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Case of Endobronchial Tuberculosis: Needs High Clinical Suspicion

Authors
Piyush Goel[1*], Tarun Jhamb[2]
[1]Narayana Super Speciality Hospital, Gurugram, India
[2]Manipal Hospital, Gurugram, India
*Corresponding Author
Piyush Goel

Abstract
We report a case of a middle-aged woman presenting with cough, non-specific chest pain, and intermittent haemoptysis for the past month. Further examination and investigations led to a diagnosis of endobronchial tuberculosis. The diagnosis is often not straightforward, and a high index of clinical suspicion is essential, as delayed diagnosis can result in severe complications.
Keywords – *EBTB – Endobronchial tuberculosis, AFB – Acid-fast bacilli, CT – Computed tomography, CECT – Contrast-enhanced computed tomography, BAL – Bronchoalveolar lavage, ATT – Anti-tubercular therapy, ZN – Ziehl-Neelsen.*

Introduction

Endobronchial tuberculosis (EBTB) is a form of tuberculosis that affects the tracheobronchial tree. It has a non-specific clinical presentation and often yields negative results for acid-fast bacilli (AFB) on sputum smears. EBTB can involve any part of the bronchial tree and any layer of the tracheobronchial wall.

Patients may present with symptoms such as cough, chest pain, dyspnoea, haemoptysis, fever, and expectoration. However, sputum AFB smear and chest X-ray may be normal in a significant proportion of patients. Early fibreoptic bronchoscopy in suspected cases is crucial for confirming the diagnosis and identifying complications(4).

Case Report

A 55-year-old female presented with non-specific chest pain and a sensation of heaviness in the chest for 4–5 days. She was initially managed with baseline
investigations—chest X-ray (normal), COVID RT-PCR (negative), and ECG (sinus rhythm)—along with conservative treatment.

Fifteen days later, she developed haemoptysis. On examination, she was hemodynamically stable, with no tachypnoea or tachycardia at rest, and maintained a room air SpO_2 of 98%. Repeat chest X-ray showed no significant abnormalities (Fig. 1), and routine blood tests were within normal limits. Two consecutive sputum AFB smears were negative.

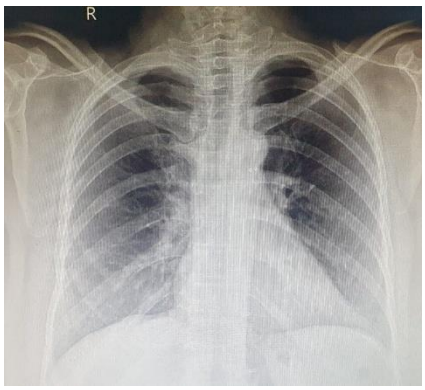

Fig. 1

She underwent a contrast-enhanced CT (CECT) of the chest, which revealed irregular polypoidal thickening along the lateral wall of the trachea at the level of the T3 vertebra, showing post-contrast enhancement (Fig. 2).

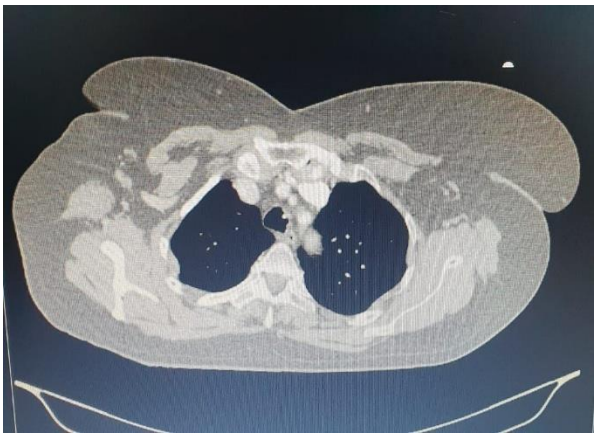

Fig. 2

Subsequently, diagnostic bronchoscopy was performed, revealing multiple nodular lesions on the anterolateral wall of the lower trachea (Fig. 3), with the largest polyp measuring approximately 1.5 cm in diameter. Biopsy of the polyp and bronchial washings were taken.

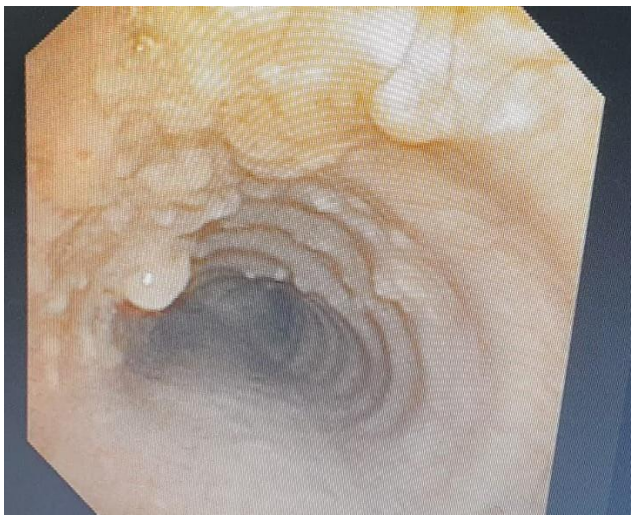

Fig. 3

ZN staining of bronchial washings showed the presence of acid-fast bacilli. Cytology revealed predominantly macrophages, few lymphocytes, few epithelioid cells, and occasional multinucleated giant cells. The endobronchial biopsy showed features of chronic inflammatory pathology. MTB culture was not sent.

The patient was started on a 6-month anti-tubercular treatment regimen and followed up regularly. After nearly five months of treatment, the patient showed significant clinical improvement: resolution of cough, no further haemoptysis, and a weight gain of approximately 2 kg.

Discussion

This patient presented with cough, mild haemoptysis, chest pain, and exertional dyspnoea. Initial chest X-ray was normal. However, contrast-enhanced CT of the chest revealed multiple tracheal polyps, later confirmed on bronchoscopy. Diagnosis of EBTB was confirmed through AFB-positive bronchial washings and histopathological findings including epithelioid cells and multinucleated giant cells. The endobronchial biopsy ruled out malignancy and confirmed chronic inflammation. The patient responded well to anti-tubercular therapy.

The common symptoms of endobronchial TB include cough with expectoration, haemoptysis, breathlessness, and wheeze[(1)]. EBTB occurs in approximately 10–40% of patients with active tuberculosis. A polypoidal presentation has been noted in about 20% of cases in some series[(2)].

Bronchoscopic findings may include mucosal hypertrophy, luminal narrowing, ulceration, and cicatricial stenosis with pseudo membrane formation [3]. Pathogenesis may involve direct implantation of bacilli into the tracheobronchial tree, hematogenous spread, or inflammatory granulation tissue formation resulting in polypoid lesions.

Flexible bronchoscopy with bronchoalveolar lavage and contrast-enhanced CT scan aid in diagnosis in most cases[4]. Chest radiography may be normal in 20% of cases, making bronchoscopy and CT more accurate tools for evaluating bronchial involvement and surgical needs[5]. Its diagnosis is challenging, due to its subtle and non-specific clinical presentation and the inability to detect acid-fast bacilli (AFB) by sputum smear[6]. The diagnostic yield of sputum AFB smear ranges from 16% to 53.3%[7]. When sputum is negative, fibreoptic bronchoscopy remains an essential tool, providing valuable diagnostic material [8].

Complications of EBTB include bronchial stenosis, airway stricture, and obstruction. These may occur in over two-thirds of patients, even with adequate treatment. Severe cases can result in airway obstruction, respiratory failure, post-obstructive bronchiectasis, recurrent pneumonia, haemoptysis, or persistent obstructive airway disease[9,10].

In our case, the chronology of symptoms in the Indian context prompted early suspicion of disease, leading to timely CT chest and diagnostic bronchoscopy, which enabled prompt diagnosis and helped minimize the risk of complications.

Anti-tubercular therapy remains the mainstay of treatment. As with pulmonary TB, a standard 4-drug regimen is used over six months, usually with excellent outcomes when started early[11].

Conclusion

Diagnosis of endobronchial tuberculosis is frequently delayed due to non-specific symptoms and inconclusive findings on chest X-ray and sputum AFB smears. Early use of flexible bronchoscopy is essential in suspected cases for timely diagnosis, reducing complications such as bronchial stenosis, atelectasis, and secondary infections. Early intervention and initiation of anti-tubercular therapy improve outcomes and reduce sequelae.

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