

Endobronchial Tuberculosis and Middle-Lobe Syndrome

Nguyen Ho Lam* and Tran Van Ngoc

University of Medicine and Pharmacy, Ho Chi Minh City, Vietnam

*Corresponding Author: Nguyen Ho Lam, University of Medicine and Pharmacy, Ho Chi Minh City, Vietnam.

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Middle lobe syndrome (MLS) is a clinical entity representing chronic or recurrent collapse of the middle lobe of the right lung [1]. Although MLS can be classified pathophysiologically into obstructive and non-obstructive types, the pathogenesis of MLS is still poor understood. The narrow diameter and long length of the middle lobar bronchus, the angular take-off of this bronchus, and the poor collateral ventilation are anatomical features causing the middle lobe susceptible to transient obstruction [1]. *Mycobacterium tuberculosis* can contribute in development of MLS according to several following mechanisms: the intraluminal tuberculous inflammation, the extraluminal compression of the enlarged lymph nodes, the endobronchial lesion blocking the bronchus, or the combination of these pathogenic mechanisms [2-4]. Here we presented an interesting case of MLS relating to *M. tuberculosis*.

An 81-year-old woman had consolidation detected incidentally on chest radiograph in right lower hemithorax (Figure 1A). She had occasionally dry cough, fatigue and anorexia two months before. Her past medical history was unremarkable. Chest computed tomography without contrast (Figure 1B) showed atelectasis related consolidation, suspecting broncholith, and calcified parenchymal nodule in the middle lobe. Bronchoscopy revealed the obstruction of the middle lobe bronchus induced by the combination of the hard broncholith (5 x 2 mm) and the whitish cheese-like material covering the bronchial mucosa (Figure 1C). The bronchoalveolar lavage (BAL) culture was positive *M. tuberculosis*. Bronchoscopy removal of the broncholith undertaken and administration of anti-tuberculosis drugs resulted in her clinical and radiological improvement after six months.

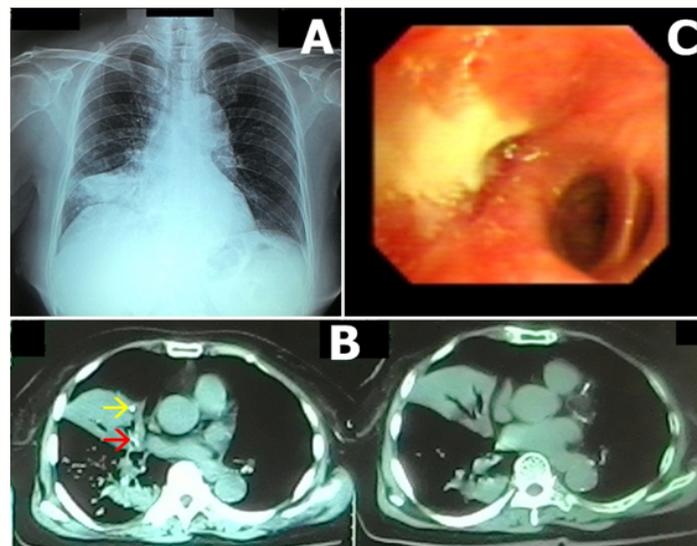


Figure 1: Endobronchial tuberculosis and middle lobe syndrome. A) Opacity at the lower right hemithorax obliterating the right cardiac border. B) Chest computed tomography showed consolidation of the middle lobe with suspected broncholith (red arrow), and calcified parenchymal nodule (yellow arrow). C) Obstruction of the middle lobar bronchus with the whitish cheese-like material.

Endobronchial tuberculosis (EBTB), a tuberculous infection of the tracheobronchial tree, is a special form of pulmonary tuberculosis. In elderly patient with the aging immune system, the endogenous reactivation of dormant tubercle bacilli or the exogenous reinfection of new tubercle bacilli in the lung can prompt in forming EBTB [5]. MLS associated with EBTB was uncommon but reported in several published cases [3,4] which showed prominent incidence in elderly patient similarity to our case. The interpretation for this observation was endobronchial lesions at lobar or segmental bronchus more common in elderly EBTB patients than younger EBTB patients [5].

In our case, the obstructive MLS was resulted from combination of the EBTB and the broncholith. Positive BAL culture for *M. Tuberculosis* and appearance of active caseous lesion on bronchoscopy were suitable for diagnosis of EBTB. The natural history of tuberculous infection can explain the coexistence of two conditions in elderly patient. Patients with primary TB infection usually enter the latent phase with the potential of developing calcified peri-bronchial lymph nodes and subsequently form the broncholith [6]. The presence of the calcified parenchymal nodule [1] in our case indicated a long-term granulomatous infection relating to *M. tuberculosis* and the association between the formation of EBTB and the endogenous reactivation of *M. tuberculosis*.

Although extremely rare, EBTB and broncholith can co-exist and result in MLS in elderly patient.

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