

## Endobronchial Tuberculosis: The Essential to Know

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Endobronchial tuberculosis (EBTB) or tracheobronchial tuberculosis is a special form of tuberculosis (TB) and is defined as tuberculosis infection of the tracheobronchial tree, with or without parenchymal involvement, with microbial and/or histopathological evidence [1-5].

### Pathology

- Infection of the bronchi could be secondary to direct extension from an adjacent parenchymal lesion, or lymph node erosion into the bronchi. Or could be autonomic by aspiration of TB, or by hematologic dissemination.
- Then histopathological evidence of epitheliogigantocellular granuloma in biopsy of the intrabronchial lesion, could be followed by fibrostenotic sequella, especially if neglected [1-3].

### Diagnosis of EBTB

**Clinical manifestations:** Sometimes symptoms of TB are present: anorexia, weight loss, Cough, hemoptysis, low temperature. Other times there is only localized wheezing when stenosis of the bronchi and in this case, it could mislead for asthma or foreign body [6]. Other times, in smokers it could be cough, weight loss and non-fever mimic cancer [5].

**Chest XR:** Chest XR could be normal in 10% - 20% of cases. In other cases, it could be misleading for cancer. Fortunately, in many cases it shows typical infiltration of upper parts of the lungs. Cavitation, mediastinal adenopathy's, especially in children, or pleural effusion. suggesting tuberculosis [2,3,5].

**Tuberculosis bacilli in the sputum:** Acid -fast bacilli staining (AFB) in expectoration is rarely positive confirming the presence of tuberculosis bacilli (10 - 30%). New nuclear amplification test: Expert MDR/RIF is promising in case of negative AFB [3,5].

**Bronchoscopy is the most valuable test for diagnosis:** Bronchoscopic appearances of EBTB have been divided into seven subtypes: actively caseating, edematous-hyperemic, fibrostenotic, tumorous, granular, ulcerative, and nonspecific bronchitis [3]. See figure 1 and 2 showing tumor aspect [5].



**Figure 1:** Endobronchial tuberculosis tumor after 6 months (2REZH, 4RHJ). Surgical ablation was needed. Quoted with permission from ref 4. *Pneumologie Clinique 2015. Elseviers editor.*



**Figure 2:** Endobronchial tuberculosis, after 3 months therapy, the lesion was smaller. Initially it obstructed the bronchi. Quoted with permission from ref4. *Journal de Pneumologie 2015. Elseviers editor.*

Biopsy and Broncho -alveolar lavage(BAL) should be done [1-8]:

- 1) BAL -AFS could be positive for TB.
- 2) Biopsy should be divided in two specimens: One for histopathology, and the other microbial for AFS, and culture.

**Histopathology:** Show Epitheliogigantocellular granuloma, suggesting TB. Central necrosis and granuloma could be seen in other lesions like sarcoidosis. But if Epitheliogigantocellular caseating granuloma, caseation confirms the diagnosis of pulmonary tuberculosis [7].

AFS and culture could reveal BK in biopsy, as well as in BAL. But unfortunately, the positivity is only in 30 - 70%.

**Computerized TomoDensitometry of the chest:** Is helpful, when we suspect endobronchial tuberculosis, but normal radiography of the chest [2,3,5].

### Treatment

The aim is to eradicate TB, and to avoid local stenosis and complications:

- 1) Medical treatment is the same for pulmonary tuberculosis- WHO regimen: 4 months Rifampicin, Isoniazid, pyrazinamide, Ethambutol followed by 4 months Rifampicin, Isoniazid (2REZH, 4RH) [9]. Early treatment is recommended to avoid fibrostenotic sequella as much as possible.
- 2) Surgical treatment [10]: is recommended when the endobronchial lesion is not resolved with medical treatment, or for fibrostenotic sequella to avoid recurrent infections and bronchiectasis. It could be traditional surgery: ablation and reconstruction. Or endoscopic interventions (Laser, cryotherapy, stent).

### Prognosis

If EBTB is not diagnosed and treated early. This will develop to fibrosis and stenotic endobronchial sequella. But even under regular TB treatment 2RHEZ/4RH, the endobronchial lesion could not resolve completely in many cases and will need surgery.

### Unsolved problems

- Need for early diagnosis: But Endoscopy and CT are not routine for pulmonary TB.
- Symptoms could be misleading, and Standard Chest RX could be normal.

EBTB is also very often undiagnosed when accompany typical pulmonary TB, as we said neither CT nor endoscopy are routinely or WHO recommended for pulmonary tuberculosis [2,3,8].

In different series of autopsies of patients died from Pulmonary TB, endobronchial pulmonary tuberculosis is present in 3 - 90%.

In a Korean cohort of pulmonary tuberculosis, when performing bronchoscopy half of them have underdiagnosed endobronchial tuberculosis. And half of them have endobronchial sequella and stenosis [8].

This highlight the need for criteria to suspect EBTB in bronchopulmonary tuberculosis patients, aiming to avoid sequella.

**Mediastinal adenopathy:** Mediastinal adenopathy invaded by TB and accompanying EBTB, could become bigger while treatment with ERZH, this is an immunological mechanism. And is not due to relapse. Mediastinal adenopathy accompanying EBTB needs 9-month therapy to avoid relapse [5].

**Conclusion**

EBTB is often underdiagnosed or lately diagnosed when sequella. We should think about it if general symptoms suggesting TB, even with normal chest XR. Unfortunately, endoscopy which is the diagnosis test is not routine for tuberculosis, nor is CT scan.

Not all EBTB respond to medical TB therapy, medical therapy eradicates TB, but might fail to reverse the macroscopic endobronchial lesion (EBTB) and could develop sequella. When mediastinal adenopathy we should give 9 months therapy.

**Conflict of Interest**

The author declares non-conflict of interest.

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