ORIGINAL RESEARCH PAPER

Medicine

ASSESSMENT OF PULMONARY FUNCTION IN RHEUMATOID ARTHRITIS PATIENTS ATTENDING RHEUMATOLOGY CLINIC

KEY WORDS: Rheumatoid arthritis , pulmonary function test

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ABSTRACT

BACKGROUND: Pulmonary involvement is a frequent and among the most severe extra-articular manifestations of Rheumatoid Arthritis (RA) ranking as the second cause of mortality in this patient population. Rheumatoid arthritis can affect the lung parenchyma, airways and pleura. Pulmonary complications are directly responsible for 10-20% of all mortality in RA patients.

Spirometry is a tool in monitoring for pulmonary function abnormalities in patients of rheumatoid arthritis. Abnormalities detected by pulmonary function tests (PFT) may precede symptoms by years and lead to early diagnosis of pulmonary fibrosis in rheumatoid arthritis and hence intervention.

OBJECTIVES: To identify and describe the pattern of pulmonary function abnormalities in rheumatoid arthritis patients attending Rheumatology Clinic.

Materials and methods:

- This is a hospital based observational study.
- 50 Patients are selected using convenient simple random sampling.
- Patients with history of asthma, COPD and other respiratory disease are excluded from study.
- Pulmonary function tests are performed using Spiro lab III according to the American Thoracic Society recommendations.

RESULTS: From our study we have found that PFT abnormalities in RA patients are more prevalent

- among females affecting 50% of patients
- among patient aged more than 60 yrs (83%)population.
- with increase disease duration.
- Among seropositive patients around 44% of patients.

CONCLUSION: Pulmonary affection in various spectrum does involve a sizeable percentage of people with RA and can have significant bearing on treatment regimen and overall quality of life of these patients. Screening of RA patients with spirometer helps in early detection of pulmonary involvement.

INTRODUCTION:

Rheumatoid arthritis is a chronic inflammatory autoimmune disease characterized by joint destruction, which leads to functional decline and disability as well as increased mortality.[1]Pulmonary involvement is a frequent and one of the most severe extra-articular manifestations of Rheumatoid Arthritis (RA) ranking second as the cause of mortality in this patient population.[2] The lungs are commonly affected in patients with RA. Pleural effusions and pulmonary rheumatoid nodules are common, and there is an association of these pulmonary manifestations of RA with, high titres of rheumatoid factor. Patients with RA also develop interstitial lung disease that is characterized by an early inflammatory phase associated with pulmonary mononuclear cell infiltrates. The later phases of interstitial lung disease are characterized by the development of pulmonary fibrosis. Pulmonary complications are directly responsible for 10-20% of all mortality in RA patients.[3]

Pulmonary involvement can be assessed using HRCT and DLCO for anatomical and physiological abnormalities respectively. However, these diagnostic tests may not be widely available and cost effective. Spirometry is a tool in monitoring for pulmonary function abnormalities in patients of rheumatoid arthritis. Abnormalities detected by pulmonary function tests may precede symptoms by years and lead to early diagnosis of pulmonary fibrosis in rheumatoid arthritis and hence intervention. The purpose of this study is to identify and describe the pattern of pulmonary function abnormalities in rheumatoid arthritis patients attending Rheumatology Clinic.

METHODS AND MATERIALS:

- This is a hospital based observational study.
- 50 Patients are selected using convenient simple random sampling who fulfilled The 2010 American College of Rheumatology and European League Against Rheumatism (EULAR) classification criteria for Rheumatoid Arthritis of age more than 18 years.
- Patients with history of asthma, COPD and other respiratory disease are excluded from study.
- Pulmonary function tests are performed using Spirolab III according to the American Thoracic Society recommendations.
- Lung parameters such as forced vital capacity, forced expiratory volume in 1 s, forced expiratory flow in 25-75%, and peak expiratory flow rate are measured.

RESULTS:

1) Sex distribution:

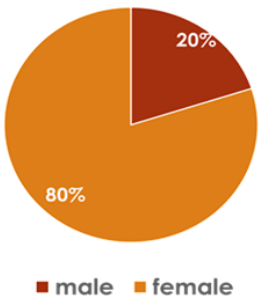

Figure 1

2) Age distribution:

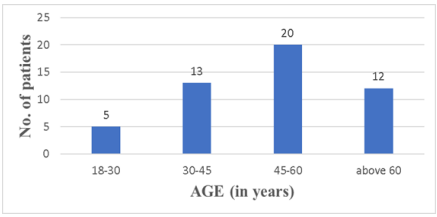

Figure 2

3) Duration of disease:

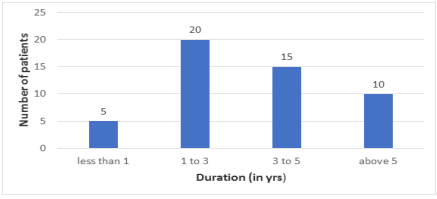

Figure 3

4) Pulmonary function test in study population:

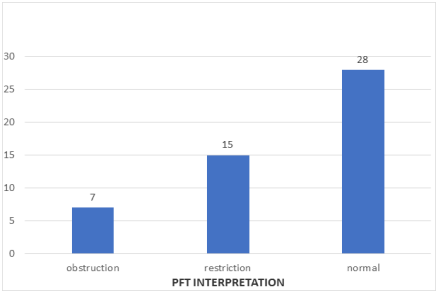

Figure 4

5) Clinical Features of Rheumatoid Arthritis Patients with PFT Abnormalities and Without PFT Abnormalities:

Table 1

CLINICAL FEATURE		PFT NORMAL	PFT ABNORMAL
GENDER	MALE	8	2
	FEMALE	20	20
AGE(IN YEARS)	18-30	4	1
	30-45	8	5
	45-60	14	6
	ABOVE 60	2	10
DURATION OF DISEASE (IN YEARS)	< 1 YR	4	1
	1-3 YRS	15	5
	3-5 YRS	6	9
	>5 YRS	3	7
RHEUMATOID FACTOR	POSITIVE	22	18
	NEGATIVE	6	4

DISCUSSION:

Summary: From our study we have found that

1. 80% of our study population were female and 20% were male.
2. Out of 50 patients 20 were in the age group of 45 to 60 yrs. And PfT Abnormalities are common among patient aged more than 60 yrs (83%)population.
3. We have found that PFT abnormalities are common in patients with increasing disease duration.
4. In our study 80% patients were rheumatoid factor positive and we have also observed that PFT abnormalities are common among seropositives than seronegatives.(44% compared to 40%)

When we compared our results with previous studies we have seen following variations.

1. **Sex distribution:** In our study we found PFT abnormalities among 50% females as compared to 20% in males.

In a study by Malaviya et al in a study on North Indian RA patients found pulmonary dysfunction in 8%. In the present study, 4 out of 7 males had PFT abnormalities (57%); among the female patients 7 out of 23 (30%) had PFT abnormalities.[4]

Another study by Madhavan, et al. in 2017 have shown Sex distribution of 7 males and 23 females. Among them 4 males (57.1%) and 7 females (30.4%) had abnormal PFT.[5]

Our results are varying from previous studied probably because of less sample size of our study population

2. Age distribution: In our study, we found PFT abnormalities are more prevelant among patients with inceasindg age .We found 83% patients above 60 yrs have PFT abnormalities as compared to 20% in patients below 30 yrs.
3. PFT : In our study, pulmonary function abnormalities were found amongst 22 out of 50 patients(44%) with restrictive pattern being the most common variety.

Similar results were observed in study by Madhavan, et al with where they 11 (36.6%) had PFT abnormalities among 30 patients.

In another study by Premsundar et al restrictive ventilatory defect was seen in 64% of patients, and obstructive ventilatory defect was seen in 10% of patients.[6]

4. Duration of disease: In our study, we found PFT abnomalitis are more prevelant amongst patients with more disease duration.
5. Seropotivite status: In our study out of 40 seropositive patients 18 has abnormal PFT (45%).

In a study by Madhavan, et al they found 22 patients had positive RF; among them 9 had abnormal PFT (41%). Among the 8 RA patients with negative RF, 2 had abnormal PFT.[5]

Limitations:

Our results give us an idea regarding demographic profile and seropositivity among patients of RA with PFT abnormalities. The main limitation of our study according to us is the small sample size. Larger studies are warranted to fully ascertain the pulmonary involvement in RA patients from this part of country.

CONCLUSION:

Pulmonary affection in various spectrum does involve a sizeable percentage of people with RA and can have significant bearing on treatment regimen and overall quality of life of these patients. Screening of RA patients with spirometer helps in early detection of pulmonary involvement.

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