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Original Research

CT signs in patients of interstitial lung disease

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ABSTRACT:
Background: More than 130 conditions fall under the wide category of interstitial lung disease (ILD), which is defined by inflammation and/or lung scarring (also known as "fibrosis"). Fifteen percent of cases seen by pulmonologists (lung specialists) are ILD. The present study was conducted to assess CT signs in interstitial lung disease. **Materials & Methods:** 70 patients of interstitial lung disease of both genders underwent CT scan. A number of parameters were noted, including the straight edge sign, exuberant honeycombing sign, and anterior upper lobe sign. Connective tissue disease (CTD) and non-CTD were the classifications given to the cases. **Results:** Group I had 20 males and 17 females and group II had 18 males and 15 females. Anterior upper lobe sign was present in 38%in group I and 62% in group II, exuberant honeycombing sign was present in 32% in group I and 68% in group II and straight edge sign was present in 40% in group I and 60% in group II. The difference was significant (P< 0.05). Sensitivity of CT in diagnosis of anterior upper lobe sign was 39%, exuberant honeycombing sign was 52% and straight edge sign was 42%. specificity of CT in diagnosis of anterior upper lobe sign was 87%, exuberant honeycombing sign was 78% and straight edge sign was 81%. **Conclusion:** The most detailed sign was the SE sign, and the most sensitive sign was the EHC sign.
Key words: anterior upper lobe sign, Connective tissue disease, Interstitial lung disease

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INTRODUCTION

More than 130 conditions fall under the wide category of interstitial lung disease (ILD), which is defined by inflammation and/or lung scarring (also known as "fibrosis"). Fifteen percent of cases seen by pulmonologists (lung specialists) are ILD.[1] The lungs' tissue becomes inflamed and/or scarred in ILD. The region inside and around the lung's tiny blood arteries and alveoli (air sacs) is known as the interstitium. This is where carbon dioxide and oxygen are exchanged. This tissue is disturbed by interstitial inflammation and scarring. As a result, the lungs' capacity to draw oxygen from the atmosphere declines.[2,3]

Usual interstitial pneumonia (UIP) pattern on chest computed tomography (CT) has varied causes, with the common causes being idiopathic pulmonary fibrosis (IPF), connective tissue disease (CTD), chronic hypersensitivity pneumonitis (HP), asbestosis, and drug toxicity.UIP patterns on chest CT are diagnosed using the clinical practice guidelines published in 2018 by the Latin American Thoracic Association (ALAT), the American Thoracic Society (ATS), the European Respiratory Society (ERS), and the Japanese Respiratory Society (JRS).[4] Imaging abnormalities such as pleural plaques, dilated esophagus, distal clavicular erosions, and pleural effusions/thickening are some that point to a potential secondary etiology for UIP.[5]The present study was conducted to assess CT signs in interstitial lung disease.

MATERIALS & METHODS

The present comprised of 70 patients of interstitial lung disease of both genders. All were enrolled in the study with their written consent.

Data such as name, age, gender etc. was recorded. One of these three multislice CT scanners was used to perform the CT scan. If the entire thorax is covered in full inspiration, the CT scan was deemed to be of diagnostic quality. Every CT scan was reconstructed in several planes and viewed using a spatial technique that was 1 to 2 mm high. A number of parameters were noted, including the straight edge sign,

exuberant honeycombing sign, and anterior upper lobe sign. Connective tissue disease (CTD) and non-CTD were the classifications given to the cases. Data thus obtained were subjected to statistical analysis. P value < 0.05 was considered significant.

RESULTS

Table I Distribution of patients

Gender	Group I (CTD)	Group II (non- CTD)
Male:Female	20:17	18:15

Table I shows that group I had 20 males and 17 females and group II had 18 males and 15 females.

Table II Assessment of parameters

Parameters	Group I	Group II
anterior upper lobe sign	38%	62%
exuberant honeycombing sign	32%	68%
straight edge sign	40%	60%

Table II, graph I shows that anterior upper lobe sign was present in 38%in group I and 62% in group II, exuberant honeycombing sign was present in 32% in group I and 68% in group II and straight edge sign was present in 40% in group I and 60% in group II. The difference was significant (P< 0.05).

Graph I Assessment of parameters

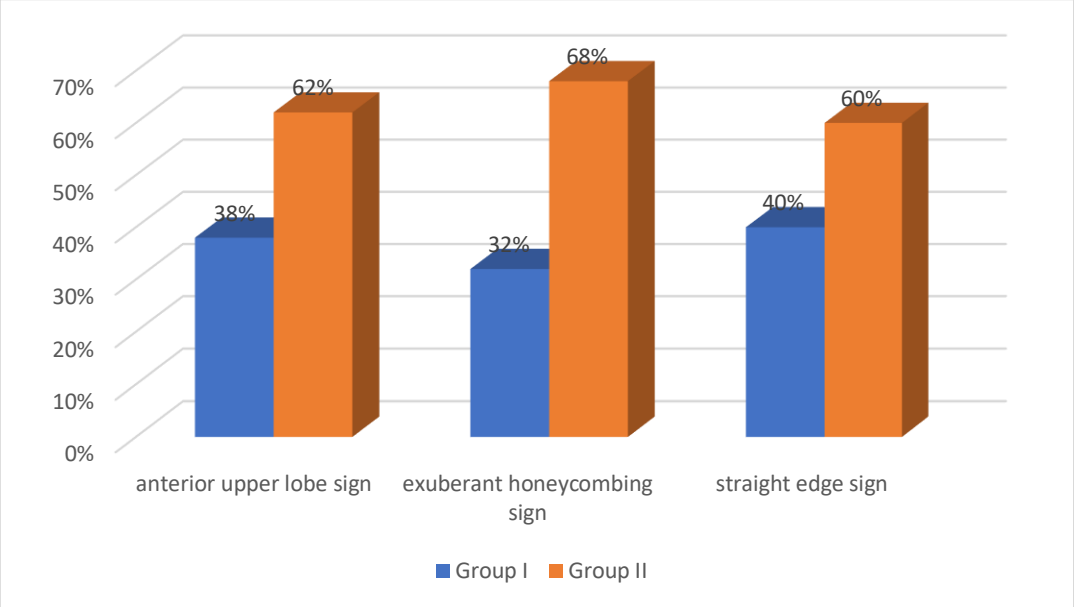

Table III CT signs in the diagnosis of CTD-related UIP

CT signs	Sensitivity	Specificity
anterior upper lobe sign	39%	87%
exuberant honeycombing sign	52%	78%
straight edge sign	42%	81%

Table III shows that sensitivity of CT in diagnosis of anterior upper lobe sign was 39%, exuberant honeycombing sign was 52% and straight edge sign was 42%. specificity of CT in diagnosis of anterior upper lobe sign was 87%, exuberant honeycombing sign was 78% and straight edge sign was 81%.

DISCUSSION

ILD progresses differently in each individual and in each condition. Determining each person's unique type of ILD is crucial because the course of treatment and the events that transpire over time may vary based on the reason.[6] Your doctor should keep an eye on your treatment because everyone reacts differently to it.[7] Many histological and radiological indicators may help differentiate IPF from other illnesses with a UIP pattern of fibrosis, but understanding them calls for a comprehensive understanding of interstitial lung disease (ILD) and an integrated multidisciplinary approach that includes pathologists, radiologists, pulmonologists, and rheumatologists.The AUL sign is concentration of fibrosis in anterior aspect of upper lobes with relative sparing of rest of the upper lobes along with concomitant lower lobe involvement.[7] EHC sign is extensive honeycomb-like cyst formation in more than 70% of fibrotic portion of lungs.[8] SE sign is fairly straight and abrupt interphase between

fibrotic lung bases and normal lung without extension along the lateral margins of lung on coronal images.[8]The present study was conducted to assess CT signs in interstitial lung disease.

We found that group I had 20 males and 17 females and group II had 18 males and 15 females. In patients with biopsy-proven IIP, Corte et al[9] investigated the clinical and prognostic value of a diagnosis of undifferentiated CTD (UCTD). Study participants included 45 patients with nonspecific interstitial pneumonia (NSIP) and 56 individuals with idiopathic pulmonary fibrosis who underwent surgical lung biopsies between 1979 and 2005. When serum autoantibodies were detected and symptoms or indicators pointed to CTD, UCTD was deemed to be present. The correlation between NSIP histology and UCTD was assessed. A priori characteristics were used to create a clinical algorithm that best predicted NSIP histology. This algorithm's and UCTD's prognostic utility were assessed. Seven (13%) IPF patients and 14 (31%) NSIP patients had UCTD. There was no benefit to survival linked to UCTD. The lack of typical high-resolution computed tomography (HRCT) features for IPF and either 1) a suitable demographic profile (females under 50 years old) or 2) Raynaud's phenomenon included the algorithm predictive of NSIP (OR 10.4, 95% CI 3.21-33.67; $p<0.0001$). This method predicted increased survival (hazard ratio 0.35, 95% CI 0.14-0.85; $p = 0.02$) regardless of IIP severity in patients having an HRCT scan that was not typical for IPF. NSIP histology is linked to UCTD. UCTD's diagnostic and prognostic importance in IIP patients is still unknown, nevertheless.

We observed that anterior upper lobe sign was present in 38%in group I and 62% in group II, exuberant honeycombing sign was present in 32% in group I and 68% in group II and straight edge sign was present in 40% in group I and 60% in group II. We found that sensitivity of CT in diagnosis of anterior upper lobe sign was 39%, exuberant honeycombing sign was 52% and straight edge sign was 42%. specificity of CT in diagnosis of anterior upper lobe sign was 87%, exuberant honeycombing sign was 78% and straight edge sign was 81%.Romagnoli M et al[10] assessed if iNSIP might represent an early lung manifestation of an autoimmune disease. After initial review of cases found in the medical records database by searching for the term "NSIP" (n = 63), 37 iNSIP cases were identified, and were re-evaluated using a dynamic integrated multidisciplinary approach. 27 cases with iNSIP were selected for the study. Mean ± sd age at first respiratory symptom was 54.2 ± 8 yrs, 70% were females, and 59% were never-smokers. At follow-up (mean ± sd 59.7 ± 29 months, range 12-138 months), autoimmune diseases occurred in 14 (52%) patients, with seven (26%) cases of autoimmune thyroiditis, six (22%) of undifferentiated connective tissue disease and three (11%) of connective tissue disease. Patients developing autoimmune diseases were older and more frequently never-smoking females. In >50% of patients diagnosed with iNSIP, evidence of autoimmune diseases develops within 2 yrs, suggesting a probable link between the clinical entity of iNSIP and autoimmune disorders.

The limitation the study is small sample size.

CONCLUSION

Authors found that the most detailed sign was the SE sign, and the most sensitive sign was the EHC sign.

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