

Clinical Profile of Pulmonary Manifestations in Rheumatoid Arthritis

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Abstract: ***Aim:** To study the clinical profile of pulmonary manifestations in rheumatoid arthritis. **Materials and Methods:** This a hospital based observational study conducted in the department of Medicine, Gauhati Medical College and Hospital for a period of one year in 100 rheumatoid arthritis patients randomly selected from those who have attended ward or OPD and fulfilled inclusion and exclusion criteria. Patients were evaluated with detailed clinical history, through clinical examination and relevant laboratory investigations. **Results:** Out of 100 cases, 9% presented with pulmonary manifestations, of which 55.5% presented with Interstitial lung disease, 33.3% with Pleural effusion and 11.1% with nodules. **Conclusion:** It was concluded from our study that apart from the mandatory articular involvement, various other extra articular systems are also involved in a major portion of the Rheumatoid arthritis patients, and out of them pulmonary involvement was of particular significance, especially interstitial lung disease.*

Keywords: Extra articular manifestations of rheumatoid arthritis, Rheumatoid arthritis, pulmonary manifestations

1. Introduction

Pulmonary involvement in rheumatoid arthritis is common and is directly responsible for 10 – 20 % of all mortality (Minaur et al., 2004) ⁽¹⁾ (Sihvonen et al., 2004) ⁽²⁾ mostly attributable to ILD. In some cases, respiratory symptoms may precede articular symptoms in 10 – 20 % of cases (O'Dwyer et al., 2013) ⁽³⁾. There are a variety of pulmonary manifestations of rheumatoid arthritis, including pulmonary parenchymal disease (interstitial lung disease (ILD)) and inflammation of the pleura (pleural thickening and effusions), airways and pulmonary vasculature (vasculitis and pulmonary hypertension). The most severe form of lung involvement is the interstitial lung disease (ILD). The clinically evident ILD affects between 10 and 42% of the patients in different series, mainly based on the method used for its study (Young and Koduri, 2007) ⁽⁴⁾ High titre of Rheumatoid Factor (RF) and Anti - cyclic Citrullinated Peptide antibody (anti - CCP) (Kamiya, H., Panlaqui, 2021) ⁽⁵⁾; higher age (Bharadwaj and Haroon, 2005) ⁽⁶⁾; (Kalappan et al., 2017) ⁽⁷⁾; Smoking (Biederer et al., 2004) ⁽⁸⁾; increased duration of disease and increases the likelihood for developing RA associated ILD.

Aim

To study the clinical profile of pulmonary manifestations in rheumatoid arthritis

2. Materials and Methods

Study Group

This is a descriptive study on the extra - articular manifestations of RA in 100 cases of rheumatoid arthritis attending out - patient department or admitted in the medical ward of Gauhati medical college hospital, Guwahati from July 2021 to June 2022. Patients who have been already

diagnosed with RA were retrospectively evaluated from the hospital records.

Inclusion Criteria

The cases fulfilling the 2010 American College of Rheumatism (ACR) and the EULAR criteria for rheumatoid arthritis.

Exclusion Criteria

- 1) Patients with previously diagnosed primary pulmonary diseases.
- 2) Chronic liver disease.
- 3) Chronic renal failure.

Method of the Study

The patients in the study group were evaluated with a detailed clinical history, through clinical examination and relevant laboratory investigations. The classification of Rheumatoid Arthritis was made according to the 2010 ACR: EULAR Classification Criteria. Patients with Extra articular Rheumatoid Arthritis were identified based on predefined criteria.

Laboratory data consisted of CBC, FBS, serum creatinine, BUN, AST, ALT, serum uric acid, ESR, CRP, fasting lipid profile, Urine R/E, Rheumatoid Factor, anti CCP were tested in all patients. All patients underwent Chest X - ray, Joint X - rays and ECG, HRCT Thorax, Echocardiography.

3. Results and Observation

1) Pulmonary Manifestations

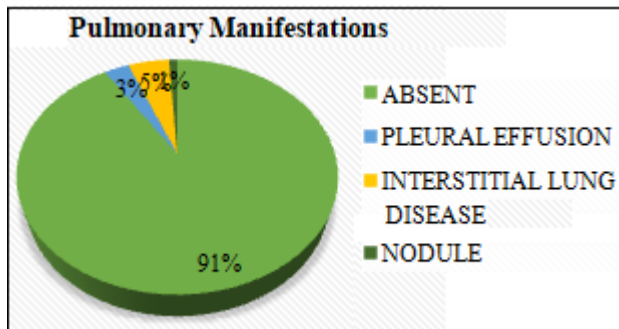


Figure showing 9% of the total cases presented with pulmonary manifestations, of which 55.5% of the patient presented with interstitial lung disease, 33.3% with pleural effusion and 11.1% with nodule.

2) Pulmonary Manifestations VS Duration of Disease

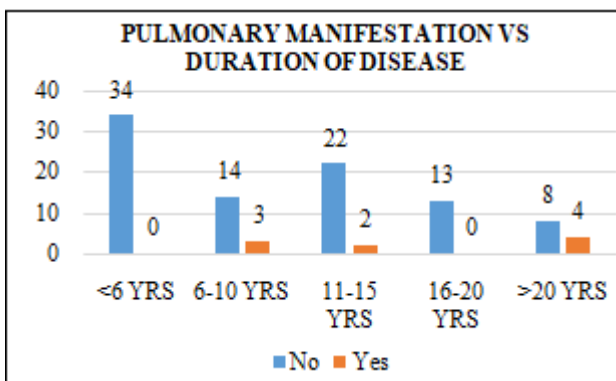


Figure showing with increase in duration of disease, there is an increase in Pulmonary cases, with highest, 44.4% of total in >20 years group, with a significant p - value of 0.05.

3) Pulmonary Manifestations VS Rheumatoid Factor

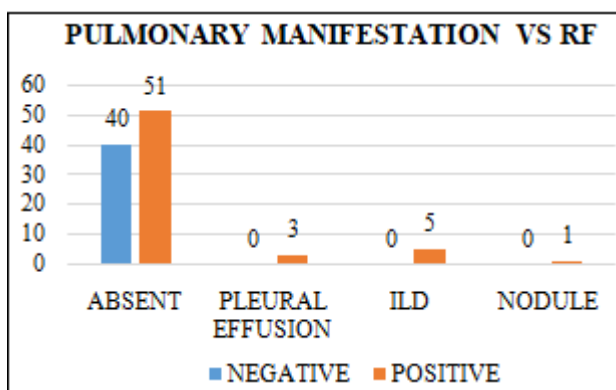


Figure showing all 100 % cases with Pulmonary manifestations to be seropositive, with a significant p value of 0.01

4. Discussion

The present study found pulmonary involvement in 9 out of 100 cases, i. e., 9 percent. Out of which ILD was found in 5 patients (5 % of total patients), pleural effusion in 3 patients (3 %) and pulmonary nodule in 1 patient (1 %)

Bharadwaj *et al*⁽⁶⁾ obtained ILD in 9.29 % patients in his study, which was comparable to our study. Unlike our study there were no other pleuropulmonary manifestations in their cohort.

Kaltsonoudis *et al*⁽⁹⁾ in a monocentric cohort study spanning 15 years found 37 out of 534 i. e., 6.7 % patients had pulmonary manifestations, which was lesser when compared to our study. ILD was found to be the predominant pulmonary involvement

Siadene O *et al*⁽¹⁰⁾, found the overall frequency of lung involvement to be 27.6 %, 18 out of 65 patients which is slightly higher in comparison to our study. ILD was found in 7 cases, bronchiectasis was found in 5 cases, rheumatoid nodule in 4 cases and pleural disease in 2 cases. These findings with the exception of bronchiectasis were comparable to our study

Duration of disease is an important factor determining extraarticular manifestations in RA, likewise the incidence of pulmonary involvement in RA also rises with increasing duration of symptoms. In our study, we found the mean duration of disease to be 3.68 years with maximum patients with disease duration 1 - 5 years (34%). Bharadwaj *et al* found mean disease duration to be 4 years in his study (Bharadwaj and Haroon, 2005)⁽⁶⁾ and Richman NC *et al* found it to be 6.4 years in their study (Richman *et al.*, 2013)⁽¹¹⁾

In our study, impact of seropositivity (either RAF and/or ACPA) on pulmonary involvement was studied, there was found to have a positive correlation between seropositivity and Pulmonary manifestations. Kamiya *et al*⁽⁵⁾, in their systematic review and meta - analysis of the risk of RA – ILD related to anti CCP antibody, suggested that presence and high titres of anti CCP was significantly associated with an increased risk of RA ILD.

5. Conclusion

It was concluded from our study that apart from the mandatory articular involvement, various other extra articular systems are also involved in a major portion of the Rheumatoid arthritis patients, and out of them pulmonary involvement was of particular significance, especially interstitial lung disease.

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