Int J Clin Exp Med 2016;9(1):355-358
www.ijcem.com /ISSN:1940-5901/IJCEM0011563

Case Report

Coexistence of tracheobronchial foreign body and lung adenocarcinoma: a case report in an adult

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Received June 17, 2015; Accepted September 17, 2015; Epub January 15, 2016; Published January 30, 2016

Abstract: The coexistence of tracheobronchial foreign body (TFB) aspiration with lung cancer is very rare in clinical conditions. However, TFB was often misdiagnosed as lung cancer. Here we reported a case of coexistence of TFB and lung adenocarcinoma. A 62-year-old Chinese man complained of cough for over one month. He had long-term history of chronic bronchitis and smoking. Chest CT showed an abnormal high-density shadow in the right middle bronchus of right lung. Fiber optic bronchoscopy revealed a bronchial stenosis by a coexistence of foreign body and local mucosa hyperemia. The foreign body was confirmed to be a chicken bone. Immunohistochemistry and mutation analysis confirmed the adenocarcinoma in the right lung. This is possibly the first reported case of a synchronous TFB and lung adenocarcinoma in Chinese adults. It is suggested that, in the management of TFB, a biopsy may be needed after the routine bronchoscopy examination in order to avoid the missed diagnosis of lung cancer.

Keywords: Tracheobronchial foreign body, lung adenocarcinoma, biopsy, bronchoscopy

Introduction

Tracheobronchial foreign body (TFB) aspiration is rare in adults [1] and may be misdiagnosed as lung cancer or chronic bronchitis [2, 3]. However, the coexistence of TFB along with lung cancer is much more uncommon. Here, we reported a case of coexistence of tracheobronchial foreign body with lung adenocarcinoma.

Case presentation

A 62-year-old Chinese male, suffering with chronic bronchitis and long-term smoking history, was admitted to our hospital because for coughing over one month. Chest CT showed an abnormal hyperdense object in middle section bronchus of right lung (**Figure 1**). Fiberoptic bronchoscopy revealed the foreign body and a stenosis in the middle section bronchus, together with hyperemia of the surrounding mucosa. Surrounding tissue was found edema and hyperplasia (**Figure 2**). We picked out the foreign body which was confirmed as a chicken bone. However, biopsy was not performed at that time because of heavy bleeding. After 4 days of anti-infection therapy, fiberoptic bronchoscopy was performed again (**Figure 3**) for biopsy and brush cytology. Histopathological analysis indicated a low differentiated carcinoma and brush cytology suggested tumor cells (**Figuire 4**). Further more, modified immunohistochemistry (IHC) [4] showed TTF-1$^+$ (**Figure 5A**), CK7$^+$ (**Figure 5B**), NapsinA$^+$ (**Figure 5C**), CK20$^-$ and Ki-67 (10%) staining. EGFR mutation detection (ARMS) showed an exon 21 L858R mutation and the PET/CT images showed an enlargement of right hilar and mediastinal lymph nodes. Skull MRI and bone scan revealed no abnormalities and the final diagnosis of this patient was adenocarcinoma of the right lung. About the foreign body in right middle section of bronchial lumen, the patien said that he had aspiration of a chicken bone 10 years ago and often suffered pulmonary infection for 10 years. The patient is under treatment now.

Discussion

TFB aspiration is mostly found in children less than 5 years old and occasionally in adults [1, 5, 6]. The properties of foreign body and the causes of airway obstruction may lead to diverse consequences. The small foreign body may just cause lung damage whereas a large foreign body may lead to suffocate [7, 8]. Organic (25.6%) and metallic (41%) foreign bodies are the first two commonest groups among

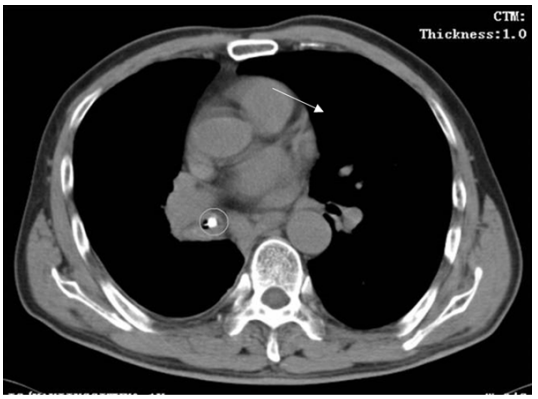

Figure 1. Chest CT showed an abnormal high-density shadow (white arrow) in right middle bronchus.

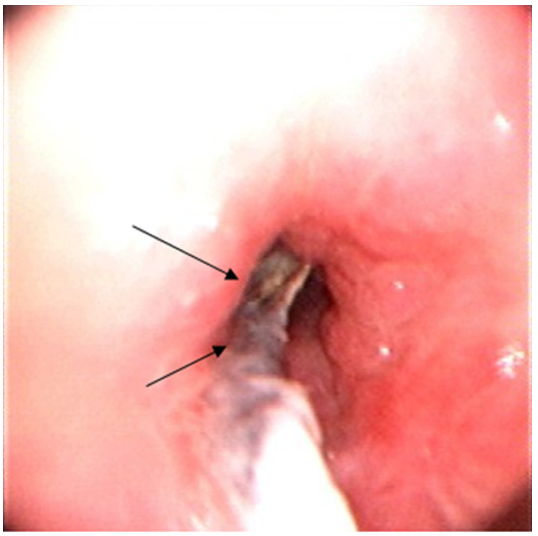

Figure 2. The fiber optic bronchoscopy showed foreign body and stenosis in middle section bronchus of right lung (black arrow), accompanied by hyperemia and edema of the mucosa.

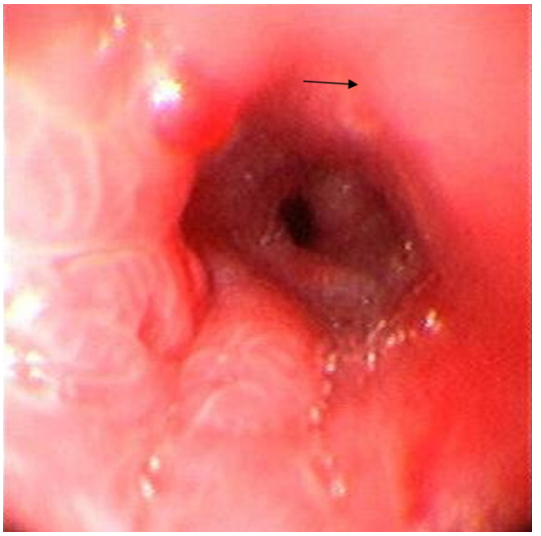

Figure 3. The fiber optic bronchoscopy showed granulation tissue hyperplasia (black arrow) in bronchus of right lung.

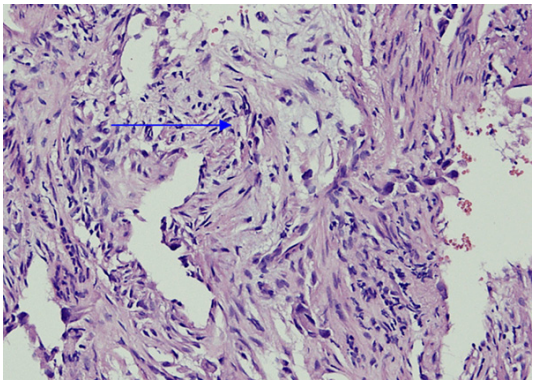

Figure 4. Biopsy for lower lobe of right lung showed moderately differentiated adenocarcinoma cells (blue arrow).

TFB adults [1], which cause mild stimulation to the tracheobronchial mucosa. Meanwhile, the lumen of airway is relatively larger in adults than children. Addation to the subcequent expansion of trachea and bronchus caused by the the foreign body [9], the clinical symptoms in TFB aspiration adults are unobvious, which leads to a chronic process and a delayed diagnosis. This is why the patient with chicken bone in his trachea showed only chronic bronchitis in more than 10 years before hospitalization.

Diagnosis of adult airway foreign body mainly depends on medical history. The patient could not remember foreign body aspiration until we picked up the foreign body and asked him in detail in this case. Due to lack of relative knowledge, he mistakenly thought the foreign body had been removed. Thereafter, this patient had pulmonary infection or bronchitis symptoms repeatedly. After using antibiotics in local health center, symptoms could be relieved and further inspection such as CT or fiberoptic bronchoscopy was not performed because of doctor's negligence.

After searching relative literatures, we found some case reports focusing on misdiagnosing of TFB. Commonly misdiagnosed diseases are presented as pneumonia, atelectasis, lung cancer etc [10-12]. There were lots of reports indicated that causal association existed between TFB aspiration and lung cancer [13-15]. From the view of monism, the chicken bone may be

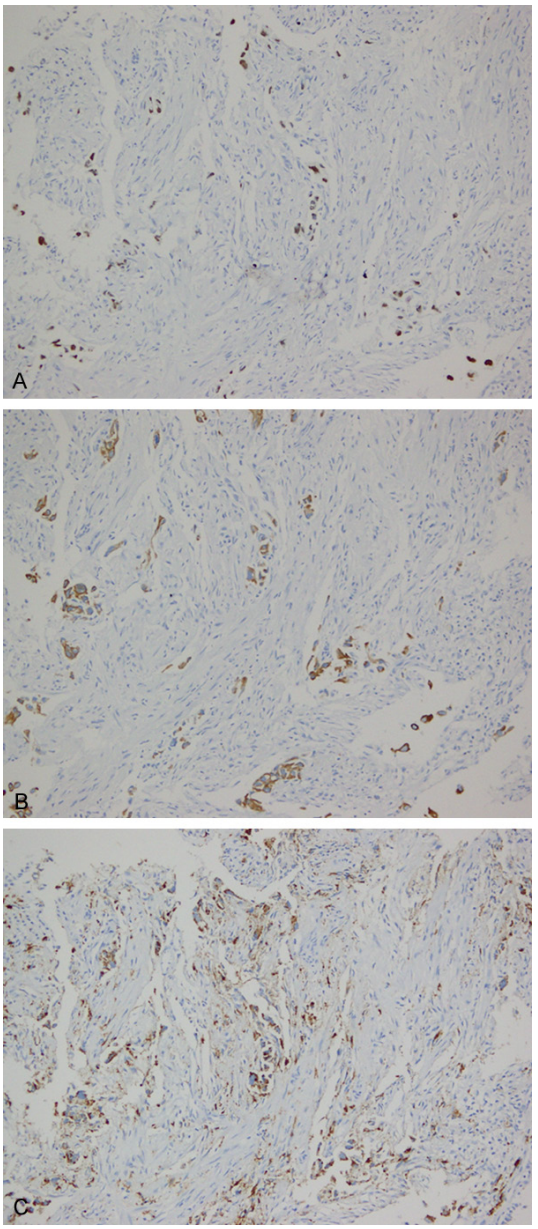

Figure 5. Immunohistochemistry staining for TTF-1$^+$ (A), CK7$^+$ (B), and NapsinA$^+$ (C) respectively.

the inducement to lung cancer because of long-term stimulating in this case. Of course, it is possible for two diseases occurring coincidentally in the same anatomical site. The molecular mechanisms of lung carcinogenesis needs further investigation and research.

Conclusions

The first case of an adult Chinese patient with coexistence of synchronous tracheobronchial foreign body and lung adenocarcinoma is reported in medical literature. Fiberoptic bronchoscope remains to be the most important way to diagnose and treat tracheobronchial foreign body. We suggest that the routine biopsy of tracheobronchial foreign body is absolutely necessary after fiberoptic bronchoscopy, especially for the patient with long term aspiration, which can effectively reduce the incidence of clinical misdiagnosis.

Disclosure of conflict of interest

None.

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