Southwest Journal of Pulmonary, Critical Care & Sleep

Journal of the California/Arizona, New Mexico, and Colorado Thoracic Societies
www.swjpcc.com

March 2025 Pulmonary Case of the Month: Interstitial Lung Disease of Uncertain Cause

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Editor's Note: Portions of this case were previously published in the Southwest Journal of Pulmonary, Critical Care & Sleep as the January 2025 Medical Image of the Month.

History of Present Illness

A 58-year-old man complained of gradually increasing shortness of breath. He denied any cough. An outside chest x-ray is reported as showing mild bilateral interstitial changes.

Past Medical History, Social History, and Family History

- He has a history of rheumatoid arthritis and has complaints of mild joint stiffness and soreness. He has taken mycophenolate for several years which has made no difference in his symptoms.
- He has never smoked and denies any occupational exposure.
- There is no family history of lung disease.

Physical Examination

- Vital Signs: SpO2 95% on room air but declined to 88% with ambulation.
- Chest: A few scattered inspiratory crackles noted.
- Cardiovascular: Regular rhythm without murmur.
- Extremities: No clubbing or edema. No evidence of synovitis or joint inflammation
- Skin: Slightly raised, pink, scaly lesions on elbows and knees.

Which of the following are ***indicated***?

1. Dermatology consult
2. Pulmonary function testing
3. Connective tissue disease panel
4. Thoracic CT scan
5. All of the above

Correct!

5. All of the above

Dermatology consultation is indicated for the scaly lesions on the patient's elbows and knees. The dermatologist thought this was consistent with psoriasis. Pulmonary function testing is indicated because of the shortness of breath. The connective tissue panel is indicated because of the previous diagnosis of rheumatoid arthritis. Lastly, the thoracic CT scan is indicated to be better detect and define the interstitial changes observed on the chest x-ray.

The thoracic CT scan is shown in figure 1.

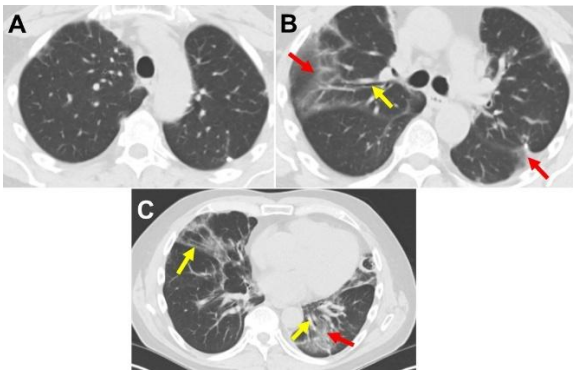

Figure 1. Representative images from the thoracic CT scan. To view Figure 1 in a separate enlarged window click here.

Which of the following ***best describe the CT scan?***

1. The thoracic CT scan shows reticulation in the mid and lower lung fields.
2. The thoracic CT scan contains multiple cavitating nodules.
3. The thoracic CT scan shows architectural distortion, ground glass, and traction bronchiectasis.
4. 1 and 3
5. All of the above

Correct!
4. 1 and 3

There is reticulation or a network of fine lines that resembles a net or mesh on the CT scan. It's usually a sign of interstitial lung disease (ILD). There is also architectural distortion, ground glass (hazy areas, red arrows in figure 1), and traction bronchiectasis (irregular widening of the bronchi and thickened bronchial walls, yellow arrows in figure 1). There are no pulmonary nodules noted. The pulmonary function testing results are shown in table 1.

Table 1. Results of pulmonary function testing (PFTs). To view Table 1 in a separate, enlarged window click here.

Pulmonary Function Test	Result (percent predicted)
Total lung capacity (TLC)	57%
Residual volume (RV)	83%
Forced vital capacity (FVC)	51%
Forced expiratory volume in 1 sec (FEV1)	52%
Diffusing limit for carbon monoxide (DLCO)	61%

The connective tissue disease panel showed-

- Rheumatoid factors: 15 (nl <15)
- Anti-cyclic citrullinated peptide (anti-CCP): negative
- Antinuclear antibodies (ANA): negative
- Erythrocyte sedimentation rate (ESR): 15 mm/hr (nl<30)
- Remainder of CTD serology negative

Which of the following are ***true***?

1. A rheumatology consult should be ordered.
2. The pulmonary function tests are consistent with a restrictive defect.
3. Anti-CCP is usually positive in rheumatoid arthritis
4. 1 and 3
5. All of the above

Correct!
5. All of the above

The pulmonary function testing shows a restrictive defect and likely explains the patient's dyspnea. The rheumatology consult was skeptical of the diagnosis of rheumatoid arthritis. Rheumatoid factors are antibodies (usually IgM) directed against IgG. Contrary to what the name suggests, rheumatoid factors are found not only in rheumatoid arthritis (RA) but in up to 4% of healthy individuals and a wide range of other autoimmune and some non-autoimmune diseases (1). In rheumatoid arthritis the anti-CCP is usually positive and can help distinguish rheumatoid arthritis from other disorders (2).

The patient had a previous VATS lung biopsy which was reviewed (Figure 3).

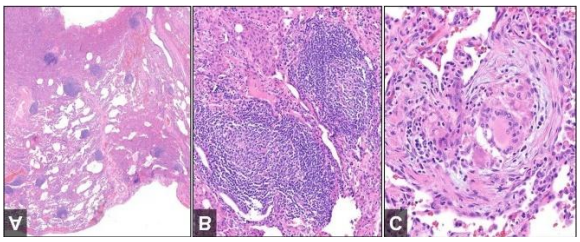

Figure 2. Low-power (A) and high-power (B,C) hematoxylin & eosin-stained pathology slides from a surgical lung biopsy (left lower lobe) demonstrating scattered lymphoid aggregates and follicles (A, B) with patchy granulomatous organizing pneumonia (C) consistent with a nonspecific interstitial pneumonitis (NSIP) pattern. To view Figure 2 in a separate, enlarged window click here.

Which of the following are ***correct***?

1. The lung histology suggests systemic connective tissue disease-related interstitial lung disease.
2. The lung histology is diagnostic of rheumatoid arthritis associated lung disease.
3. The clinical situation and the lung histology are consistent with psoriatic interstitial lung disease.
4. 1 and 3
5. All of the above

Correct!
4. 1 and 3

The histology would be consistent with rheumatoid arthritis-associated lung disease but also consistent with other connective tissue disease-related disorders including psoriasis (3,4). However, the lack of signs of rheumatoid arthritis, the rheumatoid factors being only very weakly positive and previous reports of psoriatic interstitial lung disease with similar histology suggest psoriasis as the most likely diagnosis. Interstitial pneumonia is relatively rare in the setting of psoriasis. In a series of 392 psoriasis patients there was only an incidence of 2% (5). The mechanism(s) for psoriatic lung disease is poorly understood but may be a result of chronic inflammation (6).

What could be done to ***treat psoriatic lung disease***?

1. There are reports of improvement in psoriatic lung disease with secukinumab.
2. The best choice for therapy is unclear but a trial of methotrexate might be warranted.
3. There are reports of secukinumab exacerbating psoriatic lung disease.
4. 1 and 3
5. All of the above

Correct!
4. 1 and 3

It had been thought that ILD in patients with psoriasis was most often a result of drug-induced lung toxicity associated with medications used to treat psoriasis, such as methotrexate. Recent case series indicate an association of ILD with psoriasis in patients who have not received systemic therapy. Given this, methotrexate seemed to be a poor choice. Lately, there have been several case reports of patients with psoriasis-associated ILD having improvement in lung function after treatment of psoriasis with biologic therapies such as secukinumab an inhibitor of IL-17A (7,8).

The patient lives in Alabama and is now receiving secukinumab (Cosentyx®) through his dermatologist. He reports subjective improvement after 3 months of treatment and will be having follow-up lung function.

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