsis.Post decannulation -pseudoaneurysm of repaired artery or AVfistula. **OBJECTIVE:**This case study report is to create awareness of one of the major ECMO complications the clinical and therapeutic dilemmas involved and the role of imaging and intervention **METHOD:CASE REPORT-ORAL PRESENTATION We retrospectively studied** five patients on ECMO due COVID or ILD CASE SUMMARY-1)Covid patient withARDS and cardiac arrest - put on VAV ECMO on 18/5, patient was stabilised soon after that ,decannulation on 14/7, femoral artery pseudoaneurysm with right inguinal region hematoma developed for which saphenous vein interposition graft placed. 2)covid patient with ARDS on VV ECMO on day 33 of ECMO developed retroperitoneal hematoma was progressively increasing in size so evacuation of hematoma was done however after 20 days again retroperitoneal, psoas and extraperitoneal hematoma developed, patient was rexplorated, given massive blood transfusion, switched to VAV ECMO. patient died due to MODS, septic shock CAPA and kleibsella bacteraemia.3)post covid on VV ECMO on day 49 of ECMO developed retroperitoneal hematoma with no active bleeding hence no intervention was done 4)Covid and ILD patient on VV ecmodeveloped multiple retroperitoneal hematoma on day 8 of ECMO, intubated due to severe hypoxaemia, planned for lung transplant, but died before it.5)ILD patient awaiting lung transplant on VV ecmo- developed hematoma in right psoas and right paracolic gutter. Patient was given blood transfusion and discharged post lung transplant. CONCLUSIONS: The association of ECMO with haematoma is multifactorial,

which include use of anticoagulants, mobilization during physiotherapy 28 and the intrinsic components of circuit itself.



OP/NC/18

FREQUENCY AND RADIOLOGICAL PATTERNS OF CHEST INFECTIONS IN PATIENTS LIVING WITH HIV

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Christian Medical College (CMC) Vellore

FREQUENCY AND RADIOLOGICAL PATTERNS OF CHEST INFECTIONS IN PATIENTS LIVING WITH HIV

Background

The spectrum of HIV-related pulmonary infections depends on the epidemiological features of a geographical area, CD4 count of the patient. In the post ART era, there are only a few published articles that have looked at the incidence of chest infection in PLHIV and none from India

Objectives

The objectives of our study were to assess the incidence of chest infections in PLHIV on ART and compare with the incidence of chest infection in ART-naive HIV patients. We also evaluated the radiological patterns of various chest infections in PLHIV individuals in relation to CD4 counts and define an imaging algorithm to approach various chest infections in PLHIV

Methodology

This is a two-year retrospective study done in a tertiary care teaching hospital in South India. Using the PACS search tool, using the words, PLHIV, HIV in CT thorax studies, we retrieved the study sample. Demographic profile and lab parameters were obtained from the Hospital Information System. All the CT thorax studies of the study sample were read independently by a radiologist with more than 10 years of experience. The radiological features such as nodules, ground-glass opacities, consolidation, cavity, pleural effusion, lymph nodes, etc were analyzed. The final diagnosis was confirmed by microbiological or histopathological results.

Results

A total of 216 PLHIV patients were included in this study. Among the study sample, 154 (71.3%) had infections, and 44 (20.4%) had noninfectious pathologies. A normal study was observed in 18 patients (8.3%). 94 patients were ART-naive. 122 patients were on ART. Among the patients on ART, 89 (73%) had infections. In both ART naïve and those on ART, tuberculosis was the commonest infection, followed by PJP. Numerous small nodules were common in tuberculosis, ground-glass opacities were common in PJP. Fungal infections had an equal prevalence of nodules and ground-glass opacities. We have defined an imaging algorithm to approach chest infections in PLHIV.

Conclusion

Imaging plays an important role in the management of HIV patients with pulmonary manifestations. With knowledge of the imaging pattern and common infections at different CD4 counts, we can arrive at a reasonably good diagnosis. Tuberculosis and Pneumocystis jiroveci is common infections at low CD4 count.



OP/NC/19

Radiological review of Tracheobronchopathia osteochondroplastica single center Indian experience

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Background

Tracheobronchopathia osteochondroplastica (TPO) is a rare idiopathic disease, which involves the wall of the tracheobronchial tree. Clinical manifestations are mostly nonspecific. The typical radiological features include irregular thickening and nodularity of tracheal cartilage sparing the posterior tracheal wall, small discrete endophytic nodules which could be cartilaginous or osseous (calcified) in nature while larger nodules could cause luminal narrowing causing airway narrowing and obstruction.

Aim

The primary objective of this study is to analyze different imaging features in Tracheobronchopathia osteochondroplastica.

Secondary objective is to have a relook at the classical diagnosis of radiology and bronchoscopic appearance without biopsy.

Methods

This was a retrospective study of subjects who underwent flexible bronchoscopy or chest imaging and was diagnosed TPO in our institution in the last 15 years (2005-2020), the cases were identified based on radiology, bronchoscopic picture or histopathology or a combination of them. Data extraction was done from hospital records and images from PACS. All the images were reviewed by a senior thoracic radiologist. Results

28 cases were diagnosed as TPO based on radiology with or without bronchoscopy and biopsy. The patients were predominantly male (22/28), with average age of 50yrs (IQR 44,58). The various imaging features found in CT were as follows

All the cases had cartilaginous or bony nodules typically involving the anterior wall of trachea and sparing the posterior wall. The larynx was involved in 5 cases and the lesions extended to the main bronchi (19/28) and lobar bronchi in (2/28).The nodules were calcified in 92% of cases.

There was significant tracheal stenosis in 8 cases i.e. more than 50% reduction in the size of the lumen and none of them required any therapeutic intervention like stenting or debulking as the patient had not much significant symptoms.

The commonly described associations like tracheal ring calcification and saber sheath trachea were seen in 5 and 13 cases respectively.

Other findings like mediastinal lymph nodes were present in 8 cases, bronchiectasis (12 cases), atelectasis (6 cases), consolidation (4 cases) and tuberculosis sequalae (7 cases). It is difficult to assess on whether these were coincidental co-existing pathologies or there is any causal association between TPO and other pathologies.

All cases had imaging features suggestive of TPO, among the 19 who underwent bronchoscopy 16 patients had biopsy of the tracheal nodules and in addition to histopathology proving TPO in all these patients, 24% of patients had additional diagnosis of malignancy(n=2 with primary later detected in lung and breast), Tuberculosis (n=2), ABPA (n=1) and Nocardiosis (n = 1) was also made on histopathology and BAL cultures showed mixture of organisms with predominant growth of Pseudomonas (5/13), in contrast the Klebsiella that has been described in western literature.

On follow up treatment of underlying concomitant etiology, there was clinical improvement. Conclusions

CT is the primary non invasive modality of choice to evaluate trachea with detailed assessment of morphology of wall and lumen through reformatted images .

Typical sparing of posterior wall of trachea with presence of multiple submucosal nodules with calcifications is diagnostic of TPO. Associated findings like tracheal stenosis and saber sheath trachea should be looked for. Co-existing infections and even malignancies should be carefully assessed.

Although biopsy is not commonly indicated, as seen in our series nearly a quarter of patients may reveal additional important information on histopathology.



OP/NC/20

Pre-COVID Versus COVID associated Pulmonary Mucormycosis

Dr Aleena Sara Mathew	Chri <mark>stian Medical College, Ve</mark> llore
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Pre-COVID Versus COVID associated Pulmonary Mucormycosis Aim - To study the chest CT findings in patients with pulmonary mucormycosis in pre-COVID and COVID era

Methodology - Retrospective study of CT imaging findings in microbiologically proven cases of pulmonary mucormycosis

Results - 5 patients of COVID associated pulmonary mucormycosis (CAM) and 4 patients with the same in the pre-COVID era were studied. The commonest lung finding in patients with CAM was large thick walled (greater than 4mm) cavitatory lesions and in pre-COVID era there were an equal number of patients with thin walled cavitatory lesions and consolidation, none had thick walled cavities. All patients with CAM were diabetic and at least half of them were on steroids (steroid status of other half is not known). In the pre COVID era only 25% had diabetes and others had other risk factors like immunosuppression due to treatment of hematological malignancies, post renal transplant and HIV infection. Vascular complications in pulmonary lesions were more common in CAM (seen in 50%).

Concomitant invasive fungal sinusitis was seen in 40% of CAM and none of the pre-COVID patients. Lymphadenopathy and pleural effusion were not common in either groups.

Discussion – Sequelae and secondary infections from COVID have been proposed to be exacerbated by the unrestrained use of steroids and the high prevalence of Diabetes in the country. In this study we found that cases of CAM showed more aggressive findings – in the form of larger thick walled cavitatory lesions, some of which were multiple and were associated with more complications including arterial aneursyms as compared to the cases of pulmonary mucormycosis in the pre-COVID era. These patients also had poorer overall outcomes.

Conclusion - COVID associated pulmonary mucormycosis is more aggressive than in the pre-COVID era with more vascular complications and is often associated with PNS involvement



OP/NC/21

Imaging findings in pulmonary non-tuberculous mycobacterial infections – A single centre experience

Dr Niveda I Christian medical college, Vellore (CMCV)

Background - The lung is the target organ of NTM. Diagnosis is based on clinical evidence, microbiological identification, and radiological findings. There are numerous studies on tuberculous mycobacterial lung infections, but studies on Non-tuberculous mycobacterial lung infections, that too in Indian settings are very limited.

Aim - To study the chest CT findings in patients with Non tuberculous mycobacterial infections (NTM)

Methodology - Retrospective study of CT imaging findings in microbiologically proven cases of pulmonary Non tuberculous mycobacteria over a period of 8 years. Distribution of lung findings, Pattern of lung findings – consolidation, GGO, cavity, bronchiectasis (type),nodules (size, distribution), pleural involvement, lymphadenopathy (maximum size, distribution and pattern i.e necrotic / calcified), background findings in the lungs and involvement of other organs like liver, spleen, adrenals and skeletal system were looked for.

Results – 90 patients of Non tuberculous mycobacterial infections (NTM) were studied. 28 patients out of the 90 had at least one follow up CT study. Right middle lobe with lingula (20%) followed by right upper lobe (16%) predominance was noted. Commonest lung finding observed was large cavities (upto 13cm) often multiple, with tree in bud nodules followed by cavities with tubular and varicoid bronchiectasis . RML/ lingula collapse (8%) was a specific finding. Post inflammatory scarring was the background disease in majority of the cases (77%), with few cases having emphysema and surprisingly, UIP and sarcoidosis as background. Mediastinal and hilar lymphadenopathy was uncommon and even if present were small volume nodes with average size of around 10mm. Pleural findings were also not very common and few cases showed only small pleural effusions or thickening. Pneumothorax was rare (4%). Cases with progressive/ stable findings showed parenchymal and lymphnodal calcifications. Pleural thickening was a common finding, however calcific thickening was noted only in a few patients .Liver involvement was noted in 16% of patients and 11% showed other upper abdominal organ involvement.

Conclusions - Indian cohort of pulmonary NTM patients commonly showed large cavities or bronchiectasis. Lymphadenopathy and pleural involvement were less often seen.



OP/NC/22

Assessing the site of skin entry in pPatients undergoing CT guided biopsies by an additional CT scan with local anesthesia needle in situ.

Dr. Joseph Chacko Paul	Christian medical college,
	Vellore.

BACKGROUND:

CT guided procedures have become an important component of the workflow in a radiology department especially for the biopsies of deep-seated lesions and for the lesions that are invisible from outside. CT guided procedures do not have real-time guidance. Significant complications and increase in radiation dose can occur due to needle malposition.

Aim: The aim of this study was to evaluate the value of performing an additional scan with local anaesthetic needle in situ prior to inserting the biopsy needle.

METHODS:

Consecutive patients who underwent CT guided biopsies between 01 November 2018 to 21 November 2018 were included. An additional CT scan was performed in the region of local anaesthetic infiltration with the needle left in situ. Any mismatch in needle placement was identified and was corrected by injecting local anaesthesia to the newly marked site and CT guided procedure was completed.

RESULTS:

There were 3/71 (4% of cases) CT guided biopsies in which an incorrect skin entry was detected on the image with the local anaesthetic needle; out of which one was on the wrong side of the body in a case of lumbar vertebral bone biopsy and two were errors in Z-axis, both being biopsy of lung lesions under local anaesthesia. There were 3 (12%) cases of pneumothorax noted out of a total of 25 biopsies of lung lesions. None of the above cases required chest tube insertion. There was adequate yield in all the cases. The radiation dose was kept within the acceptable mean radiation dose of 535 mGycm.

CONCLUSIONS:

This technique of checking the local needle placement prior to proceeding with CT guided procedure with specific larger needles helps in identifying the errors in placement of the needle. This would avoid the potential complications of incorrect placement of larger biopsy needles.



OP/NC/23

CT guided biopsy of cavitary lung lesions, the interplay of factors between risk and diagnostic yield – A single centre experience

> Dr Rahul Karthik L **Christian Medical College, Vellore**

Background

CT guided biopsy of cavitary lung lesions is necessary for establishing a diagnosis. The sample obtained is analysed by histopathology and culture sensitivity.

Aim

To access the multivariate factors influencing CT guided cavitary lung lesion biopsy and help create a guideline that helps patient selection for biopsy to increase diagnostic yield and reduce complications and procedure-related morbidity and mortality.

Methods

This is a retrospective study including consecutive patients who underwent CT guided cavitary lung lesion biopsy from January 2019 to July 2021. The demographic data, lesion characteristics, biopsy technique, complications and yield were reviewed through electronic data.

Results

Out of 25 patients, 18 were male and 7 were female. The mean age was 55 years. The most common cavity location was in the right upper lobe. Overall size of Cavity ranged from 1.5 cm to 11 cm and wall thickness ranging from 3 mm to 23 mm. Maximum depth from pleura was 6 cm. There were 12 lesions in contact with the pleura. Pneumothorax was observed in 4 (16%) patients, managed conservatively. Out of the 4 patients who developed pneumothorax, 3 were smokers. One patient developed massive haemoptysis, requiring on table resuscitation and monitored in ICU. He later succumbed to cardiac arrest on 5th day after the procedure. Minimal pulmonary haemorrhage in the region of the biopsy tract was noted in 6 (24%) patients. An adequate sample was obtained in 23 (92%) patients and the definitive diagnosis was reached in 10 cases (40%). Six cases that could not get a positive yield on CT guided biopsy subsequently reached a diagnosis through either transbronchial lung biopsy, BAL or sputum culture.

Conclusion

CT guided biopsy of a cavitary lung lesion is a relatively safe and effective procedure with a reasonable complication rate. Prior knowledge of imaging parameters like lesion location in relation to pleura/fissure, wall thickness, surrounding lung parenchymal changes helps in planning the biopsy technique, increase diagnostic yield and reduce complication rate. Pneumothorax is a common complication. Massive haemoptysis is an extremely rare complication, but one needs to be aware and be prepared.



OP/NC/24

"HEPATIC STEATOSIS AS AN INDEPENDENT RISK FACTOR IN PATIENTS WITH COVID-19: A COMPUTED TOMOGRAPHY STUDY"

DR.VIGNESH. K

FATHER MULLER MEDICAL COLLEGE

Background: Literature shows a severe COVID-19 course is associated with pre-existing non-alcoholic fatty liver disease (NAFLD). The present study was conducted to find the association between Hepatic steatosis and CT severity among COVID 19 patients admitted in a tertiary care hospital. Objectives of study: To find the association between Hepatic steatosis and CT severity among COVID 19 patients admitted in a tertiary care hospital. Methodology: An observational study was conducted where 96 Patients clinically suspected of having COVID-19 infection who underwent both chest CT and Positive on RT-PCR were included. The level of COVID-19 suspicion was graded as CORADS score and CT severity score was calculated based on extent of lobar involvement. The mean CT attenuation values of the liver and spleen were obtained in Hounsfield unit (HU) for the detection of hepatic steatosis. Data tabulation was done using Microsoft Excel 2013 and Analysis using SPSS 16v. Parametric statistical tests used was t test. Non parametric test used was Chi-square test. P value of <0.05 was considered statistically significant.

RESULTS:

96 study participants diagnosed with COVID 19 were included. The mean Age of the study population was 57.84 ± 14.25 years. Male were the majority in the study (69.8%). Based on Computed Tomography findings, 68.7% had CORADS 5 findings, 15.6% each had CORADS 4 and CORADS 6 findings. In the present study, 55 (57.29%) study participants had Hepatic steatosis. Association between CT Severity score with Hepatic steatosis shows a statistically significant association observed as majority i.e. 47.9% had CT severity >20.CT Severity in our study also found significant association with Age, Gender, obesity, HTN, DM, Renal Disease, Any co-Morbidities as the p value calculated to be <0.05.

CONCLUSION:

This study showed that Hepatic steatosis is significantly associated with CT severity score and showed significant p value of < 0.0001. Steatosis was shown to be substantially more prevalent in COVID-19-positive individuals.



OP/NC/25

A retrospective comparative audit of high resolution computed tomographic pulmonary findings of first and second wave of covid-19 pandemic.

Dr Dev <mark>anj</mark> ot Sra	Government medical college and hospital, Chandigarh	
BACKGROUND Computed tomography has an undeniable role in the evaluation of COVID-19 pneumonia. Many studies have already spoken about its pulmonary findings. There have been many postulates and theories regarding the cause of a more devastating second wave as compared to the first wave. One of the theories is the emergence of mutant strains which might be responsible for the raised morbidity and mortality. However, it begs to be answered if there are any differences in pulmonary radiological findings between patients of first and second COVID wave.		
To determine and compare HRCT scan findings among COVID 19 patients of first and second wave presenting to a tertiary health care centre in North India.		
METHODS Study design: Retros Sample Size: 301 RESULTS	spective cross-sectional	
A total of 301 subjects (93 in first and 208 in second wave) who filled the inclusion criteria were enrolled in the study		
The age group of peak incidence in first wave is 51-60 while it is 61-70 in the second wave. However, in the second wave, there was an increase in the patients belonging to younger age groups i.e. 21-30 and 31-40 age group as compared to the first wave (p =		
Mean CT severity sc second wave.	ore was seen to increase from 13.53 in first wave to 15.24 in the	
The predominant pattern of ground glass opacities in the first wave was seen to be peripheral with basal predominance, however, a diffuse pattern of involvement was more commonly seen in the second wave. ($p = 0.0001$)		
Presence of consolidation was seen to rise from 43 % in first wave patients to 60.6 % patients in second wave.		
Ground glass opacities were seen to be the most common finding in COVID 19 pneumonia, however, no significant difference was seen between the two waves. Other statistically significant findings included increased presence of vascular		
CONCLUSION: The study compared the commonly reported imaging features of COVID-19 pneumonia. Mean CT severity score presence of consolidations, vascular		

COVID-19 pneumonia. Mean CT severity score, presence of consolidations, vascular thickening were more prevalent in the second wave. It was also observed that younger age groups (21-30 and 31-40) were more affected in the second wave as compared to the first wave.



OP/NC/26 COMPUTED TOMOGRAPHY (CT) CHEST IN POST COVID-19 ASSOCIATED COMPLICATIONS.

DR MAHESH C

NIZAM'S INSTITUE OF MEDICAL SCIENCES

BACKGROUND: COVID-19 infection commonly involves respiratory system, ranging from mild to severe pneumonia. Major respiratory complication is fibrosis in covid-19, mechanism is unknown but it is more common after severe form of disease, seen approximately one-third of patients who survived from moderate to severe covid pneumonia. The current second wave of the COVID-19 pandemic in India has seen a rise in the rhino-orbital mucormycosis, mycobacterium tuberculosis coinfections and VTE in COVID-19 patients, other rare complications encountered are pneumothorax and other viral coinfections.

AIMS AND OBJECTIVES: Evaluation of post covid-19 pneumonia associated complications on computed tomography chest. Thereby prioritizing the patients for the treatment plan.

MATERIALS & METHOD: This is a retrospective and prospective study. Study was conducted from March 2021 till 20th July 2021. Patient's above 18 years of age with past history of COVID-19 pneumonia were included. All the scans were done in NIMS at 16 slice and 128 slice CT scanner.

RESULTS: Total 250 patients were included. Among, 64% patients CT chest showed no associated complications, in 19% patients were found be developed post covid-19 lung fibrosis, 8.8% patients had PTE, 5.6% patients had fungal infections, 2% patients had coinfection/reactivation of pulmonary Tuberculosis and 0.4% patient had pneumothorax.

CONCLUSION: Aware of the post-COVID-19 associate chest complications may give a chance to early diagnosis and treatment thereby good prognosis. Limitations of our study is small sample size and pre-covid CT chest were not available for comparison.



OP/NC/27

Magnetic Resonance Imaging In Cardiac Amyloidosis: Unraveling The Imaging Features For Diagnosis And Prognostication.

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	srinagar, J&K.

BACKGROUND:

Amyloidosis is a systemic disease. Cardiac involvement is a significant cause of morbidity and mortality in these patients. Diagnosis of cardiac amyloidosis is based on endomyocardial biopsy which however is invasive and associated with complications. Non invasive methods of diagnosis include Magnetic resonance imaging with various sequences.

AIM:

Describing MR Imaging features of cardiac amyloidosis and to prognosticate the patients based on imaging features.

METHODS:

35 patients with suspected cardiac amyloidosis who underwent MRI were included. Special interest was given to TI SCOUT (pre contrast and post contrast 5 and 10 min) and Late Gadolinium Enhancement (LGE) sequences.All images were retrieved from our archive and assessed by an experienced radiologist. RESULTS:

Common morphological features in our patients included increased wall thickness of LV (16. 1 ± 4.1mm), RV (6.3 ± 1.1mm) and interatrial septum (6.2 ± 0.8 mm). Global Late Gadolinium Enhancement (LGE) [n=21 (65%)] including subendocardial or transmural was the most common pattern followed by patchy enhancement. Global transmural LGE was associated with worse prognosis. Four types of myocardial nulling patterns were observed on postcontrast TI scout imaging: Normal nulling pattern (myocardium nulls after blood and coincident with spleen) and abnormal nulling pattern (ANP) which is further divided into three types: Type 1-myocardium nulls before blood pool but coincident with spleen, Type 2- myocardium nulling coincident with blood but not coincident with spleen and Type 3- features of both Type 1 and Type 2. Type 3 ANP was the most common (n=23) nulling pattern in our patients.

CONCLUSION:

Cardiac MRI is an essential in non invasive diagnosis of cardiac amyloidosis. Transmural global LGE serves as a poor prognosticator in these patients. "Three tier" TI scout imaging is essential to avoid false negative enhancement results. Type 3 ANP is the most specific nulling pattern in cardiac amyloidosis.