Regional dietary characteristics and bronchial foreign body: a repeated misdiagnosis caused by a red pepper

Yutian Lai*, Jian Huang*, Xudong Zhou*, Heng Du, Guowei Che

Department of Thoracic Surgery, West China Hospital of Sichuan University, Chengdu 610041, China

*These authors contributed equally to this work.

Correspondence to: Guowei Che, MD. Department of Thoracic Surgery, West China Hospital of Sichuan University, No.37 Guoxue Street, Chengdu 610041, China. Email: guowei_che@yahoo.com.

Abstract: Bronchial foreign body is a common health problem worldwide, types of bronchial foreign bodies are variegated, depending on patient age and cultural background including religious beliefs as well as alimentary habits. However, misdiagnoses caused by regional dietary correlation factors were rarely concerned. In this case, a 52-year-old woman with aggravated cough and hemosputum took thoracic CT scan twice and flexible fiberoptic bronchoscopy 5 times, which all revealed the chronic pulmonary inflammation. Furthermore, the biopsies showed bronchial granulation nodule formation. With the highly suspicion of tumor, lung lobe resection was conducted. However, from the resected specimen, we belatedly found a red pepper inserted in the bronchus, without tumor cell in postoperative pathological analysis. We reviewed the case, analyzed the potential factors that may led to repeated misdiagnoses, and concluded that regional dietary characteristics and higher clinical suspicion should be seriously under consideration in the process of diagnosis.

Keywords: Repeated misdiagnosis; bronchial foreign body; regional dietary characteristics

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Case presentation

A 52-year-old woman presented to West China Hospital, Sichuan University, China, with a history of recurrent cough and hemosputum for more than 3 years, and aggravated in recent 2 months. Before admission, thoracic CT scan twice and flexible fiberoptic bronchoscopy 5 times all diagnosed as chronic pulmonary inflammation in lower lobe of right lung, besides, the biopsy twice also showed bronchial granulation nodule formation. For further treatments, with the suspicion of lung cancer, VATS resection of lower lobe of right lung was conducted. However, when we checked the resected specimen, a red pepper was belatedly found inserted in the basal segment bronchial. Tumor was excluded by postoperative pathological analysis. After 3 days' postoperative respiratory managements, she was discharged successfully.

Discussion

Generally, vegetative foreign bodies were the most common foreign body aspirated (84.7%) (1); and most of them can be primarily suspected by a definite history of aspiration, and further confirmed by chest X-ray, CT-scan or bronchoscopy (2). However, in some cases, especially to those with a denied history of aspiration, and no evidence of thoracic CT scan or fiberoptic bronchoscopy, the correct diagnosis is usually challenging (3). The suspected diagnoses are commonly as pulmonary infection, tuberculosis or tumors (4), while bronchial foreign body may be often ignored, which may seriously affect the optimal treatments.

Although aspiration of a foreign body into trachea and bronchus can occur in all age groups, infants and little children suffer most commonly. Most adult patients with a foreign body in the bronchial tree have an early history



Figure 1 The 1st time flexible fiberoptic bronchoscopy showing the area similar to blood clot in the basal segment bronchial, covered with exudation, adjacent tissue showing swelling and granulation, without bronchial obstruction.



Figure 2 Preoperative chest CT-scan showing texture of right lower lobe, confirming non-bronchial obstruction and nonradiopaque foreign body existed.

suggestive of aspiration. As such, occult foreign body aspiration in adults is rare. In our case, the patient couldn't recall any episode of choking and aspiration, which may partly led to difficulties of diagnosis. As bronchoscopy is the "golden standard" for the definitive diagnosis of an aspirated vegetable foreign body (2) and most aspirated foreign bodies can easily be confirmed by bronchoscopy and



Figure 3 The 5th time flexible fiberoptic bronchoscopy showing the condition of swelling and granulation was worsened than in previous bronchoscopy.

biopsy, during bronchoscopy, a foreign body can be directly visualized, or granulation tissue, endobronchial stenosis, or edema, all features of tissue reaction to an aspirated foreign body, may be present. However the initial biopsy did not find satisfying evidences in this case and aspiration of a foreign body was excluded by the bronchoscopy staff once and repeatedly, which finally led to the treatment of lung lobe resection. In Figure 1, the picture of the first time flexible fiberoptic bronchoscopy presented that the basal segment bronchial wall of right lower lobe was red, much similar to blood clot, without bronchial obstruction (as confirmed in Figure 2). Adjacent mucosal swelling and granulation nodule was observed in Figures 2,3 which provided a suspicion of tumors and finally led to a lung resection. But when we dissected the resected specimen, we realized that the bloody area was actually a tubular pepper adhering to the bronchial wall (Figure 4), and could be entirely removed. Postoperative speculation was considered that with the long-term stimulation continuously released from the pepper, adjacent mucosal swelling and granulation nodule were progressively formed and suspected as tumors (Figures 2,3).

Types of bronchial foreign bodies are variegated, depending on patient age and cultural background including religious beliefs as well as alimentary habits or regional dietary characteristics. Ali *et al.*, concluded that Fishermen are more prone to experience a livefish aspiration while substandard conditions may expose E182



Figure 4 Picture of the removed tubular pepper.

individuals to leech and roundworm infestations (5); Wang et al., reported a rare case of undetected Chinese medicine "coptis chinensis" aspiration for 10 long years, which is an extremely bitter Chinese herbal medicine used as an antipyretic and antibacterial agent since ancient time (6); in a study from Croatia, animal bone and cherry stone aspiration was common due to dietary habits (7). Correct visualization and precise instruments are essential to the success of bronchoscopy, and seasonal correlation factors (8) should also be under consideration. In this case, a well understanding of local diet characteristics should be highly noted that people from southwest china were famous for the dietary habit of spicy food, especially chafing dish, and a high degree of clinical suspicion that red pepper may be a bronchial foreign body though it's sometimes difficult to identify with blood clot and the tubular characteristic may have little affection on ventilation.

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Footnote

Conflicts of Interest: The authors have no conflicts of interest to declare.

Informed Consent: Written informed consent was obtained from the patient for publication of this manuscript and any accompanying images.

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