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Tissue is issue: Not all masses are tumors

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Summary

Background: Tuberculosis can disguise itself in any form. Endobronchial tuberculosis usually presents in young adults. Endobronchial tumor-like presentation of tuberculosis (EBTB) is very rare and often mistaken as a malignancy. Diagnosis is usually delayed, as clinical and radiological features are non-specific. Direct implantation of tubercle bacilli into the bronchus, or an contiguous spread, leads to EBTB. Bronchoscopic biopsy and culture are the best modality for diagnosis.

Care Reports: Clinical and radiological presentations of all cases were similar and one of them had rib erosion on bone scan. All cases were proven to be tuberculosis by histopathology and culturing mycobacterium tuberculosis. All of them are diagnosed as endobronchial tuberculosis, either histopathology or by culture that grew mycobacterium tuberculosis, and were successfully treated with anti-tuberculous treatment alone, without residual scarring.

Conclusions: Tuberculosis should be considered in the differential diagnosis of endobronchial mass lesions in the appropriate clinical setting since this is an uncommon presentation for which invasive procedures are needed to establish the diagnosis. Initially, it was mistaken as a malignancy and there was delay in diagnosis and initiation of treatment. Prompt treatment is crucial to avert residual bronchostenosis.

key words: **bronchoscopy • endobronchial tuberculosis • granuloma • tumors**

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Background

Endobronchial tumor-like presentation of tuberculosis (EBTB) is very rare [1] and is often mistaken as carcinoma, carcinoid or adenoma. Diagnosis is delayed, as this possibility is not considered in the initial differential diagnosis because of non-specific clinical and radiological features and low diagnostic yield of sputum [1,2]. EBTB results from direct implantation of tubercle bacilli into the bronchus from a pulmonary parenchymal lesion or an adjacent tuberculous mediastinal lymph node, hematogenous or lymphatic spread. Diagnosis is usually confirmed by bronchoscopic biopsy and culture. Here, we present a series of cases with tumor-like presentation [2,3].

Case Report

Case 1

A 21-year-old male shopkeeper presented to our pulmonary outpatient clinic with 6-month history of cough, mucoid expectoration, and progressive shortness of breath. He had significant weight loss of 12 kg in 6 months and appetite was also markedly reduced. Past medical history was unremarkable except for atopy and mild allergic rhinitis. Clinical examination revealed features of airflow obstruction. Chest roentgenogram showed right hilar prominence with homogeneous opacity in the right mid zone, 6th rib erosion and right costophrenic angle obliteration. Erythrocyte sedimentation rate was 40 mm/hr. Other hematological parameters were within normal limits. Three consecutive sputum examinations were negative for acid-fast bacilli. Mantoux test was negative. Contrast-enhanced computed tomography showed a soft-tissue density lesion just below the carina with extension into the right main bronchus and left main bronchus (Figure 1A) and conformed of erosion of the right 6th rib. With a clinical suspicion of malignancy, video-bronchoscopy was done for histological confirmation. Bronchoscopy revealed widening of carina with intra-luminal mass in both right and left main bronchi (Figure 2A). Fine nodular mucosal infiltration was also noted in right middle lobe bronchus and left main bronchus. Endobronchial biopsy, done twice (2 settings), was non-contributory. Fine-needle aspiration cytology of the rib lesion was also negative for malignant cells. Whole body skeletal scintigraphy was suggestive of increasing pathological uptake at posterior part of 6th & 7th rib (Figure 1B). Since all these investigation could not confirm the histopathological nature of the lesion, thoracotomy was done after 3 months. There was massive hemorrhagic pleural effusion with spongy rib mass, histopathology of which revealed epithelioid cell granuloma with Langhans giant cells and caseous necrosis (Figure 3A).

Case 2

A 29-year-old woman was referred from the oncology department for histopathological diagnosis of a left lung mass detected a week after full-term normal delivery. She had a cough with mucous expectoration of 4 months duration, associated with loss of weight and loss of appetite. Clinical features were suggestive of left lower lobe mass. Chest X-ray

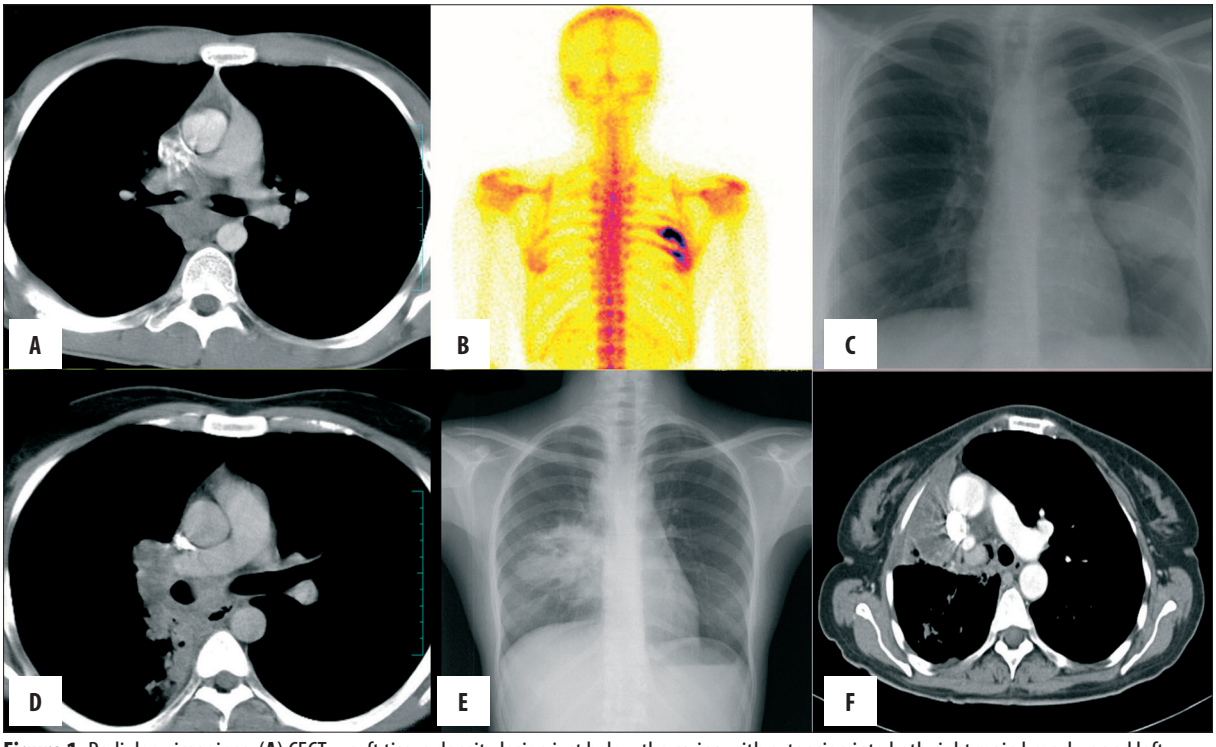

Figure 1. Radiology imagines. (**A**) CECT – soft tissue density lesion just below the carina with extension into both right main bronchus and left main bronchus. (**B**) whole body skeletal scintigraphy – increasing pathological uptake at posterior part of 6th & 7th rib. (**C**) Chest x-ray – left middle zone homogeneous opacity with obliteration of aorto-pulmonary window. (**D**) CECT – soft tissue density lesion at right hilum encasing the right middle lobe bronchus. (**E**) Chest x-ray – right mid zone consolidation and right hilar lymphadenopathy. (**F**) CECT – mass in the right main bronchus with ipsilateral mediastinal displacement and bronchiectatic changes in the right upper lobe.

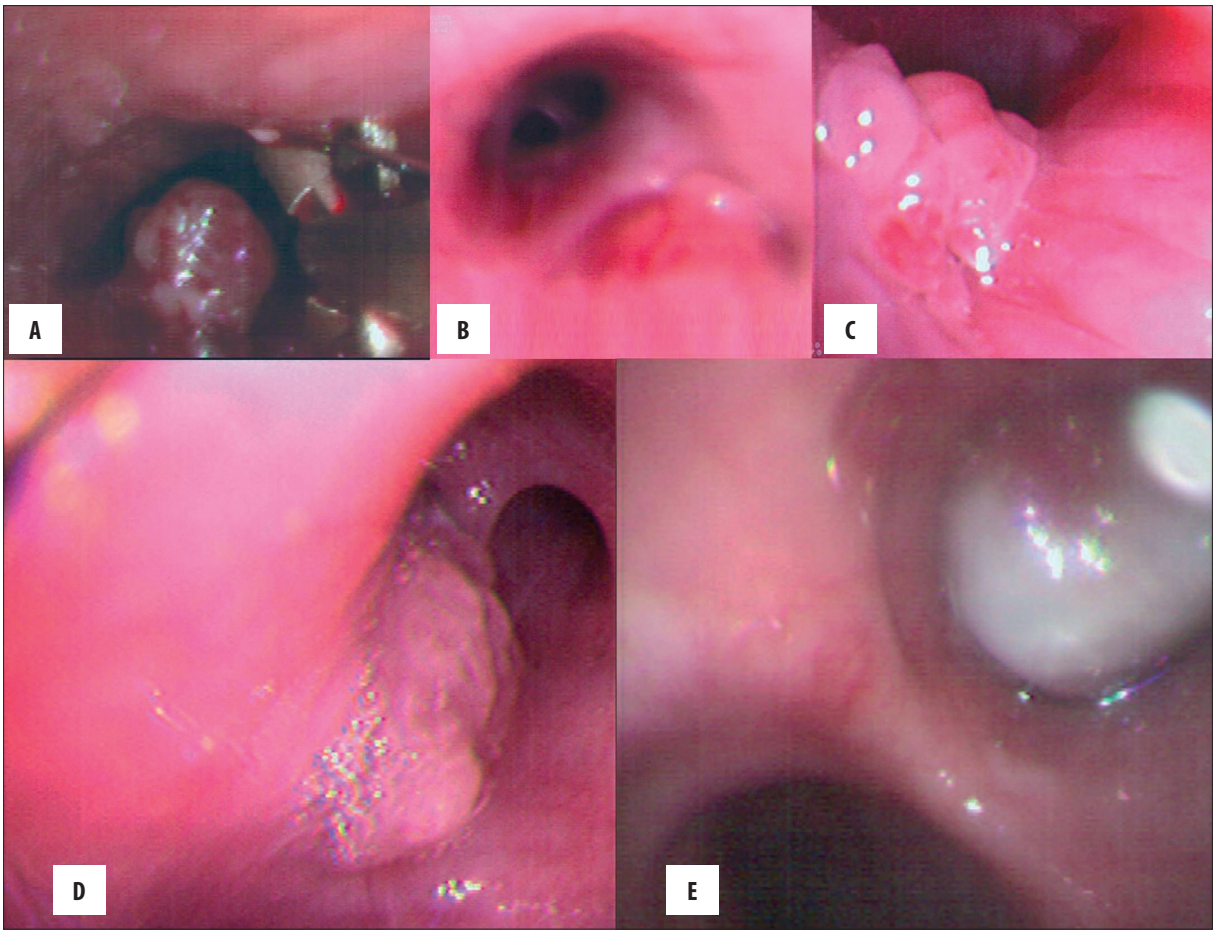

Figure 2. Bronchoscopic imagines. (**A**) Widening of carina with intra-luminal mass in both right and left main bronchus. (**B**) Mass occludes left lower lobe bronchus. (**C**) Polypoid growth in right middle lobe bronchus. (**D**) Sub mucosal growth occluding anterior segment of right upper lobe. (**E**) Tumour in the right main bronchus close to the carina.

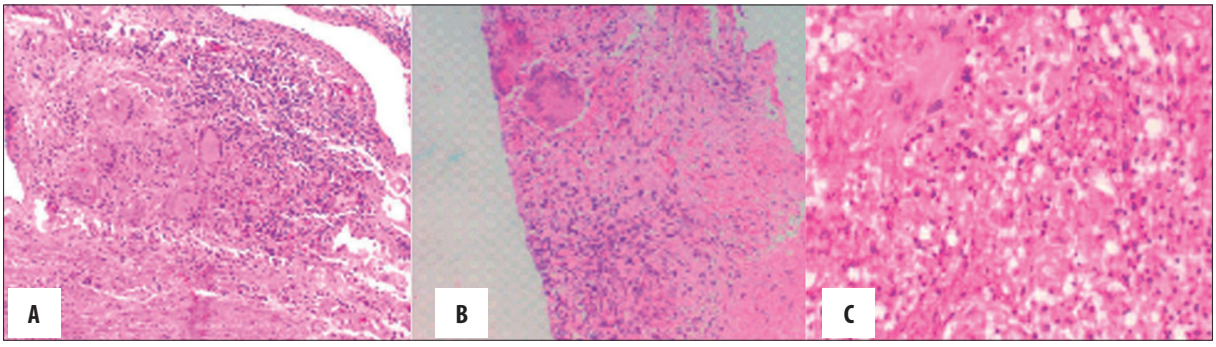

Figure 3. Histopathology (H & E stain) imagines. (**A**) Epithelioid cell granuloma with langhans giant cells and caseous necrosis. (**B**) Well defined epithelioid granuloma. (**C**) Subepithelial granuloma and caseous necrosis.

showed left middle zone homogeneous opacity with obliteration of the aorto-pulmonary window (Figure 1C). Lateral view confirmed superior segmental location of a lesion. Erythrocyte sedimentation rate was elevated (72 mm/hr). Serum lactate dehydrogenase was 216 U/L. Beta human chorionic gonadotropin was within normal limits. Mantoux test induration was 18 mm. Computed tomography scan of the chest showed a left lower lobe peripherally-placed mass lesion. Bronchoscopy revealed an endobronchial mass, which was totally occluding left lower lobe bronchus (Figure 2B) with extra-luminal compression of left upper lobe bronchus. Endobronchial biopsy was suggestive of well defined epithelioid granuloma (Figure 3B).

Case 3

A 25-year-old software engineer from Pune was referred to our institute with 7-month history of cough with scanty expectoration associated with weight loss and loss of appetite. Chest X-ray showed right hilar prominence. Erythrocyte

sedimentation rate was 42 mm/hr. Hematological and biochemical parameters were within normal limits. Sputum smear for AFB for 3 days was negative. Mantoux testing revealed an induration of 20 mm over the ventral surface of the right forearm. Computed tomography of the chest showed a soft-tissue density lesion at the right hilum encasing the right middle lobe bronchus (Figure 1D). Bronchoscopy revealed polypoidal endobronchial growth in the right middle lobe bronchus (Figure 2C). Histopathology examination was suggestive of sub-epithelial granuloma and caseous necrosis (Figure 3C). Subsequently, acid-fast bacilli were grown in radiometric BACTEC culture.

Case 4

A 22-year–old female staff nurse from Delhi presented with 3-week history of dry cough, exertion breathlessness, loss of weight and loss of appetite. Chest X-ray showed right mid-zone consolidation and right hilar lymphadenopathy (Figure 1E). Bronchoscopy revealed sub-mucosal growth occluding the anterior segment of the right upper lobe (Figure 2D) and the superior segment of the right lower lobe. Histopathological section show stratified squamous epithelium with underlying dense lymphoplasmacytic infiltration, few epithelioid cells and histiocytes and focal areas of ill-formed granuloma and glandular destruction seen. BACTEC AFB culture was negative.

Case 5

A 56-year-old housewife presented with 6-months history of cough with mucous expectoration, weight loss and loss of appetite. Clinical examination revealed crackles on the right side with monophonic wheeze. ESR was 70 mm in the 1st hour. Mantoux test was negative. Sputum smear for acid-fast bacilli was negative. Chest X-ray showed infiltrates on the right side with volume loss. Computed tomography revealed a mass in the right main bronchus with ipsilateral mediastinal displacement and bronchiectatic changes in the right upper lobe (Figure 1F). Bronchoscopy showed a tumor in the right main bronchus, close to the carina (Figure 2E). Endobronchial biopsy confirmed granuloma. AFB smear was also positive and initiated 4-drug antituberculous treatment (HREZ).

Discussion

Tuberculosis is considered to be a great imitator. Endobronchial tuberculosis (EBTB) can mimic bronchial adenoma, carcinoid or malignancy. EBTB is present in 10–40% of patients with active pulmonary TB and is typically described as a disease of the young, with more than 0% cases seen in age group less the 35 years [1]. Peak incidence of EBTB occurs in the third decade of life, with a female preponderance. The precise incidence of endobronchial lesions in patients with tuberculosis might be underestimated because of the infrequent use of bronchoscopy [1–3].

EBTB is well known to complicate parenchymal tuberculous infection, but it may also occur in the absence of parenchymal disease. The pathogenesis of EBTB is not yet fully established. However, possible mechanisms of EBTB may include direct implantation of tubercle bacilli into the bronchus from an adjacent pulmonary parenchymal lesion, direct airway infiltration from an adjacent tuberculous mediastinal lymph node, erosion and protrusion of an intrathoracic tuberculous lymph node into the bronchus, hematogenous spread, and extension to the peribronchial region by lymphatic drainage [1].

Of the various subtypes of EBTB described bronchoscopically by Chung and Lee, actively caseating type (43.0%) was the most common form, with edematous-hyperemia (14.0%), fibrostenotic (10.5%), tumors (10.5%), and granular (11.4%) types being relatively uncommon [1]. The rarity of this manifestation, coupled with the nonspecific findings on biopsy, delays recognition and therapy. Recently, diagnostic and therapeutic bronchoscopy has been applied widely for bronchial lesions [4–6], which could be the reason why we have come across a series of such cases.

The role of oral steroids in preventing bronchial stenosis has been controversial, with some studies favoring its use, while others found no advantage [6,7]. All patients were successfully treated with antituberculous treatment alone, without residual scarring.

Conclusions

Endobronchial tuberculosis may be misdiagnosed as lung cancer [5,6]. Tuberculosis should be considered in the differential diagnosis of endobronchial mass lesions in the right clinical setting [6]. Theses cases highlight the unusual presentation of tuberculosis for which invasive procedures were needed to establish the diagnosis. A high index of suspicion is warranted to make a timely diagnosis of endobronchial tuberculosis and to initiate early treatment. It is a major cause of morbidity, as it frequently heals with concentric scarring resulting in bronchostenosis [1,6,7]. Early commencement of antituberculosis drugs, before the development of fibrosis, would be effective in preventing the complications.

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