

Rheumatoid Lung Disease Mimicking Pulmonary Infection in an Elderly Male

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Abstract: *Rheumatoid arthritis (RA) is a systemic autoimmune disorder principally affecting the joints; however, extra-articular manifestations, particularly pulmonary involvement, are frequently encountered. Rheumatoid Lung Disease (RLD) comprises a broad spectrum of pulmonary parenchymal and airway abnormalities, among which Interstitial Lung Disease (ILD) is the most common and clinically significant manifestation.*

Keywords: Rheumatoid Arthritis, Rheumatoid Lung Disease, Interstitial Lung Disease, Anti-CCP Antibody, Non-Specific Interstitial Pneumonia (NSIP)

1. Introduction

Rheumatoid arthritis (RA) is a systemic autoimmune disease primarily affecting the joints, but extra-articular manifestations, including pulmonary involvement, are common. Interstitial Lung Disease (ILD) is the primary pulmonary manifestation of RA.

Key points:

- Rheumatoid Lung Disease (RLD) encompasses a spectrum of pulmonary and airway abnormalities.
- Extra-articular manifestations may develop during the clinical course of RA in up to 40% of patients.
- Up to 10% of patients with RA may develop ILD.
- RA-associated ILD is a significant cause of morbidity and mortality.
- Histopathological and radiographic appearances of RA-ILD resemble those seen in idiopathic interstitial pneumonias (IPs).
- Specific Interstitial Pneumonia (NSIP) and Usual Interstitial Pneumonia (UIP) are common patterns.
- RA-ILD is more frequently detected in men and is associated with increased mortality compared with RA patients without ILD.

2. Case Report

Patient presented to us with complaints of:

- Loss of appetite and weight loss x 1 month
- Fever since 15 days
- Cough with expectoration x15 days
- Breathlessness x 15 days.

History of Presenting Illness:

- Patient was apparently normal one month ago when he complained of loss of appetite and weight loss (approximately 3 Kgs in one month) associated with fever-low grade, not associated with chills or rigors or sweating, cough with expectoration (sputum was moderate in amount, mucoid, non-blood tinged, not foul smelling) with breathlessness on exertion since 15 days
- No history of orthopnea, PND, hemoptysis
- No history of chest pain, palpitations

- No history of hoarseness of voice, joint pains or joint stiffness.
- No complaints of lower limb swelling, abdominal distension
- No complaints of facial puffiness
- No history of chronic diarrhea
- Past history of pulmonary tuberculosis 14 years ago (completed treatment) No other significant comorbidities
- Family history nothing contributory
- Personal History mixed diet, reduced appetite, reduced sleep, bowel and bladder- normal and regular, no addictive habits

Provisional Diagnosis:

- Pulmonary Tuberculosis? reactivation of old pulmonary TB
- Lung malignancy with secondary infection

On Examination:

- No pallor, icterus, cyanosis, clubbing, lymphadenopathy, edema.
- PULSE – 86 bpm, regular, adequate volume and normal character, normal condition of the vessel wall no radio-radial delay or radio-femoral delay, all peripheral pulses were felt.
- BP – 106/70 mmHg in the left upper arm in supine position
- SpO₂ – 82% at room air, 96% @10 liters of O₂ via NRBM
- RR – 26cpm, abdomino-thoracic type of respiration.
- JVP-not elevated

Musculo-skeletal examination:

- No joint deformities

Systemic Examination:

- RS: Bilateral air entry present., Cavernal breath sounds heard in right supra-clavicular, infra-clavicular and right suprascapular area. Fine inspiratory crepitations heard in both infra-scapular, infra-axillary, inter-scapular areas.
- CVS: S1S2 heard, no murmurs.
- CNS: conscious, oriented, no focal neurological deficits.
- Per abdomen: soft, non-tender, no organomegaly.

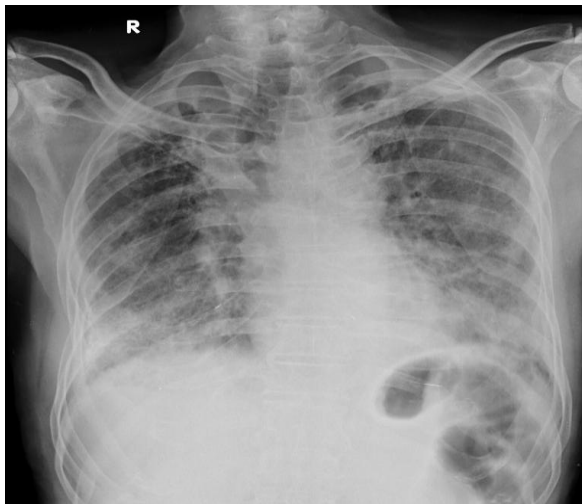


Figure 1: Chest X-Ray PA VIEW Cavitary lesion noted in the right upper lobe- Sequelae of prior tuberculosis

3. Investigations

Table 1: Investigation

Parameters	Day 1	Day 3	Day 4	Day 6
WBC	9,700	11,400	9,800	
N/L	81.2/11.4	93.6/3.8	84.9/8.5	
Hb	11.1	11.2	10.9	
MCV	89.0	89.3	90.1	
PLATELETS	2,73,000	2,88,000	2,51,000	
S. Creatinine	0.84			
S. Urea	43.1			
S. Uric acid	5.0			
LFT: TB/DB	0.74/0.26			
T. Protein	5.2			
S. Albumin	3.9			
SGOT/SGPT	39/42			
ALP	37			
S. Sodium	136			
S. Potassium	3.88			
S. Chloride	104.1			
HIV, HBsAg, HCV	Non-reactive			
Urine routine	3-4 pus cells			
ESR	115			115
S. Procalcitonin				0.621

- Sputum Culture Sensitivity: Normal Floral Growth after 24HR of Incubation
- Sputum CBNAAT- Negative
- Sputum for malignant cells -Negative
- 2D ECHO: EF:60%, GRADE 1 LVDD, Concentric LVH, PASP 35MMHG, No Clots
- USG abdomen and pelvis: no significant abnormality
- HRCT THORAX: Fibrocavitary changes in both upper lobes more on the right - sequel of prior tuberculosis. Diffuse centrilobular emphysematous changes in both lungs predominantly involving the upper lobes.
- Intercommunicating cysts noted in sub-pleural location of the posterobasal segments of both lower lobes suggestive of cystic bronchiectatic changes and unlikely to be honeycomb changes. Mild diffuse cylindrical bronchiolectatic changes in both lungs associated with diffuse areas of surrounding ground glass opacities, which may suggest intralobular septal thickening

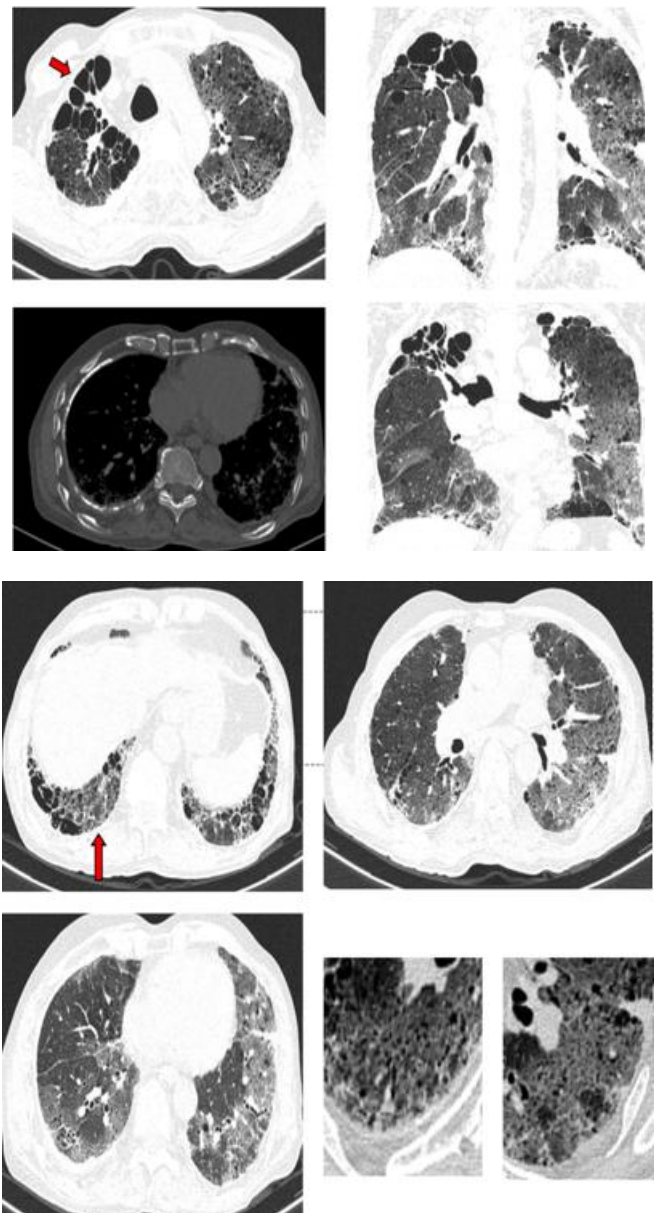


Figure 2: HRCT Thorax

- On serial evaluation, i/v/o repeated fever spikes and high ESR, ANA screening was sent and reported to be negative. RA factor and CRP was sent and was reported to be deranged.
- Anti CCP levels were relatively high following which Rheumatologist opinion was taken.
- Rheumatoid Factor (RF): 85.1 IU/mL (Elevated)
- ANA Screening: Negative
- Anti-CCP Antibody: >500 U/mL (Strongly positive for RA)
- C-Reactive Protein (CRP): 323 mg/L, decreasing to 105.6 mg/L
- Serum Procalcitonin: 0.621 ng/mL

Final Diagnosis:
Rheumatoid arthritis presenting as ILD
(Rheumatoid Lung Disease).

4. Discussion and Results

- Persistent respiratory symptoms with negative sputum CBNAAT and positive RA factor and Anti-CCP strongly suggested an underlying rheumatological condition.
- In the absence of another identifiable cause and despite no joint manifestations, a diagnosis of Rheumatoid Lung Disease was made.
- The case highlights the importance of considering extra-articular manifestations of RA, particularly in elderly patients presenting with atypical respiratory symptoms.
- Initial presentation mimicked pulmonary infection and delayed diagnosis.
- Interstitial lung disease is characterized by inflammation and fibrosis of pulmonary interstitium.
- Patients with RA are significantly more likely to develop ILD than the general population.
- HRCT is more sensitive than chest X-ray for detecting ILD and identifying disease at a subclinical stage.
- The most common radiological pattern is UIP.
- Common symptoms include:
 - Dry cough
 - Exertional dyspnea
 - Chest pain
 - Wheezing
 - Productive cough when bronchiectasis or concomitant infection is present

5. Conclusions

This case emphasizes the need for a broad differential diagnosis in elderly patients with respiratory symptoms, especially when initial infectious workup is negative. Serological markers for rheumatoid arthritis, such as RA factor and Anti-CCP, play a crucial role in identifying extra-articular involvement like Rheumatoid Lung Disease, facilitating prompt diagnosis and appropriate management. Further investigations, including high-resolution computed tomography (HRCT) of the chest, were supportive of the above diagnosis of Rheumatoid lung.

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