

Diagnose of occult bronchial foreign body

A rare case report of undetected Chinese medicine aspiration for 10 long years

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Abstract

Background: Occult bronchial foreign body can be very difficult to diagnose early in an adult patient without acute symptoms. This report describes a rare case of undetected Chinese medicine “*Coptis chinensis*” aspiration for 10 long years.

Methods: A case was reported that a female patient complained of a 10-year history of productive cough. A battery of tests were given to confirm the diagnosis.

Results: Chest computed tomography (CT) showed extensive bronchiectasis and multiple nodules, along with stenosis of left lower lobar bronchus. An extensive solid lesion with surrounding inflammatory granulation tissue was seen on her first bronchoscopy and biopsy revealed chronic mucosal inflammation. A neglected history of *Coptis chinensis* regularly kept in-mouth while sleeping for the last 10 years in this patient provided clues for a final diagnosis. Confirmatory diagnosis of bilateral tracheobronchial foreign bodies caused by recurrent inhalation of *Coptis chinensis* was made by a second bronchoscopy.

Conclusions: This case clearly demonstrates that a precise medical history is often overlooked. A high index of suspicion, a precise medical history, radiographic features of chronic respiratory symptoms not explained by other conditions were keys to diagnosing this case.

Abbreviation: CT = Computed tomography.

Keywords: bronchial foreign body, bronchoscopy, Chinese medicine

1. Introduction

Although aspiration of a foreign body into trachea and bronchus can occur in all age groups, infants and little children suffer most commonly.^[1,2] Bronchial foreign body is uncommon in adults. Significant neurological impairment, alcohol, drug intoxication, and poor dentition are usually identified risks associated with bronchial foreign body in adults.^[3,4] The single most diagnostic factor leading to its diagnosis is a high index of suspicion.^[3,5]

Most adult patients with a foreign body in the bronchial tree have an early history suggestive of aspiration. As such, occult foreign body aspiration in adults is rare.^[6,7] An occult bronchial foreign body can lead to chronic respiratory symptoms, complicating to bronchiectasis. Erroneous diagnosis of pneumonia, asthma, or lung cancer is possible.^[2,3,8,9] We present a rare case of undetected Chinese medicine “*Coptis chinensis*” aspiration for 10 long years.

2. Case report

2.1. Patient information

A 38-year-old woman presented with a 10-year history of a productive refractory cough with yellow sputum. Exacerbate symptoms along with low-grade fevers, anorexia, and fatigue were present 4 years before presentation. She did not complain of hemoptysis, chest pain, dyspnea, or night sweats. She had a history of depression and parageusia.

2.2. Diagnostic focus and therapeutic intervention

Bilateral equal breath sounds with fine rales but no wheeze were found on lung auscultation. Her blood report revealed a mild normocytic anemia with hemoglobin of 9.6 g/dL. Levels of serum electrolytes and tumor makers, tests of hepatic and renal function were all with normal limits. *Pseudomonas aeruginosa* were cultured from 3 sets of sputum culture. Repeated sputum samples for tuberculosis were negative. Pulmonary function test revealed a mid-range obstructive ventilatory defect with mildly reduced diffusion capacity. Chest computed tomography (CT) showed extensive bronchiectasis, along with multiple sharp bordered

Editor: Levent Dalar.

The patient signed informed consent for the publication of this case report and any accompanying images.

Ethical approval of this study was obtained by the ethics committee of the first affiliated hospital Zhejiang University.

The authors report no conflicts of interest.

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Medicine (2016) 95:31(e4076)

Received: 9 January 2016 / Received in final form: 1 June 2016 / Accepted: 5 June 2016

<http://dx.doi.org/10.1097/MD.0000000000004076>

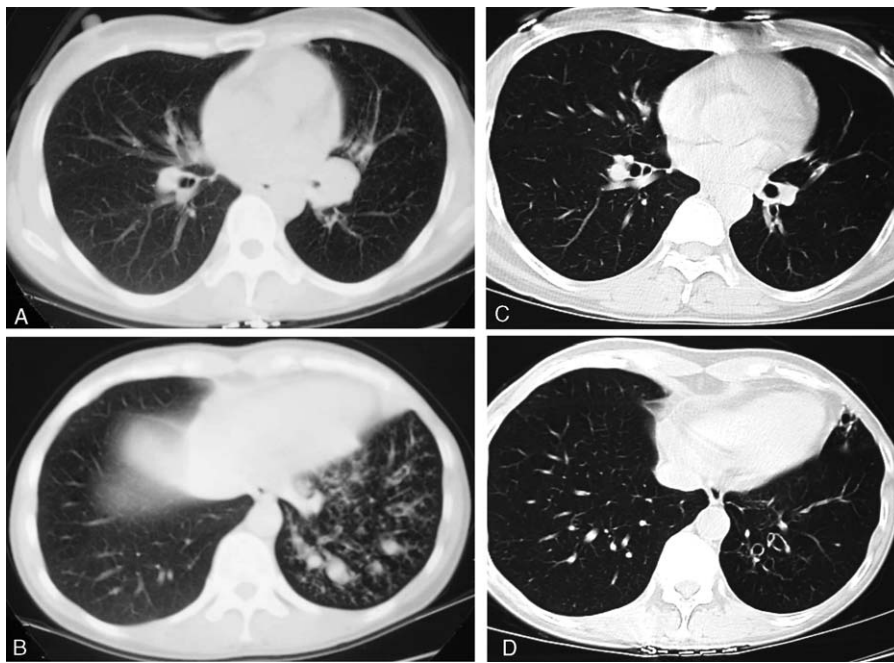


Figure 1. CT scans, Chest. Double contour and signet ring signs are present in left upper, lingulae, and lower lobes. There is stenosis in left lower bronchus; several multiple sharp bordered nodes are evident on the left lower lobe (A and B). Follow-up CT chest revealed severe bronchial dilatation in left lower lobe 10 years after bronchial foreign body was removed (C and D).



Figure 2. Bronchoscopic images. Necrotic tissues adhere to the ostium of right upper lobe bronchus (A and B) as well as right lower lobe bronchus (C), accompanied with peripheral mucosa congestion and edema. There is subtotal occlusion of the ostium of the left primary bronchus by these necrotic tissues (D).

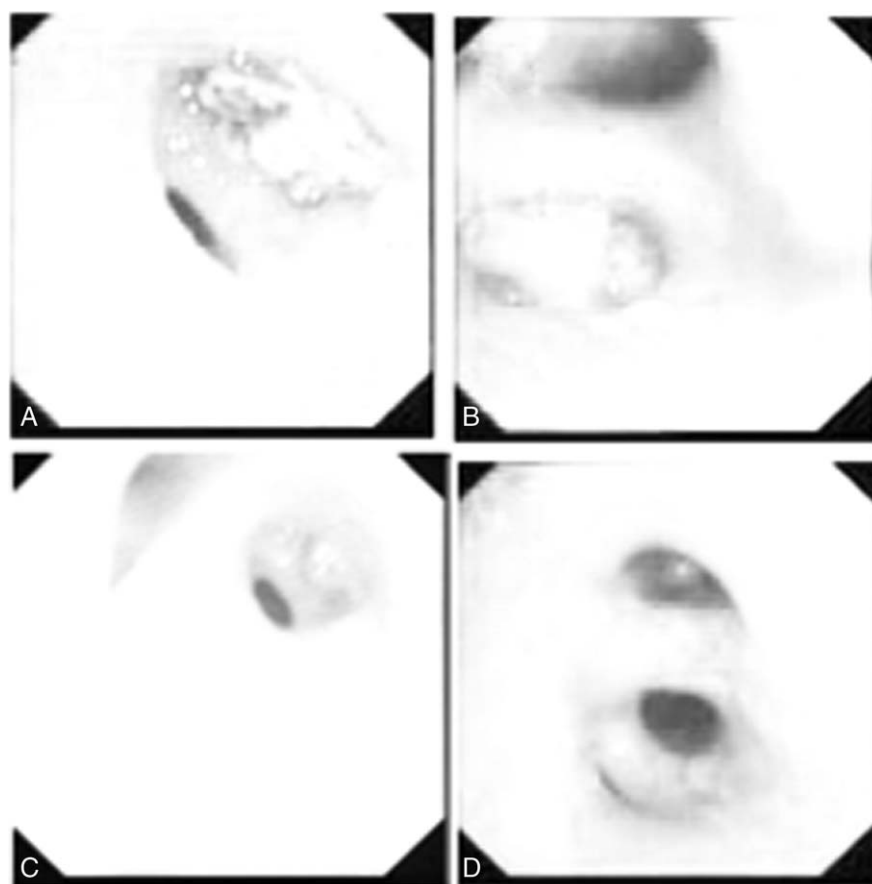


Figure 3. Images from repeat bronchoscopy. Bronchoscope entered the left primary bronchus, revealing a lot of necrotic tissues and purulent discharge adhering to the ostium of left upper (A) and lower lobe bronchus (B) as well as right lobe bronchus. There are still a few residual foreign bodies in the left upper segmental bronchi (C, after bronchoscopic treatment) and the left lower lobe basal segment is restored to normal after foreign body was clamped out (D, after bronchoscopic treatment).

nodules, the largest of which was 15 mm in diameter on the left lower lobe. In addition, stenosis of the left lobar bronchus was seen (Fig. 1).

Bronchoscopy performed after admission showed several solid lesions covered with grey granulation tissues in the left primary bronchus as well as in the right upper and lower lobe bronchus, accompanied with peripheral mucosal congestion and edema (Fig. 2). The Bronchoscope could not enter the left lower bronchus due to stenosis. Bronchoscopic biopsy revealed chronic mucosal inflammation. Scrubbing slides were negative for acid-fast bacilli.

A neglected history of Chinese medicine kept-in-mouth while sleeping since the last 10 years in this patient provided clues for a final diagnosis. The patient used *Coptis chinensis*, a Chinese herbal medicine with an extraordinarily bitter taste, to alleviate discomfort of parageusia. The bronchoscope entered the left lower bronchus on the second session. A lot of necrotic tissues and purulent secretions adhering to the ostium of left lobe bronchus as well as right lobe bronchus were seen. A scrap of hard material was clamped during biopsy, which was confirmed to be a foreign body eventually (Fig. 3). Subsequently, bronchoscopy clamped out the foreign bodies from each segmental bronchus piece by piece except left upper segmental bronchi. Bilateral tracheobronchial foreign bodies caused by recurrent inhalation of *Coptis chinensis* is the final diagnosis (Fig. 4).



Figure 4. Slices of *Coptis chinensis*.

2.3. Follow-up

After almost all of the aspirated *Coptis chinensis* were successfully removed and intravenous antibiotics administered, the patient's symptom improved. However, she still had some productive cough during subsequent follow-ups. Follow-up chest CT revealed severe bronchial dilatation in left lower lobe 10 years after bronchial foreign body was removed (Figs. 1C, D).

3. Discussion

This report describes a rare case of aspirated Chinese medicine that went undetected for 10 long years. *Coptis chinensis*, an extremely bitter Chinese herbal medicine used as an antipyretic and antibacterial agent since ancient time, serves as a source for isoquinoline alkaloids berberine, palmatine, and coptisine among others. *Coptis chinensis* is also frequently used as an anti-anxiety drug by traditional Chinese physicians, which may be the reason for this patient to present with such a long history of its oral consumption. It has never been seen as an aspirated foreign body in the trachea before. Nevertheless, this commonly used Chinese herbal medicine precipitated a "bitter lung" in this case.

Due to a depressed cough reflex during sleep, the patient did not report choking or wheezing. A negligence of patient history and absence of typical symptom both resulted in the bronchial foreign body remaining occult for many years. The phenomenon is not uncommon and the longest reported duration of aspirated foreign body is 40 years.^[3] In adults, a probable reason for lack of acute symptoms may be the larger caliber of airways, resulting in most foreign bodies lodging and obstructing more distal airways.^[10]

Although most aspirated foreign bodies can easily be confirmed by bronchoscopy and biopsy,^[3] the initial biopsy did not find satisfying evidences in this case. Although not confirmed, it is postulated that *Coptis chinensis* initiates formation of granulation tissue and fibrosis. Bronchial stenosis may occur as a late complication, and biopsies obtained a following aspiration show inflammatory regions.^[11] Thus, repeated bronchoscopy examination and biopsy plays an important role in assessing any evolving airway obstruction due to edema, secretions, and stenosis.^[12]

Most patients recover completely after the successful removal of foreign objects by bronchoscopy.^[13,14] This patient still had cough and sputum after almost all of the aspirated *Coptis chinensis* was successfully extracted possibly, due to the irreversible damage by such long-term stay of *Coptis chinensis* and residual fragments in distal airways that could not be extracted.

This "bitter lung" case clearly demonstrates the diagnostic utility of a high index of suspicion, a precise medical history, radiographic features, or chronic symptoms not consistent with the disease process to be useful in successfully diagnosing bronchial foreign bodies.

References

- [1] Baharloo F, Veyckemans F, Francis C, et al. Tracheobronchial foreign bodies: presentation and management in children and adults. *Chest* 1999;115:1357–62.
- [2] Weissberg D, Schwartz I. Foreign bodies in the tracheobronchial tree. *Chest* 1987;91:730–3.
- [3] Limper AH, Prakash UB. Tracheobronchial foreign bodies in adults. *Ann Intern Med* 1990;112:604–9.
- [4] Rafanan AL, Mehta AC. Adult airway foreign body removal. What's new? *Clin Chest Med* 2001;22:319–30.
- [5] Yilmaz A, Akkaya E, Damadoglu E, et al. Occult bronchial foreign body aspiration in adults: analysis of four cases. *Respirology* 2004;9:561–3.
- [6] Hussain A. Neglected foreign body in the right bronchial tree. *Int Surg* 1976;61:366–7.
- [7] Abrol BM, Chattopadhyay AK. Forgotten bronchial foreign body. *J Indian Med Assoc* 1973;61:224.
- [8] Franquet T, Gimenez A, Roson N, et al. Aspiration diseases: findings, pitfalls, and differential diagnosis. *Radiographics* 2000;20:673–85.
- [9] Chen CH, Lai CL, Tsai TT, et al. Foreign body aspiration into the lower airway in Chinese adults. *Chest* 1997;112:129–33.
- [10] Mu L, He P, Sun D. Inhalation of foreign bodies in Chinese children: a review of 400 cases. *Laryngoscope* 1991;101:657–60.
- [11] Lee P, Culver DA, Farver C, et al. Syndrome of iron pill aspiration. *Chest* 2002;121:1355–7.
- [12] Kinsey CM, Folch E, Majid A, et al. Evaluation and management of pill aspiration: case discussion and review of the literature. *Chest* 2013;143:1791–5.
- [13] Dong YC, Zhou GW, Bai C, et al. Removal of tracheobronchial foreign bodies in adults using a flexible bronchoscope: experience with 200 cases in China. *Intern Med* 2012;51:2515–9.
- [14] Mehta A, Gupta A, Ks A, et al. Endobronchial foreign body (FB): a rare cause of empyema. *J Clin Diagn Res* 2015;9:OJ02–3.