

A Study of Pulmonary Manifestations in Patients of Rheumatoid Arthritis Attending a Tertiary Care Centre in Kumaon Region of Uttarakhand.

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ABSTRACT

Background: ILD is the most common pulmonary manifestation of rheumatoid arthritis and rheumatoid arthritis is most common encountered connective tissue disorder. Lung affliction directly implicated with the underlying RA is more frequent, although pulmonary infection and drug toxicity are common complications of RA. The lung is involved in rheumatoid disease because of the abundant vasculature and connective tissue. RA is involved in variable amounts of pathological inflammation and fibrosis of the lungs. The well-characterized pulmonary disorders in RA include: RA-associated interstitial lung disease, pleural effusions and pleuritis, rheumatoid nodules, Caplans syndrome, pulmonary vasculitis and pulmonary airway involvement. Bronchiectasis and an increased incidence of chest infections have also been reported. **Methods:** Patients of Rheumatoid arthritis patients above 16years of age attending the Department of Medicine in Government Medical College & Associated Dr. Susheela Tiwari Govt Hospital, Haldwani (NAINITAL). **Results:** Out of the 102 patients recruited, 72(70.5%) were female and 30 (29.41%) were male. Majority were in age group of (55-64) .102 patients who underwent this test 63 (61.76 %) were found to have abnormalities while 39 (38.23%) were normal. Out of the 63 patients with abnormalities, 28(27.4%) had Obstructive ventilatory defects, 35(34.3%) had Restrictive ventilatory defect. The commonest symptom was in Cough at (41.7%) followed by Phlegm in (22.54%) and increased frequency of chest colds and chest illnesses in a year in (14.20%) Breathlessness in (10.78%) Wheeze in (9%). (52.90%) patients had duration > 5 ys of duration suffering from rheumatoid arthritis .Rheumatoid factor was positive in 74 (72.54%). The ESR median value of 36.1 had abnormal spirometry compared with those at 11 who had normal (p=0.001). **Conclusion:** In our study older age, positive rheumatoid factor, and those with a high ESR were more likely to have abnormalities in their pulmonary function test.

Keywords: Interstitial Lung Disease, Rheumatoid Arthritis, Spirometry.

INTRODUCTION

The onset of respiratory symptoms may manifest even before the onset of symptoms of rheumatoid arthritis.^[3] The majority of lung disease occurs within the first 5 years after the initial diagnosis, and may be a presenting manifestation in 9 to 20% of patients. Pulmonary complications are directly responsible for 10 to 20% of all mortality.^[4]

Lung affliction directly implicated with the underlying RA is more frequent, although pulmonary infection and drug toxicity are common complications of RA. The lung is involved in variable amounts of pathological inflammation and fibrosis of the lungs. The well-characterized pulmonary disorders in RA include: RA-associated interstitial lung disease, pleural effusions and pleuritis, rheumatoid nodules, Caplans syndrome,

pulmonary vasculitis and pulmonary airway involvement. Bronchiectasis and an increased incidence of chest infections have also been reported.^[5,6,7]

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MATERIALS AND METHODS

Study Population

These were Rheumatoid arthritis patients above 16 years of age attending the Department of Medicine in Government Medical College & Associated Dr. Susheela Tiwari Govt Hospital, Haldwani (Nainital).

Study Design

This was a Cross sectional descriptive study.

Inclusion Criteria

RA patients who met the American Rheumatism (1987) criteria with informed consent/assent were recruited.

Exclusion Criteria

Those excluded were:

Patients who had other connective tissue diseases e.g. Systemic Lupus Erythematosus (SLE).

Patients who had documented active pulmonary lesions e.g. Pulmonary tuberculosis, Pneumonia, Asthma, COPD.

- Patients who had documented Cardiac disease. > 65yrs of age
- Recent haemoptysis (3 months)
- Recent surgery of thorax, abdomen, eye surgery

RESULTS

Age Group Their ages ranged from 16 to 72 years with a mean of 45.91 years. Patients were divided in seven groups, maximum i.e. 23(22.54%) number of patients were in age group of (55-64) and minimum 3(2.94%) were in age group of >75 years.

Table 1: Age distribution.

| Age group | Number of patients, n=102(%) |
|-----------|------------------------------|
| 16-24 | 11(10.78) |
| 25-34 | 12(11.76) |
| 35-44 | 21 (21.56) |
| 45-54 | 18(17.64) |
| 55-64 | 23 (21.56) |
| 65-74 | 14(13.72) |
| >75 | 3(2.94) |

Sex distribution

Out of the 102 patients recruited, 72(70.5%) were female and 30 (29.41%) were male.

Table 2: Sex distribution.

| Sex | Number of patients, n=102(%) |
|--------|------------------------------|
| Male | 30 (29.41) |
| Female | 72 (70.5) |

Prevalence of PFTs abnormalities and patterns in RA patients. Pulmonary function tests were performed using the Spiro excel machine, of the 102 patients who underwent this test 61.76 (%) were found to have abnormalities while 39 (38.23%) were normal. Out of the 63 patients with abnormalities, 28(27.4%) had Obstructive ventilatory defects, 35(34.3%) had Restrictive ventilatory defect as shown in [Figure 1]. Out of 102 patients recruited 22(21.56) were female and 6(5.88) were male manifesting obstructive lung disease depicted in [Figure 2].

Out of 102 patients recruited 12 (11.76%) were male and 23 (22.54%) were female manifesting restrictive lung disease depicted in [Figure 3].

Respiratory Symptoms

Respiratory symptoms were assessed using the Lung Tissue Research Consortium questionnaire. The commonest symptom was in Cough at 42(41.7%)

followed by Phlegm in 23(22.54%) and increased frequency of chest colds and chest illnesses in a year in 15(14.20%) Breathlessness in 11(10.78%) Wheeze in (9%).

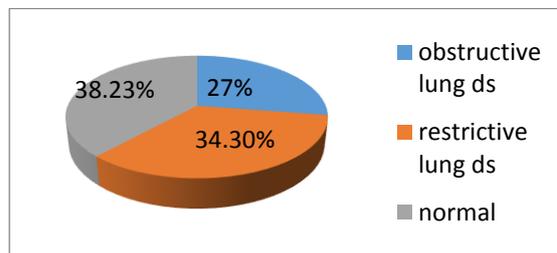


Figure 1: Pulmonary Function Test.

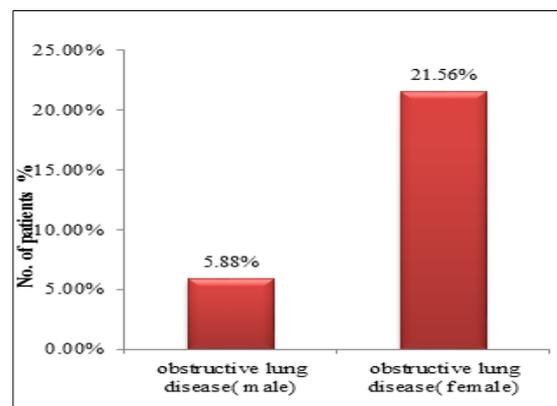


Figure 2: Obstructive lung disease-Distribution sex wise (Bar chart)

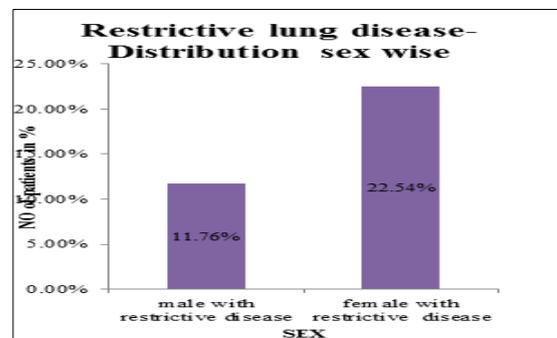


Figure 3: Restrictive lung disease-Distribution sex wise.

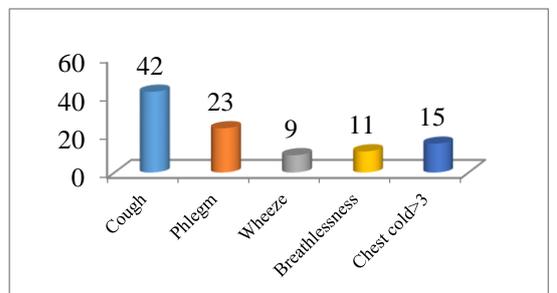


Figure 3: Frequency of Respiratory symptoms in Rheumatoid arthritis patients.

No of patients with duration of rheumatoid disease in percentage 3.92% of patients had disease duration <1 year while 52.90% had duration > 5 years as

depicted in [Table 3] The higher pulmonary abnormalities in the older age group, possible explanation could be longer duration of exposure to symptomatic RA disease with late diagnosis.

Table 4: Duration of Disease.

| Duration of disease <1yr. | Duration of disease 1-5 yrs | Duration of disease >5 yrs. |
|---------------------------|-----------------------------|-----------------------------|
| 3.92% | 43.13% | 52.90% |

Rheumatoid factor

Out of 102 patients Rheumatoid factor was positive in 74 (72.54%) and negative in 28 (27.45%) as depicted in [Table 5]. Factors that were shown to associate with pulmonary function abnormalities were sero positivity to Rheumatoid factor.

Table 5: Percentage of Rheumatoid factor positive/negative patients.

| Rheumatoid factor positive patients in (%) | Rheumatoid factor negative patients in (%) |
|--|--|
| 72.54% | 27.45% |

DISCUSSION

The aim of this study was to study pulmonary manifestations in patients of rheumatoid arthritis attending a tertiary care centre in Kumaon region of Uttarakhand. The total number of patients who were recruited into the study was 102 this is because when including the ACR 2010 criteria for diagnosis of RA, more patients were diagnosed as compared to using the ACR 1987 criteria, which our studies did. The mean age of the study population was 46.52 years. This is expected because RA is a disease with onset from the third to fifth decades of life. Women were predominantly affected by the disease at 69.60% with a male to female ratio of 1: 2.29 the present study found the prevalence of restrictive ventilatory defect to be the most common at 34.31%. This was an important finding since other studies have solely set out to find the prevalence of obstructive dysfunction in small airways in RA. A variety of patterns are seen on HRCT scans in rheumatoid arthritis, with the most common being usual interstitial pneumonia (UIP), which occurs in 40–62% of cases.^[8,9] De laurtis et al, and a nonspecific interstitial pneumonia (NSIP) pattern is also most frequently seen.^[10] In my study interstitial pneumonia (UIP), occurred in (57.69%) of cases, and nonspecific interstitial pneumonia (NSIP) pattern occurred in (23.07%) of cases which is similar to previous studies.

Limitations

Sample size in this study was small only 102 patients were included in the study. A further larger study is required to know the prevalence of disease in Kumaun region. True load can be assessed by a

community based study, the present study was hospital based study. It might have a skewed result and a larger number of patients would need to be evaluated to postulate a concrete opinion.

CONCLUSION

High frequency of pulmonary function abnormalities were measured by spirometry in given population. The commonest ventilator defect pattern was restrictive followed by obstructive lung disease. Rheumatoid disease activity, older age and respiratory symptoms were identified as predictors of physiological pulmonary impairment as determined by Spirometry .HRCT proved to be more specific in diagnosing pulmonary function abnormalities the commonest being (usual interstitial pneumonitis) followed by nonspecific interstitial pneumonitis.

HRCT and Spirometry can act synergistically in diagnosing increased numbers of pulmonary cases in rheumatoid arthritis.

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