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Non Resolving Pneumonia Unmasked As Small-Cell Lung Cancer By Bronchoscopy

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Abstract

A 66-year-old male with a 30-pack-year smoking history presented with productive cough, fever, and left sided pleuritic chest pain. Chest radiograph demonstrated consolidation over left upper zone. The patient had taken out-patient treatment, including a course of antibiotics and ATT before consulting us. Subsequent contrast-enhanced Computed Tomography (CECT) scan identified a 6.3 x4.5x 9.3 cm soft tissue density in the left upper lobe with margins/borders encroaching on Pulmonary Artery . Bronchoscopic biopsy with lavage of the LUL confirmed the diagnosis of small cell carcinoma.

Keywords: NIL

Introduction

A 66-year-old male chronic smoker presented with complaints of fever, progressive breathlessness (MMRC grade III) and non-productive cough for one month, with chest pain, appetite loss and weight loss of 10 kg over the past two months. There was no history of hemoptysis.

Chest radiograph revealed left lung consolidation . High-resolution computed tomography (HRCT) of the thorax An. ill defined soft tissue density which is heterogeneously enhancing with few non enhancing areas (necrotic/cystic)areas measuring 6.3 x4.5 x9.3 cm involving the medial aspect of anterior and apicoposterior segment of left upper lobe segment adjacent to the arch of aorta and is seen extending into the superior and anteromedial basal segment segment of left lower lobe

Bronchoscopy with Transbronchial lung biopsy

(TBLB) was done biopsy was taken from left upper lobe and tissue biopsy sample was sent for Histopathology and Bronchoalveolar lavage(BAL) samples were sent for routine, cytology, cartridge based nucielac acid amplification test for tuberculosis AFB, KOH which were negative with cytology showing no evidence of cellular atypia or malignancy

Tissue histopathology from left lung mass showed lung parenchyma infiltrated by small round cells arranged in diffuse sheets ,individual tumor cells are small, roundwith increased N:C ratio ,hyperchromatic nuclei showing nuclear moulding at places ,salt and pepper chromatin and scanty cytoplasm ,Features suggesting of small cell carcinoma , Immunohistochemistry showed TTF1 strongly positive and Synaptophysin was moderate to strong diffuse cytoplasmic positivity in tumour cells ,Ki67 95%in highest proliferating area.

PET CT was suggestive of increased metabolic activity noted in perihilar regions of Left lung predominantly left upper lobe ,it measures 6.8 x6 x8.7 cm ,SUV max =20.The lesion is seen infiltrating Distsal left main Bronchus as well as its upper and lower branches ,the lesion is infiltrating left main pulmonary artery and its lobar branches as well as closely abutting short segment of esophagus.

Discussion:

Non-resolving pneumonia represents a diagnostic challenge in clinical practice and is broadly defined as failure of clinical or radiological improvement within 4–6 weeks despite appropriate antimicrobial therapy.

While infectious etiologies such as resistant organisms, tuberculosis, and fungal infections are common considerations, underlying malignancy remains a critical and often under-recognized cause, particularly in older patients with significant smoking history. Small cell lung carcinoma (SCLC), although aggressive and rapidly progressive, may initially present in an atypical manner, masquerading as persistent or recurrent pneumonia.

SCLC typically arises from neuroendocrine cells of the bronchial epithelium and has a strong predilection for central airways. Tumor growth within or adjacent to major bronchi can result in partial or complete airway obstruction, leading to impaired mucociliary clearance, distal air trapping, and secondary infection. This phenomenon results in post-obstructive pneumonia, characterized by consolidation distal to the obstructing lesion.

The inflammatory component of post-obstructive pneumonia may temporarily respond to antibiotics, producing transient clinical improvement. However, radiological resolution remains incomplete or delayed, as the underlying mechanical obstruction persists. This partial response frequently delays definitive diagnosis, allowing the malignancy to progress.

In SCLC specifically, additional features such as paraneoplastic syndromes (e.g., SIADH, ectopic ACTH secretion, Lambert-Eaton myasthenic syndrome) may precede or accompany pulmonary symptoms, though they may be absent early in the disease courseChest radiography is often the initial imaging modality but may be insufficient to identify an underlying central lesion, particularly when obscured by consolidation. Persistence of lobar or segmental opacity beyond the expected resolution period necessitates further evaluation.

Contrast-enhanced CT thorax is the imaging modality of choice in non-resolving pneumonia. In cases of SCLC, CT typically demonstrates:

1. Central or perihilar mass
2. Mediastinal and hilar lymphadenopathy
3. Bronchial narrowing or obstruction
4. Distal post-obstructive consolidation or atelectasis

Unlike non-small cell lung carcinoma, SCLC is less likely to present as a peripheral solitary pulmonary nodule, making it more prone to misdiagnosis as infection.

Flexible bronchoscopy plays a pivotal role in evaluating non-resolving pneumonia when imaging suggests central airway involvement. Endobronchial findings may include mucosal infiltration, extrinsic compression, or an overt mass lesion. Bronchoscopic biopsy, brushing and bronchoalveolar lavage aid in excluding infectious etiologies and confirming malignancy.

Histopathologically, SCLC is characterized by small, round to spindle-shaped cells with scant cytoplasm, finely granular chromatin, and high mitotic activity. Immunohistochemistry typically demonstrates positivity for neuroendocrine markers such as synaptophysin, chromogranin A, and CD56, confirming the diagnosis.SCLC is an aggressive malignancy with a rapid doubling time and early dissemination. Delayed diagnosis due to misinterpretation as pneumonia may result in progression from limited-stage to extensive-stage disease, significantly worsening prognosis. Median survival without treatment is only 2–4 months, whereas early initiation of chemoradiotherapy in limited-stage disease can substantially improve survival and symptom control.

Management of post-obstructive pneumonia secondary to SCLC requires a dual approach: antimicrobial therapy for infection and definitive oncologic treatment for tumor control. Antibiotics alone are insufficient without relieving the obstruction. Standard treatment includes platinum-based chemotherapy combined with thoracic radiotherapy, with prophylactic cranial irradiation considered in responders.

This case underscores the importance of maintaining a high index of suspicion for malignancy in non-resolving pneumonia, particularly in high-risk populations. Early use of CT imaging and bronchoscopy can facilitate prompt diagnosis, prevent disease progression, and improve patient outcomes.

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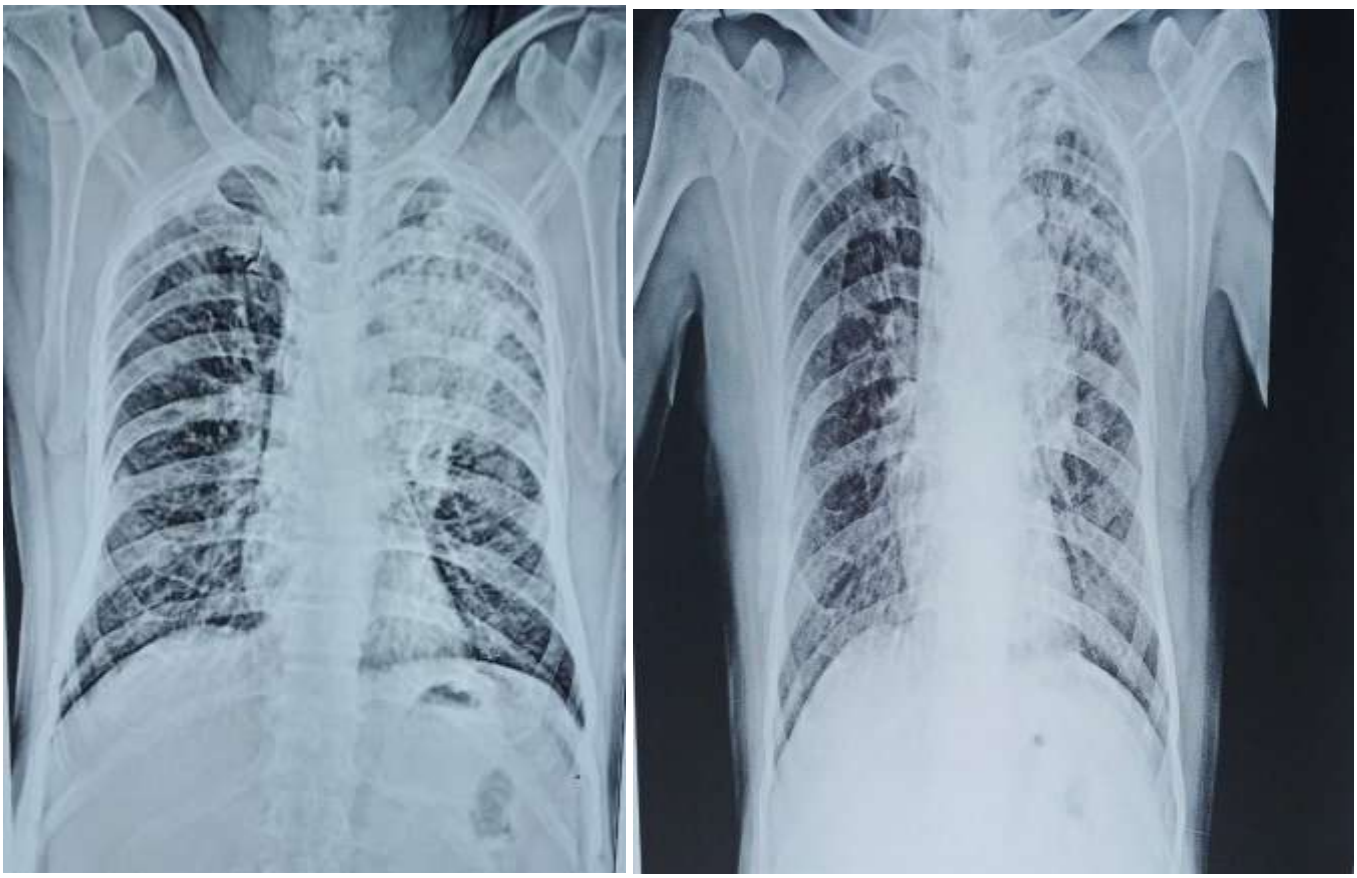
Conclusion

Non-resolving pneumonia in elderly patients, particularly those with constitutional symptoms and persistent radiological abnormalities despite appropriate antimicrobial therapy, should prompt evaluation for an underlying malignancy. Small cell lung carcinoma can present atypically as persistent consolidation secondary to post-obstructive pneumonia, leading to diagnostic delay and disease progression. This case highlights the importance of maintaining a high index of suspicion for lung cancer when pneumonia fails to resolve as expected. Early utilization of contrast-enhanced CT imaging, bronchoscopy, and histopathological examination is essential for establishing the diagnosis. Recognition of malignancy as a potential cause of non-resolving pneumonia allows timely initiation of appropriate oncologic management, which may improve symptom control, quality of life, and overall outcomes. Clinicians should therefore consider bronchogenic carcinoma, including small cell lung carcinoma, in the differential diagnosis of persistent pulmonary consolidation, especially in high-risk patients.

SERIAL CHEST XRAY SHOWING LEFT UPPER LOBE CONSOLIDATION



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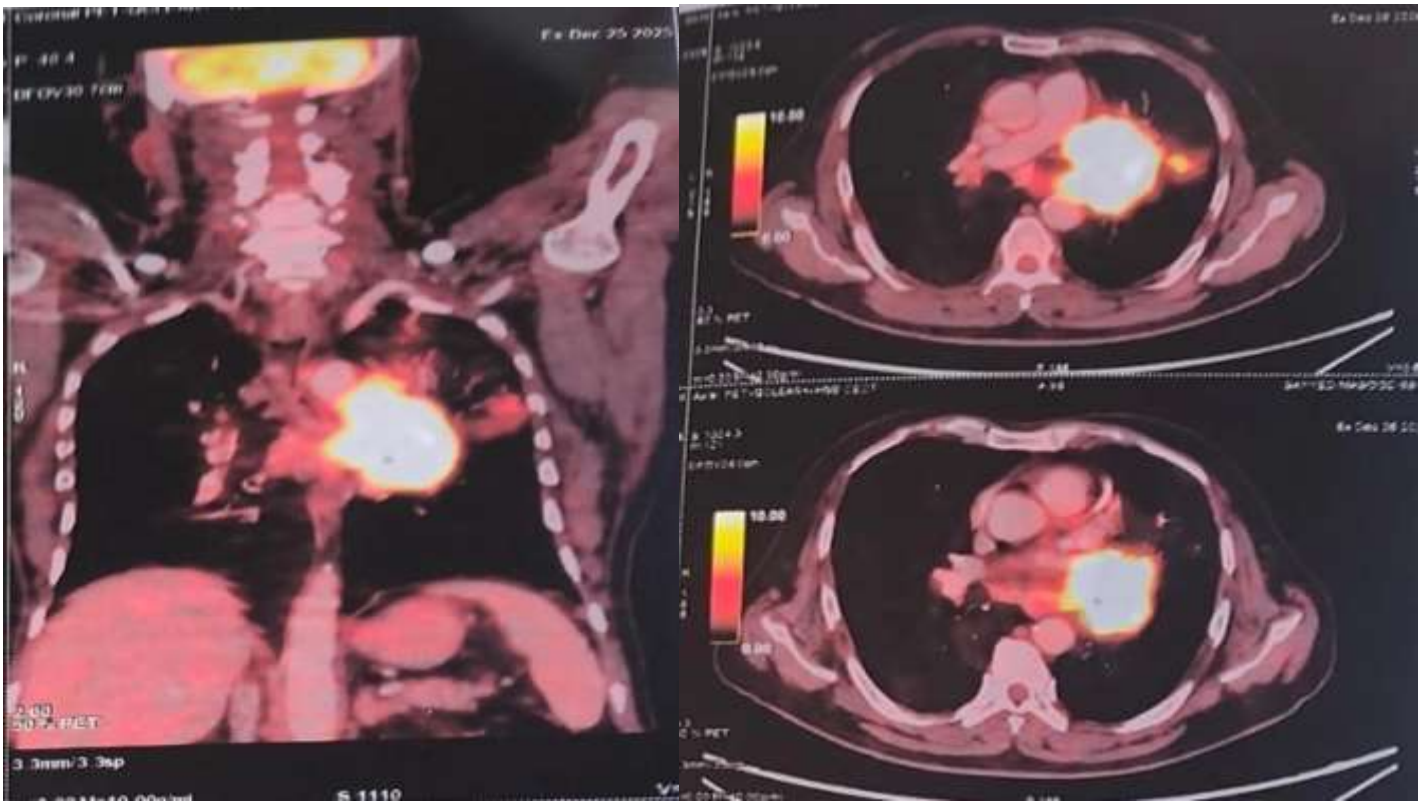
PET -CT IMAGES



BRONCHOSCOPY AND TBLB IMAGES

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