*Tanaffos* (2010) 9(1), 63-66


# Loose Body in the Main Bronchus Due to Broncholithiasis

**Majid Mirsadraee [1], Mehrdad Katebi [2]**

[1] Department of Pulmonary Medicine, Mashhad Islamic Azad University, [2] Department of Clinical Anatomical Pathology, Razavi Subspecialty Hospital, MASHHAD-IRAN.

ABSTRACT

*Anthracosis of the lung is black discoloration of bronchial mucosa that may distort and occlude the bronchial lumen and cause significant clinical findings named "Anthracofibrosis". In this article a rare presentation of this disease and related complications were reported. A 73 year-old woman with a 10-year history of chronic cough, dyspnea, weight loss and wheezing was referred to us for exacerbation of her symptoms in winter. She was a known case of anthracosis. Her previous bronchoscopy and sampling were inconclusive. Her recent computed tomography (CT) scan showed bilateral parenchymal infiltration, multiple lymph node calcifications and an intra-luminal calcified material in the left main bronchus. Bronchoscopy showed a floating foreign body in the left main bronchus and infiltration of the right and left main bronchi. Bronchial lavage showed plenty of acid fast bacilli and biopsy showed granulomatous reaction in favor of tuberculosis. In conclusion, we believe that broncholithiasis should be considered as a chronic complication of anthracosis.* ***(Tanaffos 2010; 9(1): 63-66)***

***Key words:*** *Anthracosis, Anthracofibrosis, Tuberculosis, Foreign body, Broncholithiasis*

## INTRODUCTION

Tracheobronchial foreign body in the bronchus is a rare condition in the elderly and one of its uncommon subtypes is broncholithiasis (1). The term broncholith refers to any calcification impinging on the bronchus produced by food aspiration, bronchiectasis or calcified lymph node/tissue that extrude to bronchial lumen (2).

Extrusion of calcified lymph node into the bronchial lumen due to tuberculosis, fungal infection or silicosis is the most common cause of broncholithiasis (3).

Anthracosis of the lung is an ancient disease of human beings (4) that was overlooked in developed countries due to its decreasing prevalence. It is the accumulation of carbon or organic dust (5) within the alveolar macrophages or freestanding in lung parenchyma or bronchial mucosa leading to black discoloration of bronchial mucosa. It may progress and cause bronchial stenosis with chronic pulmonary symptoms named "anthracofibrosis" (6). The

*Correspondence to: Mirsadraee M*
*Address: No 80, 15th Kosar, kosar Ave, Vakilabad Blv., Mashhad, Iran.*
*Email address: majidmirsadraee@mshdiau.ac.ir*
*Received: 22 July 2009*
*Accepted: 4 October 2009*

underlying cause of anthracosis was not found. Two important causes have been introduced for anthracosis: inhalation of smoke during home bread baking (7) and tuberculosis (5,8). The clinical manifestation of this disease has been previously described (9). A previous study reported that lymph node and bronchial calcifications are frequent findings in anthracosis (10). In endemic areas (developing countries) still some unusual manifestations of this disease might be expected. In this article, we report a patient presenting with broncholithiasis due to lymph node calcification in whom both tuberculosis and anthracosis were found to be the underlying causes.

## CASE SUMMARIES

Our patient was a 73-year-old woman with frequent referrals to pulmonary clinic due to chronic cough and dyspnea. Physical examination showed bilateral diffuse wheezing and pulmonary function test revealed obstructive pattern not improved by bronchodilator. She did not recall any exposure to smoke or a previous history of gastroesophageal reflux. Received treatment consisted of salmeterol inhaler and oral theophylline. Earlier CT scan demonstrated lymph node calcification, right upper and lower lobe masses, tracheal stenosis and left upper lobe bronchiectasis. Bronchoscopic lavage and biopsy revealed anthracosis but samples were negative for tuberculosis, fungal disease, or any other pathologic condition.

During a one year follow up, she suffered from two exacerbations that both were treated with inhaled long acting beta 2 agonist, inhaled corticosteroid, montelukast and theophylline. In her last visit in winter, she had severe dyspnea and cough. Physical examination showed wheezing especially in the left posteroinferior part of the chest. Recent CT-scan detected right middle lobe consolidation, right lower lobe infiltration, a calcified object inside the left main bronchus, and multiple mediastinal and bronchial calcifications (Figure 1). Bronchoscopy revealed tracheal narrowing, right middle and lower lobes stenosis and infiltration (Figure 2), penetrating anthracosis in both lungs and a black and white floating foreign body in the left main bronchus (Figure 3). The foreign body was extracted by basket forceps and evaluation of distal left bronchi revealed stenosis and anthracosis of the left lower lobe main bronchus. Acid fast bacilli were detected from bronchial lavage and histopathological evaluation showed granulomatous reaction in favor of tuberculosis (Figure 4). Cross section of the foreign body did not reveal a true foreign body and diagnosis of broncholithiasis was confirmed. The patient improved after bronchoscopy and especially after the initiation of anti tuberculosis drugs. Following one month therapy, her general clinical condition improved but respiratory symptoms including wheezing were present with decreased severity.

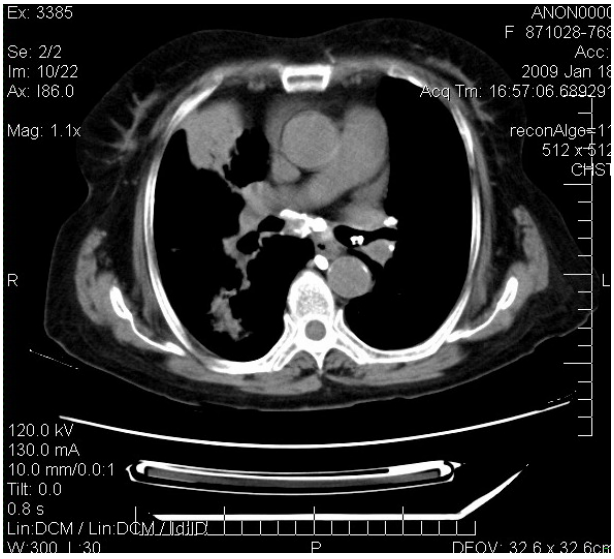


Figure 1. CT scan of the patient with anthracosis and tuberculosis showed right lung infiltration, mediastinal calcification and a calcified Intra-bronchial object in the left main bronchus.

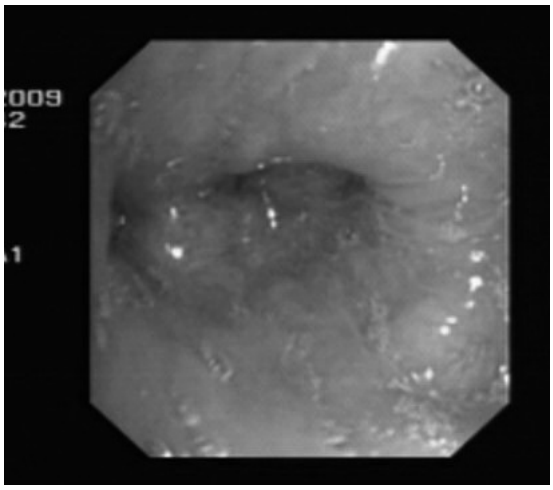

Figure 2. Mucosal inflammation and infiltration of the right lower lobe due to tuberculosis

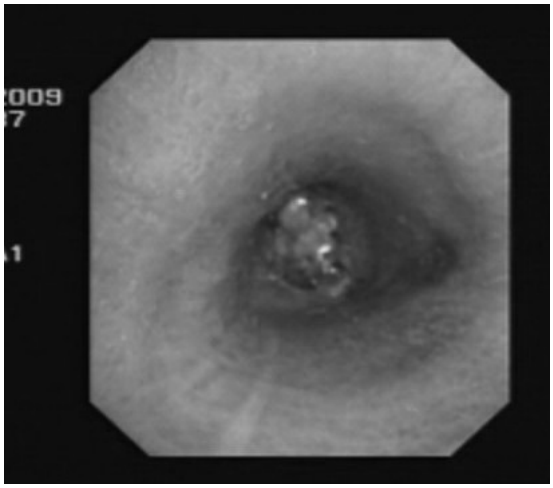

Figure 3. Broncholith presenting as a loose body inside the lumen of the left main bronchus.

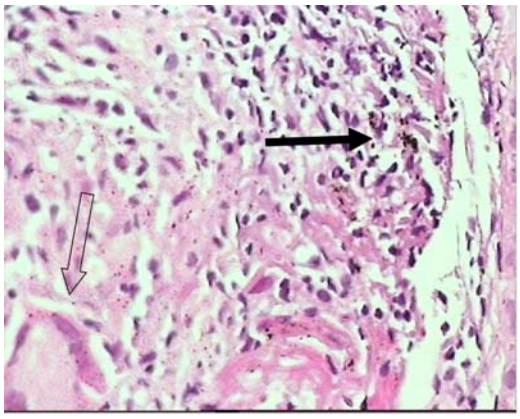

Figure 4. Histopathological study of the specimen from right lower lobe bronchus revealed granuloma (white arrow) and anthracosis (black-arrow).x400,H&E staining.

## DISCUSSION

This case report showed broncholithiasis as the final spectrum of two simultaneous diseases, tuberculosis and anthracosis. Bronchoscopy was the key factor for management of this patient suffering from loose body due to broncholithiasis (11). Some authors claim that bronchoscopy often fails to aid a correct diagnosis of broncholithiasis and suggested the CT scan as a more sensitive diagnostic tool (3). Usually the diagnosis of subjects with previous history of chronic lung disease is confirmed by their physician and they are under treatment for their previous condition. Relapse of pulmonary symptoms such as cough, phlegm and hemoptysis is frequent but these symptoms are usually considered as a flare up of the disease. Therefore, broncholithiasis and loose body as a new complication of this situation may be missed and the management may not be effective. In our patient, CT-scan is the strategic tool that with proper technique leads to the decision of performing second bronchoscopy. Therefore, in a problematic chronic airway disease such as anthracosis or tuberculosis, CT-scan and bronchoscopy are both recommended. Although the treatment of choice for broncholithiasis is usually surgical removal (2) and is available in our region (12), removal of a loose body through bronchoscopy is both safe and effective (13).

In our experience, anthracosis and anthracofibrosis show a very slowly progressive course. During winter season, these subjects usually show severe exacerbation. Considering the fact that there is no curative treatment for anthracosis at this time, management of these patients might be difficult. The percentage of anthracosis patients undergone repeated bronchoscopy was not so high. Our experience in these subjects showed that the degree and extension of involvement did not change significantly over time.

In our patient, right lung biopsy confirmed the

diagnosis of TB, but the broncholith was discovered from the left lung. Lymph node calcifications were also common in the mediastinum and parenchymal infiltrates and intra-bronchial lesions were bilateral. Therefore, a possible case scenario would be that tuberculosis involved both lungs primarily and the broncholith originated from one lung and migrated to the other.

In this regard, the question is whether TB was superimposed to an already existing slow growing anthracosis or latent TB was the major cause of anthracosis and discovered through repeated diagnostic tests. In our patient, clinical symptoms deteriorated significantly in winter. Anti-tuberculosis therapy returned the patient's condition to her previous chronic state. Therefore, we believe that tuberculosis was a new condition, and lymph node calcification and broncholithiasis were originated from an already existing chronic anthracosis.

In conclusion, anthracosis should be added to the list of causes of broncholithiasis.

## REFERENCES


1. Zhijun C, Fugao Z, Niankai Z, Jingjing C. Therapeutic experience from 1428 patients with pediatric tracheobronchial foreign body. ***J Pediatr Surg*** 2008; 43 (4): 718- 21.
2. Nollet AS, Vansteenkiste JF, Demedts MG. Broncholithiasis: rare but still present. ***Respir Med*** 1998; 92 (7): 963- 5.
3. Seo JB, Song KS, Lee JS, Goo JM, Kim HY, Song JW, et al. Broncholithiasis: review of the causes with radiologic-pathologic correlation. ***Radiographics*** 2002; 22 Spec No: S199- 213.
4. Petrányi G. Anthracosis in members of the aristocracy and mummies in Hungary. ***Orv Hetil*** 1997; 138 (13): 826.
5. Naccache JM, Monnet I, Nunes H, Billon-Galland MA, Pairon JC, Guillon F, et al. Anthracofibrosis attributed to mixed mineral dust exposure: report of three cases. ***Thorax*** 2008; 63 (7): 655- 7.
6. Chung MP, Lee KS, Han J, Kim H, Rhee CH, Han YC, et al. Bronchial stenosis due to anthracofibrosis. ***Chest*** 1998; 113 (2): 344- 50.
7. Amoli K. Bronchopulmonary disease in Iranian housewives chronically exposed to indoor smoke. ***Eur Respir J*** 1998; 11 (3): 659- 63.
8. Aslani J, Ghanei M, Khosravi L. Relation of bronchial anthracosis with Mycobacterium tuberculosis. ***Medical Journal of Tehran University of Medical Science*** 2002; 60: 460-4.
9. Mirsadraee M , Saaedi P. Anthracosis of lung; Evaluation of potential causes. ***Journal of bronchology*** 2005; 12: 84-7.
10. Kim HY, Im JG, Goo JM, Kim JY, Han SK, Lee JK, et al. Bronchial anthracofibrosis (inflammatory bronchial stenosis with anthracotic pigmentation): CT findings. ***AJR Am J Roentgenol*** 2000; 174 (2): 523- 7.
11. Dikensoy O, Usalan C, Filiz A. Foreign body aspiration: clinical utility of flexible bronchoscopy. ***Postgrad Med J*** 2002; 78 (921): 399- 403.
12. Reza B, Ziaollah H. Surgical management of tuberculous broncholithiasis with hemoptysis: experience with 5 operated cases. ***Ann Thorac Cardiovasc Surg*** 2007; 13 (3): 185- 90.
13. Yi KY, Lee HK, Park SJ, Lee YC, Rhee YK, Lee HB. Two cases of broncholith removal under the guidance of flexible bronchoscopy. ***Korean J Intern Med*** 2005; 20 (1): 90- 1.