

A CASE REPORT ON BILATERAL LOBAR PNEUMONIA(CAP) WITH BILATERAL PLEURAL EFFUSION(RIGHT> LEFT)

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Article Received on: 23/12/2024

Article Revised on: 12/01/2025

Article Accepted on: 01/02/2025



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ABSTRACT

Pneumonia, an inflammatory lung infection, affects the parenchyma and alveolar sacs, often resulting in fluid or pus accumulation. It is caused by various agents, including bacteria (e.g., *Streptococcus pneumoniae*), viruses (e.g., influenza), and fungi. Classified by causative agent, acquisition location (e.g., community- or hospital-acquired), severity, anatomical location, and duration, pneumonia presents symptoms such as fever, dyspnea, cough, and chest pain. This report details a case of a 50-year-old male with bilateral lobar pneumonia and pleural effusion. Diagnostic imaging revealed multilobar pneumonia with bilateral pleural effusion, more significant on the right. The patient’s treatment included bronchodilators, antibiotics, supportive care, and pleural fluid aspiration, which resulted in clinical improvement.

KEYWORDS: pneumonia, community acquired pneumonia (CAP), lobar pneumonia, pleural effusion.

INTRODUCTION

Clinically, patients may experience symptoms such as fever, chills, cough, dyspnea, and chest pain.^[1&2]

Pneumonia can be classified in several ways, including.

Based on the causative agent	Based on where it was acquired	Based on the severity	Based on anatomical location	Based on the duration of illness
Bacterial pneumonia: <i>Streptococcus pneumoniae</i> , <i>Haemophilus influenzae</i> , and others.	Community-acquired pneumonia (CAP): Acquired outside of healthcare settings.	Mild pneumonia: Symptoms are manageable and can often be treated at home.	Lobar pneumonia: Affects one or more lobes of the lung.	Acute pneumonia: Symptoms develop quickly and last for a short duration.
Viral pneumonia: influenza viruses, respiratory syncytial virus (RSV), and coronaviruses.	Hospital-acquired pneumonia (HAP): Developed during hospital stay, typically after 48 hours of admission.	Moderate to severe pneumonia: May require hospitalization and more intensive treatment.	Bronchopneumonia: Affects patches throughout both lungs, often following bronchitis.	Chronic pneumonia: Symptoms persist over a longer period and may be due to underlying conditions. ^[1,2,3&10]
Fungal pneumonia: <i>Histoplasma</i> , <i>Coccidioides</i> , and <i>Cryptococcus</i> .	Ventilator-associated pneumonia (VAP): A type of HAP that occurs in patients on mechanical ventilation.		Interstitial pneumonia: Affects the tissue and space around the air sacs rather than the air sacs themselves.	

Lobar pneumonia is a type of pneumonia that affects a specific lobe of the lung, leading to the inflammatory exudate consolidation within the intra-alveolar space lung tissue.^[4]

Pleural effusion

Fluid accumulation in the pleural space indicates disease. The accumulation is associated with many medical conditions that predispose to fluid accumulation via

many different mechanisms, including increased pulmonary capillary pressure, decreased oncotic pressure, increased pleural membrane permeability, and obstruction of lymphatic flow.^[5&6]

Diagnosis of a pleural effusion begins with obtaining the patient’s clinical history and doing a physical examination and is followed by chest radiography and analysis of pleural fluid in appropriate instances.

Light’s criteria for pleural effusions		
	Transudate	Exudate
Protein (pleural/serum)	≤0.5	>0.5
LDH (pleural/serum)	≤0.6	>0.6
	Pleural LDH ≤ two-thirds upper limit of normal serum LDH	Pleural LDH > two-thirds upper limit of normal serum LDH

If necessary, the process continues with further investigative studies, such as computed tomography (CT) of the thorax, pleural biopsy, thoracoscopy, and, occasionally, bronchoscopy.^[8,9&10]

CASE REPORT

A 50-year-elderly male patient presented to the Respiratory Medicine department at SBMCH & RI in Renigunta, Tirupati, with a 10-day history of respiratory

symptoms Breathlessness associated with Wheezing and cough with scanty whitish mucoid sputum. Fatigue, loss of appetite, and irregular bowel and bladder habits.

History and Background: The patient is an agricultural labourer with a smoking history of approximately 30 pack years, around 20 cigarettes per day. He had no prior history of pulmonary tuberculosis (PTB), surgeries, chest pain, COVID-19 infection, or known allergies.



Fig: Serial chest radiograph showing interval resolution after thoracentesis.

Diagnostic Workup

- Chest X-Ray:** Showed bilateral (B/L) multilobar pneumonia, raising suspicion for tuberculosis (TB).
- Ultrasound (USG):** Further quantified the findings, showing a mild left-sided pleural effusion with loculations and septations, and a moderate, free-flowing right-sided pleural effusion (estimated at 200-250 mL) which is slightly turbid & straw yellow coloured.

3. Pleural Fluid Analysis

- Adenosine deaminase (ADA): 20.8 U/L (not indicative of TB)
- Lactate dehydrogenase (LDH): 288 U/L, supporting the diagnosis of an exudative effusion.

Treatment Plan

Initial Treatment: He was treated with a combination of bronchodilators, antibiotics, and supportive medications:

- Inhaled bronchodilators, oral Antibiotics and supportive care.

Post-Aspiration Treatment

- Regular inhalation with Single Inhaler Triple Therapy (SITT)
- Pain Management and Nebulization when required.

DISCUSSION

Imaging and pleural fluid analysis were pivotal in ruling out TB (low ADA) and confirming exudative effusions (high LDH). Pleural fluid aspiration on the right side of thorax helped in alleviating the symptoms of breathlessness and assisted in confirming the diagnosis. Close monitoring and follow-up imaging are advised to track resolution.

CONCLUSION

This case highlights the complexity of diagnosing and managing pneumonia with pleural effusion, particularly in patients with risk factors like long-term smoking. A thorough diagnostic approach—including imaging, pleural fluid analysis, and clinical evaluation—is essential for accurate diagnosis and to rule out conditions like tuberculosis. Effective treatment, involving targeted antibiotics, bronchodilators, and supportive care, along with procedures such as pleural fluid aspiration, can lead to significant clinical improvement. This case underscores the importance of individualized treatment plans in managing pneumonia with associated complications.

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