RESEARCH PAPER

An Unusual Endobronchial Presentation: Endobronchial Tuberculosis Mimicking Neoplastic Lesion with Collapse and Hemoptysis

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INTRODUCTION

Endobronchial tuberculosis (EBTB) is a form of pulmonary tuberculosis characterized by tuberculous involvement of the tracheobronchial tree, often leading to bronchial obstruction, atelectasis, and complications such as hemoptysis or stricture formation. It accounts for approximately 10–40% of pulmonary TB cases depending on the population and diagnostic methods used, and is more commonly reported in younger adults in endemic regions.

This case is noteworthy for its insidious onset with long-standing hemoptysis followed by progressive breathlessness, and imaging features initially suggestive of a neoplastic endobronchial lesion causing right lower lobe collapse. The diagnostic challenge was compounded by initial inconclusive histopathology, overlapping infectious and malignant differentials, and the eventual confirmation through repeat bronchoscopy, cytology, acid-fast bacilli (AFB) staining, and CBNAAT positivity.

EBTB can masquerade as malignancy, foreign body aspiration, or other granulomatous diseases, leading to delayed diagnosis and risk of irreversible bronchial stenosis or bronchiectasis. Prompt bronchoscopic evaluation, microbiological confirmation, and anti-tubercular therapy are essential to prevent long-term sequelae.

CASE

A 29-year-old male student presented with complaints of breathlessness for 2 years (mMRC grade 1) and a history of recurrent hemoptysis for the past 7 years, with the most recent episode 7 days prior to presentation consisting of 3–4 episodes per day of 0.5–1 mL blood each (last episode on 2nd June 2025). There was associated history of wheeze in the past, though not currently present, with no identified triggers, diurnal or positional variation.

He denied cough, chest pain, fever, rhinorrhoea, weight loss, loss of appetite, abdominal pain, vomiting, diarrhea, burning micturition, or joint pain at the time of current presentation.

Past history was unremarkable for known comorbidities, smoking, substance abuse, or alcohol use. No family history of obstructive airway disease or tuberculosis contact. He had received three doses of COVID-19 vaccine and no prior inhaler use or major surgeries.

From 6 May 2025 to 12 May 2025, the patient was admitted at JP Varekha Multispeciality Hospital with fever, anorexia, cough, body ache, and generalized weakness, requiring oxygen support. Investigations during that admission included:

High-resolution computed tomography (HRCT) of the chest performed on 7 May 2025 revealed a calcified lesion in the right infrahilar region with complete collapse of the right lower lobe. Subsequent contrast-enhanced computed tomography (CECT) of the chest on 9 May 2025 demonstrated a calcified lesion, suspicious for a neoplastic etiology, involving the right main bronchus in the infrahilar region, associated with complete right lower lobe collapse (Figure 1). Two-dimensional echocardiography on the same day showed a left ventricular ejection fraction of 60% with trace mitral regurgitation and no evidence of pulmonary arterial hypertension. Ultrasonography of the abdomen and pelvis revealed mild hepatomegaly with grade I fatty liver and mild splenomegaly. The patient was referred to D.Y. Patil University for bronchoscopy and further management with a provisional diagnosis of right-sided pleural effusion with a suspected neoplastic lesion. He was admitted from 2 May to 26 May 2025, during which he presented with fever, breathlessness, weight loss, and loss of appetite. Fiberoptic bronchoscopy performed on 16 May 2025 revealed a mass in the right intermediate bronchus that bled on touch, and endobronchial biopsy was taken from the right main bronchus. A repeat bronchoscopy on 21 May 2025 with bronchoalveolar lavage, endobronchial biopsy, and brush biopsy demonstrated a mass in the right intermediate bronchus causing near-complete obstruction (Figure 2). Bronchoalveolar lavage CBNAAT dated 19 May 2025 detected *Mycobacterium tuberculosis*. Ziehl–Neelsen staining of BAL and endobronchial biopsy samples was positive for acid-fast bacilli. BAL differential cell count

showed neutrophils 55%, macrophages 20%, and lymphocytes 25%. Initial BAL cytology suggested features of pulmonary tuberculosis, with subsequent samples negative for malignancy; endobronchial brush cytology was also negative for malignancy. Fungal KOH preparation and cultures were negative, and Gram stain and initial AFB studies were non-contributory in some samples. Histopathological examination of the endobronchial biopsy obtained on 16 May 2025 showed a mild inflammatory lesion. Repeat 2D echocardiography on 20 May 2025 confirmed an LVEF of 60% with no tricuspid regurgitation, pulmonary arterial hypertension, regional wall motion abnormalities, or diastolic dysfunction. On clinical examination, there were no significant general findings; respiratory system examination revealed bilateral vesicular breath sounds with reduced air entry over the right infrascapular and infra-axillary regions, while abdominal, cardiovascular, and neurological examinations were unremarkable.

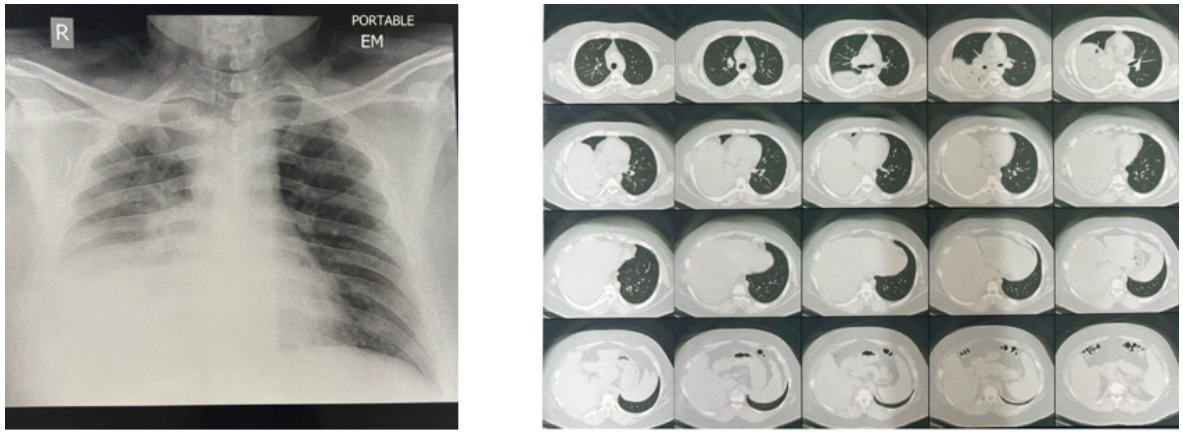

Fig 1: Chest radiography suggesting left lower lobe pathology corelated with computed tomography thorax

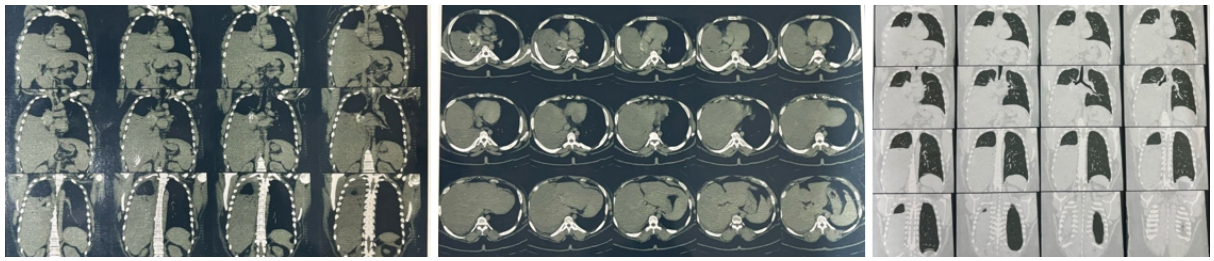

Fig 2: CECT chest (9 May 2025): Calcified lesion? neoplastic in infrahilar region on right main bronchus with complete right lower lobe collapse.

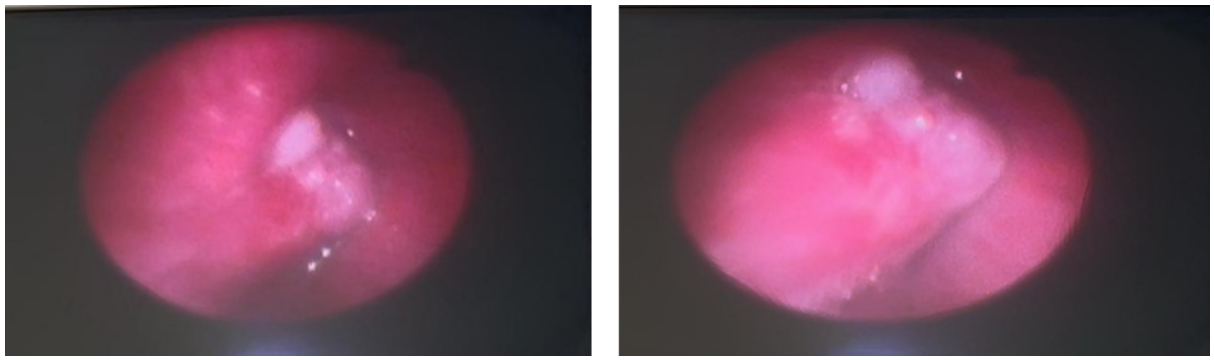

Fig 3: Fiberoptic bronchoscopy (FOB) + BAL + endobronchial biopsy (EBB): Right intermediate bronchus mass

seen.

DISCUSSION

The patient's long history of recurrent hemoptysis over seven years, recent onset of breathlessness, and imaging demonstrating a calcified endobronchial lesion with right lower lobe collapse initially raised suspicion for an endobronchial neoplasm such as bronchogenic carcinoma or carcinoid tumor. However, the young age of the patient, absence of smoking history, and residence in a tuberculosis-endemic region broadened the differential diagnosis to include endobronchial tuberculosis, fungal infections, and other granulomatous diseases. Endobronchial tuberculosis is well known to masquerade as malignancy or foreign body aspiration, often resulting in delayed diagnosis[1–3].

Bronchoscopy played a pivotal role in establishing the diagnosis in this case. Visualization of a friable, bleeding mass causing near-complete obstruction of the right intermediate bronchus was initially suggestive of a neoplastic process. The first endobronchial biopsy demonstrated only mild inflammatory changes, highlighting the low diagnostic yield of single bronchoscopic sampling in endobronchial tuberculosis. Repeat bronchoscopy with brush cytology, Ziehl–Neelsen staining, and CBNAAT confirmation of Mycobacterium tuberculosis ultimately established the diagnosis. Previous studies have emphasized the importance of repeat bronchoscopic evaluation and combined microbiological and histopathological approaches to improve diagnostic accuracy in suspected endobronchial tuberculosis[4–6].

Clinically, endobronchial tuberculosis commonly presents with cough, hemoptysis, wheeze, and breathlessness due to bronchial irritation and luminal obstruction. Hemoptysis results from ulceration or hypervascular granulation tissue within the bronchial mucosa. Wheeze may be localized and positional, often mimicking asthma or obstructive airway disease. The clinical spectrum varies depending on the bronchoscopic subtype and degree of airway involvement, as described in large clinical series[6–7].

Radiologically, endobronchial tuberculosis can closely mimic malignancy, presenting as mass-like endobronchial lesions, calcification, segmental or lobar collapse, and post-obstructive consolidation. Computed tomography plays a crucial role in identifying bronchial obstruction and associated parenchymal changes; however, imaging alone cannot reliably differentiate endobronchial tuberculosis from neoplastic lesions. Bronchoscopic classification describes edematous-hyperemic, tumorous, ulcerative, granular, and fibrostenotic subtypes, with the tumorous form most likely to be confused with malignancy[3,9].

Management of endobronchial tuberculosis primarily involves standard anti-tubercular therapy using a four-drug regimen (isoniazid, rifampicin, pyrazinamide, and ethambutol). Adjunctive corticosteroids may be considered in selected patients with significant inflammatory edema or airway obstruction to reduce the risk of residual bronchial stenosis, although evidence remains variable. Follow-up bronchoscopy and imaging are recommended to assess treatment response and detect complications such as bronchial stenosis, bronchiectasis, or persistent atelectasis[8,10].

This case underscores the importance of maintaining a high index of suspicion for endobronchial tuberculosis in young patients presenting with chronic or recurrent hemoptysis and endobronchial mass-like lesions, particularly in tuberculosis-endemic regions. Early bronchoscopic diagnosis and prompt initiation of anti-tubercular therapy are essential to prevent irreversible airway damage and long-term pulmonary sequelae[1,4,6].

CONCLUSION

A 29-year-old male with chronic recurrent hemoptysis over 7 years, recent breathlessness, right lower lobe collapse, and endobronchial mass-like lesion on imaging/CT is most consistent with endobronchial tuberculosis. Confirmation came from bronchoscopic findings, AFB positivity, CBNAAT MTB detection, and exclusion of malignancy/infection mimics. Prompt initiation of anti-tubercular therapy (HRZE) with adjunctive steroids forms the cornerstone of management, with close follow-up for response and sequelae.

REFERENCES

Kashyap S, Solanki A. Challenges in endobronchial tuberculosis: From diagnosis to management. Pulm Med. 2014;2014:594806.

Jung SS, Park HS, Kim JO, et al. Incidence and clinical predictors of endobronchial tuberculosis in patients with pulmonary tuberculosis. Respirology. 2015;20(3):488-495.

Chung HS, Lee JH. Bronchoscopic assessment of the evolution of endobronchial tuberculosis. Chest. 2000;117(2):385-392.

Shahzad T, Irfan M. Endobronchial tuberculosis—a review. J Thorac Dis. 2016;8(12):3797-3802.

Smith LS, Schillaci RF, Sarlin RF. Endobronchial tuberculosis: Serial fiberoptic bronchoscopy and natural history. Chest. 1987;91(5):644-648.

Park HY, Jeon K, Um SW, et al. Clinical significance of bronchoscopic subtypes of endobronchial tuberculosis. Respirology. 2010;15(4):533-538.

Lee JH, Park SS, Lee DH, Shin DH, Yang SC, Yoo BM. Endobronchial tuberculosis: Clinical and bronchoscopic

features in 121 cases. Chest. 1992;102(4):990-994.
World Health Organization. Treatment of tuberculosis: Guidelines. 4th ed. Geneva: World Health Organization; 2010.
Sharma SK, Mohan A. Tuberculosis. 3rd ed. New Delhi: Jaypee Brothers Medical Publishers; 2022. Chapter: Endobronchial tuberculosis.
Kim YJ, Lee KS. Pulmonary tuberculosis: Up-to-date imaging and management. AJR Am J Roentgenol. 2008;191(3):834-844.