Pleuropulmonary manifestations in rheumatoid arthritis

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Citation

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Abstract

Background: Pleuropulmonary manifestations of rheumatoid arthritis are a frequent extra-articular manifestation of rheumatoid arthritis (RA). Various studies have reported a prevalence of interstitial lung disease (ILD) of 5-40 %.

Objectives: To find out the pattern of pleuropulmonary manifestations and to assess the spirometric and radiological changes of lung diseases in RA, in patients admitted to a respiratory unit.

Duration of study: July 2003 to August 2006

Methods: The study was conducted on 17 patients with Rheumatoid arthritis (previously diagnosed), who were admitted for various respiratory complaints, in the Department of Pulmonary Medicine, King George's Medical University. A thorough respiratory evaluation was done including Clinical evaluation for signs and symptoms, Chest x-ray PA view, HRCT Thorax, Spirometry and sputum for AFB.

Results: 17 patients with rheumatoid arthritis were evaluated for pleuropulmonary manifestations. The male & female ratio was 1.4:1; The Mean age was 52.6 years (18-66). ILD was the most common pulmonary manifestation of rheumatoid arthritis and as noted in 88.2 % of patients. Most common type was Usual Interstitial Pneumonia (UIP), Bronchiolitis obliterans organizing pneumonia (BOOP) was seen in only 2 patients. Dyspnoea was the most common presenting symptom of ILD. Pleural effusion was noted in 11.8 % of patients. Spirometry showed a restrictive pattern in 52.9 % (i.e.9/17), obstructive pattern in 11.8 % (i.e.2/17) and six were unable to cooperate. Interstitial lung disease (ILD) was seen more in men.

Conclusion: The study showed that an interstitial lung disease (ILD) was the most common pleuropulmonary manifestations in RA patients.

INTRODUCTION

Rheumatoid arthritis is a chronic systemic inflammatory disorder that may affect many tissue organs –skin, blood vessels, heart, lungs, and muscles but principally affect joints, producing a non suppurative synovitis that often progress to tissue destruction of articular cartilage and ankylosis of joints [2,3]. The prevalence of Rheumatoid arthritis is approximately 0.8% of the population (range 0.3 to 2.1%) but in India it is exactly not known. Women are affected three times more than men. Rheumatoid arthritis usually appears during 3rd to 5 th decades of life. Their prevalence increases with age. While pleuro-pulmonary manifestations are more likely to be observed in males. The most common lung manifestation is pulmonary fibrosis followed by Pleuritis, Pleural effusion, pulmonary nodules, pulmonary hypertension, and progressive loss of lung volume, secondary amyloidosis, sclerosing mediastinitis and bronchocentric granulomatosis in decreasing order.

METHOD

During the intake period of 3 year from July 2003 to august 2006, 17 patients of rheumatoid arthritis admitted to the Department of Pulmonary Medicine were evaluated for pleuro-pulmonary manifestations. All patients were classified as rheumatoid arthritis on the basis of American Rheumatism Association 1987 revised classification criteria[1], complete blood counts, C - reactive protein (CRP), serum rheumatoid factor and X-ray Hand & wrist, were done for all patients. Evaluations for pleuro-pulmonary

manifestation were done by Chest x-ray PA view, Spirometry and High resolution computerized tomography (HRCT) of thorax. Sputum for AFB was done on three consecutive days in all patients to exclude tuberculosis.

RESULT

Of the 17 patients with rheumatoid arthritis, 10 were males while 7 were females (Ratio M: F; 1.4:1). The mean age of study group were 52.6 years (Range 18-66). Mean duration of rheumatoid arthritis was 11.9 years. Mean duration of respiratory complaints was 10.3 months (Range 2-14 months). Dyspnoea and dry cough were most common presenting symptoms (76.47 %). Sputum for AFB was negative in all patients. Others system were with in normal limits. Spirometry showed restrictive pattern in 52.9 % cases (Mean FEV1/FVC 86 % and Mean FVC 1.16 Litre) and obstructive pattern noted in 11.8 % while 6 (35.3 %) patients did not cooperate. (Table 1: Shows patient's characteristics of study group).

Figure 1

Table 1

Total number	17
F: M	7:10
Mean age (years)	52.6 (18-66)
Mean duration of RA (years)	11.9
Rheumatoid factor positive	14(87.5%)
Elevated ESR	10 (58.8%)
Elevated C-Reactive Proteins	10 (70.6%)
Mean duration of respiratory symptoms in (months)	10.35 (2-14)

Interstitial lung disease was the most common Pleuro-pulmonary disease pattern being present in 15 patients (88.2 %). Among Interstitial lung disease (ILD), Usual Interstitial Pneumonia (UIP) was most common pattern noted in 13 (88.7 %), followed by Bronchiolitis obliterans organizing pneumonia (BOOP) in 2 (13.33 %). Pleural effusion was observed in 2 (11.8 %) of all patients. (Table 2: Showing pleuro-pulmonary abnormality seen on HRCT Thorax).

Figure 2

Table 2

S.N.	Disease class	HRCT presentation	Type of ILD	HRCT Pattern	No.of patient
1.	PULMONARY	ILD (N=15)	UIP (N=13)	Predominant reticular	11
				Predominant Ground glass opacity	1
				Thickend interlobular septum	13
				Traction bronchiectasis	4
				Pulmonary nodule	1
				Honey combing	7
			BOOP (N=2)	Airspace consolidation	2
2.	PLEURAL	PLEURAL EFFUSION (N=2)	RIGHT		1
			LEFT		1

DISCUSSION

It is now known that Interstitial Lung Disease is both the most common and most serious pleuro-pulmonary complication of rheumatoid arthritis[4]. Ellman and Ball first noted the association between pulmonary fibrosis and rheumatoid arthritis in 1948[5].

ILD is a relatively common complication in RA being reported in 19-44% in four prospective studies[6,7,8,9]. Generally two patterns of Interstitial Lung Disease are more common amongst RA, Usual Interstitial Pneumonia (UIP) and Bronchiolitis obliterans organizing pneumonia (BOOP). These patients have complaints of breathlessness and dry cough. Physical examination reveals bibasilar crepts. Chest x-ray shows interstitial infiltrates mostly basal and in peripheral parts of lungs. HRCT Thorax is characteristic in Usual Intestitial Pneumonia (UIP) and is characterized by presence of reticular opacity predominatly in the subpleural regions of lung bases and often associated with cystic air spaces measuring 2 to 20 mm (honey combing)[10,11,12]. Disease activity is characterized by presence of patchy areas of hazy increased density (Ground glass opacity) [13]. While

Bronchiolitis obliterans organizing pneumonia (BOOP) is characterized by patchy unilateral or bilateral air space consolidation[14].

Pleuritis is reported in 21 % cases. Pleural effusion is occasional manifestation being reported in 3-5% of cases in different studies[15]. The patients are usually asymptomatic but sometimes complicated by severe pluritic pain, fever, breathlessness. Pleural effusion is usually small and unilateral but may be large and bilateral. Pleural fluid is characteristic and shows exudative type (protein usually >3.0gm/dl), low sugar (<50 mg/dl) in about 75% of patients, raised LDH, raised cholesterol and high Titer of RF [16,17]. Another typical abnormality is high pleural fluid/blood ratio of neuron specific enolase, rising 10 or more times [18].

Others less common pleuro-pulmonary manifestations of rheumatoid arthritis are rheumatic nodules [19], Caplan's syndrome [20], upper zone fibrosis and cavitation, upper airway obstruction occasionally resulting into stridor[21] and Obstructive sleep apnoea as well as Central sleep apnoea. Others rare lung manifestation of rheumatoid arthritis are, Pulmonary hypertension[22], progressive loss of lung volume due to diapharagmatic dysfunction[23], secondary amyloidosis[24], sclerosing mediastinitis[25] and bronchocentric granulomatosis[26] .

The present study has shown that Interstitial Lung Disease, predominantly usual interstitial pneumonia (UIP) is the most common pleuropulmonary manifestation in Rheumatoid arthritis patients.

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