A STUDY OF INTERSTITIAL LUNG DISEASE ASSOCIATED WITH RHEUMATOID ARTHRITIS

General Medicine

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ABSTRACT

BACKGROUND: Rheumatoid Arthritis (RA) is a common systemic disease that manifests as inflammatory arthritis of multiple joints and produces a wide variety of extra-articular manifestations. Interstitial Lung Disease (ILD) is one of the important pulmonary manifestation of RA like other Connective Tissue Disease(CTD). However RA-ILD differs from CTD-ILD in terms of histopathology and prognosis.

OBJECTIVES: To study the clinical features, laboratory profile, radiological patterns, pulmonary function tests including spirometry and DLCO in patients with RA-ILD.

MATERIALS AND METHODS: This study was a cross sectional study carried out in the department of Respiratory Medicine at MMIMSR, Mullana, Haryana. A total of 10 patients were included in the study after verifying inclusion and exclusion criteria. After complete history and investigations details were documented in a proforma.

RESULTS: A total of 10 patients comprising of 3 males and 7 females with a mean age of 56.5 years were included. Dry cough (100%) was the most common presenting complaints followed by exertional dyspnoea (80%). Among the 10 patients 8 were smokers. Bilateral basal Velcro creps was the most common feature (70%) followed by clubbing(20%). In HRCT the most common pattern was UIP (typical UIP-10%, probable UIP-70%) followed by Non-IPF pattern (20%). Spirometry showed restrictive pattern in all cases. DLCO was severely reduced in typical UIP pattern.

CONCLUSION: HRCT chest is the most sensitive tool for early diagnosis of ILD, while DLCO is most sensitive for monitoring the prognosis. RA-ILD can be prevented and treated at an early state.

KEYWORDS

Rheumatoid Arthritis, Interstitial Lung Disease, Connective Tissue Disease

INTRODUCTION :

Bilateral infiltrative diseases involving the lung parenchyma with a varying degree of inflammation and fibrosis, that may present acutely or more commonly as a chronic condition, are as a group named as Interstitial Lung Diseases(ILD). ILD is also known as diffuse parenchymal lung disease (DPLD) as interstitium is not the only component affected. DPLD term was previously used in the 1999 BTS guideline but later it was decided to adopt interstitial lung disease as consistent with universal guidelines⁽¹⁾.

Rheumatoid arthritis (RA) is a chronic systemic inflammatory disease. The main characteristic is a persistent synovitis of small joints, often symmetrical in distribution, resulting in pain, stiffness and loss of function^(2,3). A wide variety of extra-articular features like rheumatoid nodules, vasculitis, ILD, lymphadenopathy, serositis and amyloidosis may develop. The prevalence of RA is nearly constant throughout the world except in China with low prevalence of 0.3% and pima Indians with high prevalence of 5%. It is threefold more common in women than men⁽⁴⁾.

Lung disease is the second most common cause of death in RA^(5,6). First being cardiac disease in RA^(7,8,9). In our research we study the clinical, radiological, laboratory profile, pulmonary function tests including spirometry and DLCO in patients with RA-ILD.

MATERIALS AND METHODS:

The study was conducted in the department of Respiratory Medicine at MMIMSR, Mullana, Haryana during a period of 1 year from 2018 to 2019. The study population consisted of consecutive patients with a diagnosis of RA (based on revised ACR/EULAR criteria 2010) attending the respiratory medicine OPD during the study period, with features suggestive of ILD (pulmonary signs and symptoms) together with either or both of the following:

1. Reticular, Nodular or reticulonodular shadowing in chest x-ray.
2. ILD pattern in HRCT chest.

INCLUSION CRITERIA

1. Definite diagnosis of RA (ACR/EULAR CRITERIA 2010)⁽¹⁰⁾.
2. Pulmonary signs and symptoms together with radiological features consistent with ILD.
3. Age > 18 years.

Exclusion criteria

1. RA patients without pulmonary signs or symptoms.
2. Other connective tissue disorders.
3. Age < 18 years.
4. Pregnant and lactating women.
5. Sick patients unable to undergo PFT.
6. Pulmonary symptoms due to other chronic respiratory illnesses like infection, allergic alveolitis, pneumoconiosis etc.

Approval to conduct the study was obtained from the Institute's ethical committee. All patients are included in the study after obtaining informed consent from them. A detailed history was taken using the standard proforma prepared for study purpose including physical examination, blood investigations including complete hemogram, ESR, CRP and RA factor. Chest x-ray, HRCT, PFT and DLCO were also done for all patients included in the study. HRCT pattern was classified as typical UIP, probable UIP, indeterminate and Non-IPF according to Fleischner's society guidelines.

RESULTS:

A total of 10 patients comprising of 3 males and 7 females with a mean age of 56.5 years were included. Dry cough (100%) was the most common presenting complaints followed by exertional dyspnoea (80%). Among the 10 patients 8 were smokers (males-3, females-5). Bilateral basal Velcro creps was the most common feature (70%) followed by clubbing(20%). Among the 10 patients 7 tested positive for RA factor. Chest xray most common pattern was reticular (80%). In HRCT the most common pattern was UIP (typical UIP-10%, probable UIP-70%) followed by Non-IPF pattern (20%). Spirometry showed restrictive pattern(100%) in all cases. DLCO is severely reduced in typical UIP as compared to probable UIP and non-IPF pattern.

Figure:1 Hret Showing Typical Uip Pattern- Subpleural Honeycombing.

Figure:2 Chest Xray Showing Reticular Shadowing

Table:1 Distribution Of Chest X-ray

Table:2 Distribution Of Hrcr Pattern

DISCUSSION:

There is a dearth of Indian literature on ILD in RA patients. In a study done at Baroda, it was observed that 36% of RA patients have ILD⁽¹¹⁾. In our study the most common age group was 60 to 70 years. Studies that have analysed the extra articular manifestations of RA have reported that these are mostly in age group 50 to 60 years⁽¹²⁾. In our study the mean duration of joint symptoms was 27.9 months while studies report long standing RA as a risk factor for ILD^(13,14).

Many of the previous studies has shown a male predominance of RA-ILD but other studies like Tanaka et al in 2004 have shown a female preponderance similar to our study⁽¹⁵⁾. The most common respiratory complaint was dry cough (100%) followed by exertional dyspnoea (80%). The most common respiratory sign was bibasilar Velcro creps (70%) and it has been observed that it is associated with UIP pattern. Clubbing was present in 20% of study patients. In accordance to it past studies have shown that in comparison with Idiopathic Pulmonary Fibrosis, clubbing is less common in RA-ILD⁽¹⁶⁾.

Rheumatoid Factor was first discovered by Waaler et al in 1940s in the blood of RA patients⁽¹⁷⁾. The prevalence of RA factor in study patients was 70% and acute phase reactants were elevated in 80% of patients. The predominant HRCT pattern was UIP pattern (probable UIP-70%, typical UIP-10%) involving predominantly the lower lobes. This is in consistent with other studies in which reticular pattern with or without honeycombing is most common than ground glass opacity^(18,19).

In our study it is observed that among the smokers the most common pattern is UIP. However studies shows that NSIP(Nonspecific

Interstitial Pneumonia) pattern associated with smoking has a good prognosis⁽²⁰⁾. Spirometry shows restrictive pattern in all 10 cases and are consistent with other studies by Dawson et al and Banks J et al^(21,22).

In our study it is observed that DLCO was severely reduced in typical UIP pattern as compared to probable UIP and Non-IPF pattern. This is in accordance with literatures where UIP pattern indicates advanced disease and has a poor prognosis as compared to NSIP pattern. Thus DLCO is a highly sensitive tool in monitoring the prognosis of patients with Interstitial Lung Disease⁽²³⁾.

CONCLUSION:

Interstitial Lung Disease(ILD) associated with Rheumatoid Arthritis affects men and women in their late middle age. It can occur within a few years of occurrence of joint symptoms. All RA patients should be screened for respiratory complaints at regular intervals. HRCT is the most sensitive tool in evaluating RA-ILD patients and DLCO is the best tool for monitoring the prognosis.

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