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Case Report

Unmasking endobronchial tuberculosis in a post-valve replacement patient on anti-coagulant therapy: a diagnostic challenge

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ABSTRACT

Endobronchial tuberculosis (EBTB) is a rare yet challenging diagnosis due to its nonspecific symptoms, frequently normal chest radiographs, and variable sputum smear positivity. We report a case of a 56-year-old male with a history of aortic valve replacement on long-term warfarin therapy, presenting with massive hemoptysis requiring mechanical ventilation. Initially attributed to anticoagulation-induced coagulopathy, further evaluation with bronchoscopy revealed an endobronchial lesion, and bronchoalveolar lavage (BAL) confirmed Mycobacterium tuberculosis via GeneXpert. The patient was initiated on anti-tuberculosis therapy (ATT), resulting in clinical improvement and radiological improvement. This case underscores the diagnostic dilemma of EBTB in patients on long-term anticoagulant therapy, where bleeding is often attributed to coagulopathy rather than tuberculosis. Early bronchoscopy is crucial in high-risk patients, particularly in TB-endemic regions, to ensure timely diagnosis and treatment. This report highlights the importance of clinical vigilance in atypical presentations of TB.

Keywords: Endobronchial tuberculosis, Hemoptysis, Aortic valve replacement, Anticoagulation, Bronchoscopy

INTRODUCTION

Endobronchial tuberculosis (EBTB) is a distinct form of tuberculosis (TB) that affects the tracheobronchial tree. Diagnosing EBTB poses significant challenges due to its nonspecific symptoms, frequently normal chest radiographs, variable sputum positivity, and the need for specialized investigations such as bronchoscopy to directly visualize and sample airway lesions. This diagnostic difficulty can lead to missed diagnoses and delays in treatment. It is crucial to consider EBTB in patients with chronic cough, particularly when other diagnostic tests are inconclusive.

Herein, we present a challenging case of EBTB in a patient with a history of aortic valve replacement surgery who was on warfarin therapy. The patient presented with massive hemoptysis, necessitating mechanical ventilation. This case is particularly noteworthy due to the atypical presentation, diagnostic complexity, and as tuberculosis is rarely suspected in individuals with a history of valve replacement. Such patients are often evaluated for coagulopathy related bleeding, valve-related complications or secondary infections rather than primary pulmonary infections like TB.

While there are reports on TB endocarditis affecting prosthetic valves, to our knowledge, no prior case of EBTB in a post-aortic valve replacement patient presenting with hemoptysis has been published.

This highlights the diagnostic dilemma posed by this condition.[1,2]

CASE REPORT

A 56-year-old male presented to the emergency department with a one-week history of intermittent hemoptysis, dyspnea, and fever. On arrival, he experienced a massive hemoptysis episode, leading to respiratory distress that required intubation and mechanical ventilation. He had tachycardia (120/min), blood pressure of 100/70 mmHg, and oxygen saturation of 97% on volume-controlled ventilation (tidal volume: 350 mL, PEEP: 5 cm H_2O, FiO_2: 60%). Respiratory examination revealed decreased breath sounds in the right mammary, inframammary, and infrascapular regions, with coarse crepitations. Later, due to hypotension, inotropic support was initiated.

The patient had no history of anorexia or weight loss. He had history of aortic valve replacement (23 mm mechanical aortic valve) performed one year prior for severe aortic regurgitation, and he had been on warfarin therapy since then.

Chest X-ray revealed a homogeneous opacity in the right mid and lower lung zones (Figure 1). Laboratory investigations showed a prolonged prothrombin time (PT: 37.5 seconds, INR: 4.2), while other parameters were within normal limits. An electrocardiography (ECG) revealed ST depression in leads I, aVL, V5, and V6. Transthoracic echocardiography showed normal left ventricular function with a well-functioning prosthetic valve and no evidence of vegetations or thrombi.

Figure 1: Chest X-ray showing homogenous opacity in right middle zone and lower zone.

Given his history of valve replacement and anticoagulation therapy, hemoptysis was initially attributed to warfarin-induced coagulopathy or valve-related complications. Warfarin was withheld, and he was transitioned to heparin therapy. For further evaluation of the opacity in chest x-ray, a contrast-enhanced computed tomography (CECT) thorax (Figure 2) was done, which showed an abrupt cutoff of the right bronchus intermedius, suggestive of mucus or clot plugging, or an endobronchial lesion. Additional findings included right lower lobe collapse, focal bronchiectasis in the right middle lobe, and minimal right pleural effusion. The right upper lobe bronchus was seen arising directly from the supra-carinal trachea (pig bronchus). No evidence of endoleak or aortobronchial fistula was observed. Endotracheal secretions were sent for AFB smear and bacterial cultures, and were negative. Blood and urine cultures were also negative.

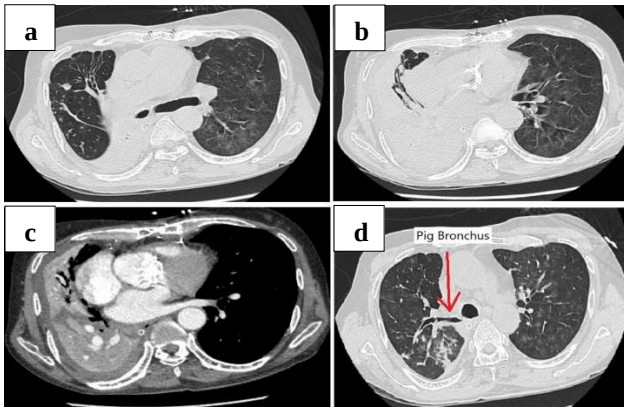

Figure 2: (a) CECT thorax showing focal area of bronchiectasis in right lower lobe, (b and c) collapse of right middle lobe, (c) right sided mild pleural effusion, and (d) right upper lobe bronchus seen arising directly from the supra-carinal trachea.

Since the patient was on invasive mechanical ventilation and ionotropic support, a multidisciplinary discussion involving pulmonologists, cardiologists, cardiothoracic surgeons, and anesthesiologists led to the decision to perform bronchoscopy under high-risk consent. Flexible bronchoscopy (FOB) performed via the endotracheal tube revealed a bleeding endobronchial lesion in the right middle lobe bronchus (Figure 3), while the left bronchial tree appeared to be normal. Bronchoalveolar lavage (BAL) samples were obtained from the right middle and lower lobes. Due to active bleeding and the patient's anticoagulation status, a biopsy was not attempted. BAL analysis was negative for bacterial-fungal cultures, and malignant cytology, but GeneXpert (CBNAAT) detected *Mycobacterium tuberculosis* (MTB) without rifampicin resistance.

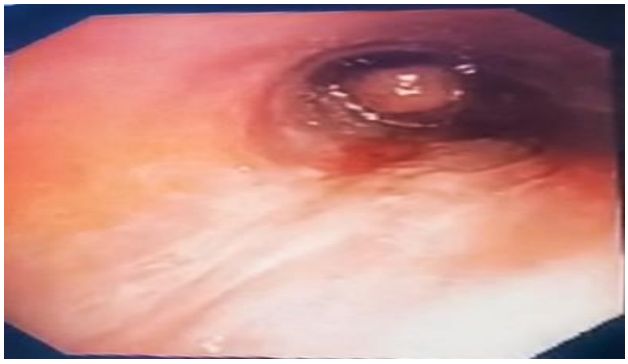

Figure 3: Flexible bronchoscopy image showing a bleeding polypoidal endobronchial lesion in the right middle lobe bronchus.

The patient was initiated on category 1 DOTS therapy as per the National Tuberculosis Elimination Programme (NTEP). Also, the patient's relatives were informed that a repeat bronchoscopy and biopsy would be considered if there was no response to anti-TB treatment (ATT). Following ATT initiation, the patient showed clinical improvement, with no further hemoptysis episodes. He was successfully extubated on day 5 and transitioned to oxygen support via nasal cannula. By day 8, the patient was weaned off from oxygen support, and was discharged in stable condition on ATT and warfarin. At his two-week follow-up, a chest X-ray showed marked improvement (Figure 4). The patient is currently under OPD based follow-up.

Figure 4: Chest X-ray taken after 2 weeks of anti-tubercular therapy showing the radiological improvement.

DISCUSSION

The pathogenesis of EBTB remains unclear, but proposed mechanisms include: direct extension from adjacent infected lung parenchyma, implantation from infected sputum, hematogenous dissemination, lymph node erosion into a bronchus, and lymphatic spread.[3-5] Clinical manifestations vary depending on disease extent and stage. Symptoms may be due to TB itself (e.g., cough, fever, malaise) or complications like airway obstruction. Hemoptysis occurs in 15–40% of cases and is typically mild, though massive hemoptysis can occur.[6] Unilateral rhonchi and diminished breath sounds may indicate endobronchial stenosis.[7,8] In our case the patient didn't show usual symptoms of TB, such as fever, weight loss or anorexia.

Early diagnosis of EBTB is crucial to prevent complications such as bronchostenosis and to reduce infectivity. Sputum AFB smear positivity in EBTB varies (16–53%), but a negative result does not exclude the diagnosis.[9] CT chest and bronchoscopy play key roles in evaluation and management of EBTB. Chung et al classified bronchoscopic findings in EBTB into seven subtypes: actively caseating, edematous-hyperemic, fibrostenotic, tumorous, granular, ulcerative, and nonspecific bronchitic.[3] Our patient had a tumorous type of lesion, leading to endobronchial obstruction and right lower lobe collapse.

The treatment of EBTB follows standard TB protocols, emphasizing early intervention to prevent airway complications like stenosis. The role of corticosteroids remains controversial. Fibrostenotic lesions may necessitate bronchoscopic interventions such as balloon dilation, stent placement, laser therapy, or cryosurgery.[10]

Diagnosing EBTB in patients with a history of valve replacement and ongoing anticoagulation therapy is particularly challenging. This case underscores the importance of maintaining a high index of suspicion for TB, even in critically ill patients on ventilatory, ionotropic and anticoagulation support. Initially, hemoptysis in our post-AVR patient was attributed to warfarin-induced coagulopathy, but further investigation identified endobronchial TB. This case highlights the necessity of bronchoscopy in high-risk patients, particularly in TB-endemic regions, to facilitate prompt diagnosis and treatment.

CONCLUSION

This case highlights the diagnostic challenge of endobronchial tuberculosis (EBTB) in patients on long-term anticoagulation, where hemoptysis may be misattributed to coagulopathy. Prompt bronchoscopy enabled timely diagnosis and initiation of anti-tubercular therapy, leading to clinical and radiological improvement. Clinicians should maintain a high index of suspicion for EBTB, especially in TB-endemic regions, even in patients with atypical presentations or concurrent cardiac comorbidities.

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REFERENCES

1. Diagne PA, Camara M, Ba PO, Diop MS, Samba M, Abdou Lahad Mbengue, et al. Early Prosthetic Valve Endocarditis with Mycobacterium Tuberculosis after Mitral Valve Replacement: A Case Report. World J Cardiovasc Surg. 2024;14(03):33-40.
2. Liu Q, Jin J, Shao L, Weng S, Zhou J, Li F, et al. Late prosthetic valve endocarditis with Mycobacterium tuberculosis after the Bentall procedure. Ann Clin Microbiol Antimicrob. 2019;18(1).
3. Chung HS, Lee JH. Bronchoscopic Assessment of the Evolution of Endobronchial Tuberculosis. Chest. 2000;117(2):385-92.
4. Kashyap S, Solanki A. Challenges in Endobronchial Tuberculosis: From Diagnosis to Management. Pulmonar Med. 2014;2014:1-8.
5. Smart J. Endo-bronchial tuberculosis. Br J Tuberculosis Dis Chest. 2006;45(2):61-8.

6. Samardzić N, Jovanović D, Marković-Denić L, Roksandić-Milenković M, Popević S, Skodrić-Trifunović V. Clinical features of endobronchial tuberculosis. Vojnosanitetski Pregled. 2014;71(2):156-60.
7. Neki NS. Endobronchial tuberculosis: an overview. Ann Pak Inst Med Sci. 2013;9(3):105-9.
8. Casali L, Crapa ME. Endobronchial Tubercolosis: a peculiar feature of TB often underdiagnosed. Multidisciplinar Resp Med. 2012;22:7.
9. Ozkaya S, Bilgin S, Findik S, Kök HÇ, Yuksel C, Atıcı AG. Endobronchial tuberculosis: histopathological subsets and microbiological results. Multidisciplinar Resp Med. 2012;22:7.
10. Puchalski J, Musani AI. Tracheobronchial Stenosis. Clin Chest Med. 2013;34(3):557-67.

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