

A STUDY ON THE INCIDENCE OF PLEUROPULMONARY MANIFESTATIONS OF RHEUMATOID ARTHRITIS IN A TERTIARY CARE HOSPITAL

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ABSTRACT: INTRODUCTION: Rheumatoid arthritis is a chronic systemic inflammatory disorder that affects many tissue organs such as skin, blood vessels, heart, lungs and muscles but principally affects joints producing synovitis that often progress to tissue destruction of articular cartilage and ankylosis of joints. Pulmonary manifestations in rheumatoid arthritis are varied as the pleura, lung, parenchyma, airways and pulmonary vasculature all can be involved. **AIM AND OBJECTIVES:** To study the incidence of pleuropulmonary manifestations of Rheumatoid Arthritis in patients who were confirmed to have rheumatoid arthritis by 2010 ACR criteria.⁶ **METHODOLOGY:** This prospective study was carried out at King George Hospital, Visakhapatnam, Andhra Pradesh. It is a Tertiary Care Hospital. The study was conducted from January 2013 to December 2014. **RESULTS:** A total of sixty patients who were confirmed to have rheumatoid arthritis were included in this study. Of these, female patients were 34 (56.66%) and males were 26 (43.33%). In this study, out of sixty patients of rheumatoid arthritis 24 patients (40%) had pleuropulmonary manifestations. **CONCLUSION:** Rheumatoid Arthritis is prevalent in females but pleuropulmonary manifestations are common in males. Prevalence of pleuropulmonary manifestations is independent of duration of rheumatoid arthritis. But presence of pleuropulmonary manifestations indicate the severity of disease process.

KEYWORDS: Rheumatoid Arthritis, Pleuropulmonary, Rheumatoid factor, interstitial fibrosis.

INTRODUCTION: Rheumatoid Arthritis is a chronic inflammatory systemic disease with predominant articular affection. It leads to progressive joint damage, significant morbidity and shortened lifespan. Rheumatoid arthritis is a disease of unknown etiology characterized by articular, extra-articular manifestations and the presence of serum rheumatoid factor. There is progressive functional decline resulting in considerable socio-economic burden. In rheumatoid arthritis there is symmetrical and persistent inflammation of synovial tissue involving the peripheral joints. Patients with rheumatoid arthritis who have high titre of Rheumatoid factor i.e. auto anti -bodies to the Fc component of IgG are most likely to have extra articular manifestations of disease including rheumatoid nodule, pleuropulmonary, neurological, gastrointestinal, cardiovascular, cutaneous, hematological and ocular complications. Prevalence of rheumatoid arthritis is 0.8%. All races are affected and women are three times more likely than men to be affected. Onset of illness is most frequently in fourth and fifth decade of life. Pulmonary manifestations in rheumatoid arthritis are varied as the pleura, lung parenchyma, airway and pulmonary vasculature all can be involved. Not only the disease perse, but the

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treatment, of rheumatoid arthritis with chemotherapeutic drugs and disease modifying anti – rheumatic drugs can also cause varied pulmonary manifestations.

The present study is undertaken to know the varied pleuropulmonary manifestations along with articular and extra articular manifestations of rheumatoid arthritis.

AIMS AND OBJECTIVES:

- 1) To study the clinical profile of patients with rheumatoid arthritis with special emphasis on pulmonary manifestations.
- 2) To study various pulmonary manifestations of rheumatoid arthritis with respect to age, sex, modes of presentations, clinical features, radiological features and pulmonary function abnormalities.
- 3) To study the correlation between pulmonary manifestations and various systemic manifestations.

MATERIALS AND METHOD: This is a prospective hospital based study conducted in a tertiary care hospital, Visakhapatnam, Andhra Pradesh. A total of sixty patients of Rheumatoid Arthritis were recruited into the study. The 2010 American College of Rheumatology criteria⁶ was used to recruit the patients. In the present study pleuropulmonary manifestations are studied in sixty patients who are having rheumatoid arthritis.

INCLUSION CRITERIA: All patients of Rheumatoid Arthritis (according to the 2010 American College of Rheumatology criteria) who are more than 15 years of age and who have been screened for pulmonary manifestations in both symptomatic and asymptomatic patients.

EXCLUSION CRITERIA:

- 1) Cases of juvenile Rheumatoid Arthritis.
- 2) Patients with mixed connective tissue disease.
- 3) Patients with seronegative Rheumatoid Arthritis.

METHODOLOGY: The study population included patients with rheumatoid arthritis both denovo detected and those who were already diagnosed as having rheumatoid arthritis. A detailed history and clinical examination was performed with special emphasis on the respiratory system. Routine investigations included are haemogram, erythrocyte sedimentation rate, urine microscopy, blood urea, serum creatinine, serum electrolytes, liver function tests, serum total proteins, serum albumin and serum calcium were done. Ultrasound abdomen, 2D Echo and colour doppler of arterial and venous system of both lower limbs included, wherever relevant serological tests including rheumatoid arthritis factor, C-reactive protein, ASO titres, sputum microscopy, gram stain, Zeihl Neilson staining for acid fast bacilli and culture and sensitivity was done on the sputum. Pleural fluid analysis including sugar, protein, lactate dehydrogenase, albumin, amylase, adenine deaminase, cell count and differential count, gram stain, acid fast bacilli stain and culture were done. Special investigations like pleural fluid ph, PCR for tuberculosis were done. Pulmonary function tests, chest x-ray, and HRCT chest were performed and bronchoscopy was done in required cases.

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RESULTS:

Age	Male	Female	Total patients	Percentage (%)
0 – 20	-	-	-	-
21 – 30	-	-	-	-
31 – 40	8	14	22	36.67
41 – 50	16	16	32	53.33
51 – 60	2	4	6	10
More than 60	-	-	-	-

Table 1: age incidence

Sex	Total	Percentage (%)
Male	26	43.33
Female	34	56.66

Table 2: Sex Incidence

Sl. No.	Clinical Feature	Total Patients	Percentage (%)
1.	Polyarthritis	60	100
2.	Presence of deformities	20	33.33
3.	Subcutaneous nodules	20	33.33
4.	Pleuropulmonary manifestations	24	40
5.	Felty's syndrome	6	10
6.	Vasculitis	2	3.3
7.	Uveitis	2	3.3
8.	Pericardial effusion	2	3.3

Table 3: Frequency of clinical features

Sl. No.	Pleuropulmonary Manifestation	Total
1.	Diffuse interstitial fibrosis	4
2.	Pleural effusion	6
3.	Tuberculous pleural effusion	2
4.	Bronchiectasis	2
5.	Bronchiectasis with pleural nodule	2
6.	Bronchial asthma	4
7.	COPD with pleural thickening and pleural nodule	2
8.	Caplan's syndrome	2
	TOTAL	24

Table 4: Frequency of pleuropulmonary manifestations

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ANALYSIS AND DISCUSSION: The commonest age group of patients in the present study is between 40 to 50 years with a range of 30-60 years. Of the sixty patients, female predominance is present. Females are 34 (56.66%) and males are 26 (43.33%) in number. All patients in the study group have Rheumatoid factor positivity and radiological features of juxta-articular osteoporosis in the corresponding involved joints. Subcutaneous nodules are present in 20 patients (33.33%). All sixty patients had polyarthritis, out of which 20 patients (33.33%) had deformities, out of which 6 were males and 14 were females. Felty's syndrome was present in 6 patients, uveitis was seen in 2 patients, vasculitis in 2 patients and pericardial effusion was seen in 2 patients. Though Rheumatoid Arthritis is common in females, pleuropulmonary manifestations are relatively common in males.¹ In the present study out of sixty patients of Rheumatoid arthritis, 24 patients had pleuropulmonary manifestations. Out of 24 patients 8 were female and 16 were male patients. The prevalence of pleuropulmonary manifestations according to this study is 40%. This is comparable to a similar study conducted at Lucknow.² As documented by Indian journal of Radiology the interstitial lung changes affects significant proportion of patients affected with rheumatoid arthritis. Coexisting subcutaneous rheumatoid nodules is a high risk factor for development of interstitial lung disorder in patients with rheumatoid arthritis.³ In the present study four patients presented with diffuse interstitial fibrosis, of these 2 patients are elderly having long duration of the disease and had skeletal deformities. They had symptoms of progressive onset of dyspnoea, occasional dry non-productive cough. Chest x-ray of female patient had shown basal reticulo-nodular infiltrates. Bilateral HRCT of both patients showed reticulo-nodular densities with honey combing in both lungs predominantly lower lobes, suggestive of fibrosis. There is ground glass haziness in both lungs. Pulmonary function tests in them showed restrictive pattern. Two patients with rheumatoid arthritis presented with progressive exertional dyspnoea with anemia and were found to have felty's syndrome and caplan's syndrome. Both of them are farmers by occupation. Four patients had bilateral pleural effusion. They have chest pain associated with dry cough of short duration. They also had recent aggravation of articular symptoms. Another patient was found to have bilateral minimal pleural effusion on routine chest x-ray. This patient also had bilateral vasculitis and dry gangrene of lower limbs and polyarthritis. Among them one had minimal pericardial effusion which resolved with disease modifying rheumatic drugs. Pleural fluid in all these patients has shown low glucose, higher lactate dehydrogenase with acidic pH.⁴ Pleural fluid is characteristic and shows exudative type (protein usually >3.0 gm/dl), low sugar (<50 mg/dl) in about 75% of patients, raised LDH, raised cholesterol and high titre of rheumatoid factor. Mantoux test is negative in all these patients⁵. Two patients with rheumatoid arthritis of two years duration had pyrexia of unknown origin of one month duration. They did not respond to disease modifying rheumatic drugs. When evaluated they were found to have tuberculous pleural effusion. Pleural fluid analysis was serosanguinous, had high lymphocyte count (total cell count 600 and differential count showing 80% lymphocytes, ADA> 90 and of exudative type). Mantoux test was positive and they responded to antituberculous treatment. Four patients had bronchial asthma. Chest x-ray and pulmonary function tests are normal. Four patients had fever, cough with expectoration and dyspnoea. HRCT showed tractional bronchiectasis. Two patients had COPD with emphysematous pattern, thickening of pleura and pulmonary nodule. Pulmonary function tests showed an obstructive pattern.

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CONCLUSION: Rheumatoid arthritis usually appears during third to fifth decades of life. Their prevalence increases with age. Those patients who had long standing disease had more articular deformities. Factors associated with poor prognosis in rheumatoid arthritis include insidious polyarticular onset, male patients, extra-articular manifestations. Rheumatoid arthritis is prevalent in females but pleuropulmonary manifestations are common in males. Prevalence of pleuropulmonary manifestations is independent of duration of rheumatoid arthritis and presence of levels of antinuclear antibodies and C-reactive protein. But presence of pleuropulmonary manifestations indicate the severity of disease process. They are more common in patients who are having high titres of rheumatoid factor and subcutaneous nodules. Among all pleuropulmonary manifestations, pleural effusion is the most prevalent followed by diffuse interstitial fibrosis and bronchiectasis.

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