

Emergencies A Series - 6

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Introduction

Interstitial lung disease (ILD) encompasses a diverse group of pulmonary disorders characterized by chronic inflammation and fibrosis of the lung parenchyma. These conditions are often marked by dyspnea, reduced chest expansion, and distinctive auscultatory findings such as Velcro crackles. The clinical presentation and radiological findings aid in the diagnosis, but the underlying etiology can vary widely, including occupational exposures, systemic diseases, and drug-induced lung injury. It's the Chronic inflammation and hyperplasia of the type 2 pneumocytes.¹

Clinical Features and Diagnosis of ILD

Common Clinical Features of ILD:

Dyspnea on exertion: A hallmark symptom often reported by patients.

Chest examination: Slight reduction in chest expansion.

Auscultation: Velcro-like crackles, which may be fine late inspiratory or pan-inspiratory, heard over affected lobes.

Lobar Involvement:

Upper lobe predominance: Conditions such as silicosis, coal workers' pneumoconiosis, ankylosing spondylitis, and tuberculosis.

Lower lobe predominance: Common in rheumatoid arthritis, scleroderma, idiopathic pulmonary fibrosis, and certain drug-induced ILD (e.g., Nitrofurantoin, hydralazine, methotrexate, amiodarone).²

Classification of ILD

ILD can be categorized based on etiology as follows:

Known Causes:

Occupational/Environmental Exposures: Silicosis, byssinosis, asbestosis.

Hypersensitivity Pneumonitis: Immune-mediated response to inhaled organic antigens.

Infections: Tuberculosis, fungal, and viral infections.

Associated with Systemic Diseases:

Autoimmune Diseases: Sarcoidosis, rheumatoid arthritis, systemic lupus erythematosus (SLE), systemic sclerosis.

Idiopathic Interstitial Fibrosis:

Idiopathic Pulmonary Fibrosis (IPF): Characterized by progressive fibrosis of unknown origin.

Drug-Induced ILD:³

Cardiac Drugs: Amiodarone, angiotensin-converting enzyme inhibitors (ACEI), beta-blockers, hydralazine.

Antimicrobial Drugs: Cephalosporins, isoniazid, nitrofurantoin, penicillins, sulfonamides.

Central Nervous System (CNS) Drugs: Carbamazepine, phenytoin, chlorpromazine, imipramine.

Case Studies

Emergency Case 1

A 70-year-old female with a history of recurrent aspiration, diabetes, and systemic hypertension presented with severe respiratory distress and was diagnosed with aspiration pneumonia complicated by underlying ILD.

Clinical Presentation:

Initial Presentation: SPO2 39%, improved to 95% with 10 liters of oxygen. History of fever, cough, and headache.

History: She had a history of recurrent aspiration. She was an old case of CVA 3 years. Known case of diabetes and systemic hypertension for the past 15 years. She was on regular treatment.

Examination: Drowsy but arousable, grunting noise, pedal edema, extensive dry crackles bilaterally.

Diagnosis: Aspiration pneumonia with underlying ILD.

Investigations: CVS Heart rate 112bpm regular, BP 150/90, RS Extensive dry crackles over the entire lungs on either side, Abdomen soft, CNS right-sided 9, 10 nerve residual palsy

Treatment:

Day 1: CBG 139 mg, CBC showed elevated WBC count (TLC 17000), with 85% polymorphs, Lymphocytes 13%, Eosinophil 2%, Hb 10.9g % and ESR 10mm in half an hour and 30mm in 1 hour. Treatment initiated with DIL nasal oxygen back rest ryles tube feed, Inj piperacillin-tazobactam 4.5g Q6H/ Inj clindamycin 600mg IV Q8H Tablet mucolite TID, amlodipine 5mg in the morning.

Day 2: Persistent high WBC count, TLC 17600, Polymorph 74%, Lymphocytes 24%, Eosinophil 2% Chest physician suggested aspiration pneumonia. Added Deryphylline IVQ8H, nebulized asthalin, and ambroxol. Afternoon SPO2 87 to 90% with 10L of oxygen. Clinically extensive wheeze present. CT thorax interstitial thickening/ air space opacity minimal pleural effusion (right is greater than left)

Impression

Aspiration pneumonia with underlying ILD

Anti-topo isomerase antibody to rule out PSS
Progressive systemic sclerosis.

Aminophylline infusion was started by chest physician. Seen by general physician. tachypnea + respiratory rate 34, Heart rate 90bpm, BP 130/90, Extensive dry, coarse crackles (Velcro like) over both lungs ++

Day 3: Tachypnea present, Duolin nebulization Q8H was added.

Day 4: Patient was dyspnic/ drowsy/ and in increased respiratory distress. SPO2 90% with 10L of oxygen. Emergency physician repeatedly on Day 1, Day 2 and Day 3 suggested that the patient may need mechanical ventilation which was not done.

Day 5: Significant improvement in respiratory status with SPO2 at 96% on 3L of oxygen.

Day 10: Vitals stable, Patient could walk by herself, advised to continue,

Amlodipine 2.5 mg on morning

Losartan 50 mg at night

Clopidogrel 75 mg at night

The patient showed marked improvement on day 5, On day 4 instruction was given to do a gram stain from the sputum for fungal hyphae. The same evening culture of the sputum reported as candida grown in culture probably significant.

On the same evening, 400 mg of IV fluconazole was added and was continued for 7 days. On Day 7 her respiratory status improved markedly, coarse crackles were present in only a palm-sized area over the right basal region. On the subsequent days, lung fields were clear.

A case of respiratory distress with ILD presenting as fungal pneumonia.

Signs of ILD are dyspnea, cyanosis and clubbing.

On examination expansion of the chest is slightly reduced. Auscultation (fine late inspiratory or pan inspiratory crackles (Velcro-like) heard over the affected lobes.

Signs associated with connective tissue disease.

Predominantly upper lobe involvement occurs in rheumatological disorders.

The predominantly lower lobe is involved in silicosis, and sarcoidosis.

Pneumoconiosis, tuberculosis

In this patient, extensive dry crackles were present over both lungs upper and lower lobes.

We will discuss a few other cases of fungal pneumonia.

Case 2

A 59-year-old diabetic female presented with fever, cough, and headache for 5 days.

Clinical Presentation:

Examination: Medium crackles over the left basal region.

Treatment and Outcome:

Started with IV ceftriaxone and was stopped because of loose stools.

On Day 2 IV levofloxacin and azithromycin were started with no significant improvement for 3 days.

On Day 6 she was started on IV piperacillin tazobactam Q6H into 3 days.

Medium crackles over the left basal region were persisting.

Sputum culture on day 7, candida species are grown. She was discharged and advised

Fluconazole 150 mg OD into 7 days.

After 1 week, she was clinically better, no cough, no basal crackles.

Advised

Fluconazole 150 mg for another 1 week with regular diabetic drugs.

Case 3

A 60-year-old diabetic male with Velcro crackles in both lung fields was present.

A diabetic with Velcro crackles and suspected fungal pneumonia was started on fluconazole 150mg OD for 10 days. Within 5 days his crackles reduced to 50%, After 10 days his lungs were free from crackles without investigations, only by Clinical examination he was diagnosed and treated.

Velcro crackles

Diabetes and suspected fungal pneumonia were treated as such. To conclude candidiasis is not uncommon in diabetic patients. Several drugs are responsible for ILD to be noted.

Conclusion

This manuscript highlights the complexity of diagnosing and managing ILD, particularly when complicated by fungal infections in diabetic patients. The presented cases underscore the importance of considering fungal pneumonia in such patients and the efficacy of antifungal treatment. Awareness of drug-induced ILD and its clinical features can aid in early diagnosis and management.

References

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