

Original Article

Bronchial lipoma: a case report and review of literature

Qing Yuan^{1*}, Changxing Shen^{1*}, Fei Yu², Guoliang Zhang¹, Xiaolian Song¹, Changhui Wang¹

¹Department of Respiratory Medicine, Shanghai Tenth People's Hospital, Tongji University, Shanghai 200072, China; ²Department of Nuclear Medicine, Shanghai Tenth People's Hospital, Tongji University, Shanghai 200072, China. *Equal contributors.

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Abstract: Background: Outline: Conclusions: Bronchial lipoma is a very rare kind of benign tumor, which is more common in the elderly or obese men. Because it tends to block the airway, and has no specific clinical manifestations, so it may be easily misdiagnosed as lung cancer, lung inflammation, bronchial asthma, bronchiectasis, and other chronic airway diseases. Chest thin-slice spiral computed tomography (CT) and CT value measuring of the mass are helpful to the diagnosis, the definite diagnosis needs tissue biopsy by high-frequency electric snare through bronchoscopy or lung lobectomy. The former general as the preferred solution, the latter has a larger surgical trauma. So when with recurrent obstructive pneumonia, severe bronchiectasis, extrabronchial growth, or because of technical reasons, bronchoscopy cannot be used, if we do this operation we should keep the normal lung tissue as much as possible. The (Argon plasma coagulation technique, APC) treating endobronchial lipoma through bronchoscope is reliable.

Keywords: Endobronchial lipoma, rigid bronchoscope, argon plasma coagulation technique

Introduction

Lipoma mainly occurs on shallow parts of the body, abdominal and retroperitoneal parts, where are contain rich adipose tissue, which originated in the bronchus is rare [1, 2]. Bronchial lipoma is a very rare benign tumor, with an incidence of only 0.1%-0.4% of all lung neoplasms [3, 4]. There are only 46 cases reported in China at present [5-11]. By the bronchoscope interventional surgery one case of bronchial lipoma was diagnosed in pathology in our hospital. This paper reports the patient's clinical data, combining with literature review and explores the clinical symptoms, diagnosis and treatment characteristics of bronchial lipoma.

Clinical presentation

The patient was a 54-year-old man, ex-smoker for 30 years (90 pack-years), with a history of high blood pressure. He had symptoms of long-standing productive cough, expectoration and intermittent fever for 3 months. His temperature is 38.9 degrees Celsius. His body mass index (BMI) is 35.2 kg/m². Physical examination of the chest revealed dullness on percussion and decreased respiratory sounds in the

left lung. Routine blood count, liver and kidney functions, electrolyte, serum tumor markers are not seen obvious abnormality. The total cholesterol is 6.0 mmol/L; low density lipoprotein is 4.3 mmol/L. Abdominal ultrasound showed fatty liver. Chest computed tomographic (CT) scan and 3D reconstruction of the trachea revealed a nodular lesion including a homogeneous fat density area, accompanied with obstructive change in the left upper lung field (**Figure 1A, 1B**). Soft tissue mass shadow can be seen in the trachea; The CT value of Mass is -100 Hu. Rigid bronchoscopy revealed it to be a well-circumscribed, rounded, yellowish, elastic soft tumor with smooth outlines that almost completely obstructed the entrance to the left upper lobe (**Figure 1C, 1D**), and biopsy was performed simultaneously. Bronchoscopic biopsy specimens showed fiber granulation and adipose tissue, with part of tumor surface coating bronchial epithelium and inflammatory cells. Pathological diagnosis was a lipoma of the left upper lobe bronchus consisting of mature adipose tissue (**Figure 1E**). The nodule is about 1.5 cm in diameter. Under general anesthesia residual tumor of left upper lobe was resected via rigid bronchoscopy frozen, high-frequency electric coagulation trap electric cut, argon plasma

Bronchial lipoma

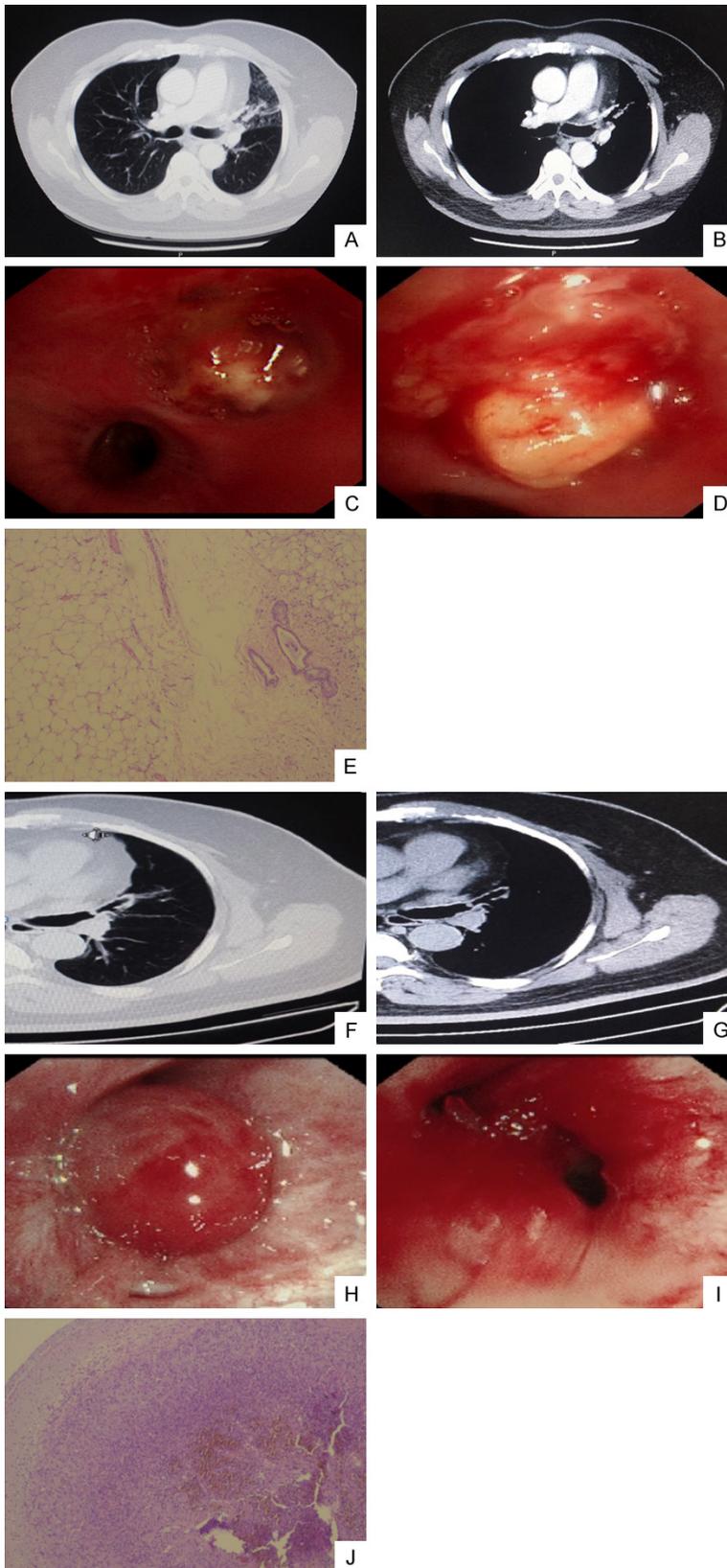


Figure 1. A. CT pulmonary window: as shown in the left upper lobe bronchial stenosis, distal obstructive atelectasis. B. CT mediastinum window: Fat density shadow is visible in the left upper lobe bronchus with CT value-100

Hu. C. The left upper lobe tumor is under the bronchoscope. D. Under the bronchoscope. E. Bronchial lipoma of light microscope. HE, 10 × 40. F. CT pulmonary window: new neoplasm in the left upper lobe. G. CT mediastinum window: The size is about 0.7 cm * 0.5 cm. H. New neoplasm in the left upper lobe bronchus. I. After trap and frozen treatment. J. Inflammatory granulation tissue. HE, 4 × 10.

coagulation (APC) intervention treatment; and surrounding mucosa was handled by congelation. After follow-up of 3 months, the chest CT's reexamine found new biological on the left lung lobe (**Figure 1F, 1G**). Under general anesthesia the polypoid lesion by was resected under rigid bronchoscope (**Figure 1H, 1I**). Pathological examination prompt inflammatory granulation tissue (**Figure 1J**). The patient is doing well with no evidence of recurrence 7 months after the operation.

Clinical characteristics of bronchial lipoma

The disease belongs to lung benign tumor, accounting for 0.1%-0.4% of all respiratory tract tumor [3, 4], the current number of domestic reports is about 46 cases which was diagnosed clearly by pathology checkout [5-11], and plus this case, it is a total of 47 cases, 36 cases of men and women in 11 cases, The incidence of men and women is 3.05:1. Onset age from 19 to 74 years old, the average age (57±12) years old. High rates of middle-aged men [12], some scholars think that obesity and smoking is the susceptible risk factors of the disease [2], the majority of patients combined hyperlipidemia and fatty liver. At present about

Bronchial lipoma

the pathogenesis of bronchial lipoma, remains unclear. Most scholars believe that the lung lipoma forms by normal exists in the bronchial submucosal cartilage board outside or subpleural adipose fat tissue cell hyperplasia, not metaplasia [13]. Microscopically tumor contain adipose tissue and fibrous tissue, mature fat cells, cytoplasm containing Sudan III staining positive lipid drops, angiomylipomas (liposarcoma) do not have this feature, it is only in the special staining showed positive.

Clinical manifestations of bronchial lipoma

Adipose tissue is relatively rich in bronchus, the left primary bronchus, the left lobe bronchus and segmental bronchus for comose, the right side of the bronchus is relatively rare, divided into the intracanalicular type and out-canalicular type. Otherwise the subpleural lipoma, moving from the edge of bronchioles growth, expanding into the surrounding lung tissue, close to the visceral pleura, usually asymptomatic. Lung lipoma grow slowly, long duration. Early clinical symptoms are not typical, can be characterized by mild cough, sputum, along with the tumors had increased gradually, the blocking bronchial lumen, leading to obstructive pneumonia, atelectasis, appear repeatedly lung infection, illness gradually aggravate, chronic inflammatory stimulation repeatedly make wall thickening, poor drainage of secretions. And then there will be a cough and expectoration is aggravating, chest tightness, shortness of breath, fever, difficulty breathing, such as performance, anti-infection therapy effect is poor. Tracheal bronchus lipoma blood supply is poorer, less hemoptysis symptom. The most common symptoms are cough, expectoration, hemoptysis, fever and breathing difficulties, despite the fact that 25% of cases may be asymptomatic [14]. Although bronchial lipoma is a rare cause of airway obstruction [15]. However, the lipoma which with pedicle locates in the larger tracheal bronchus, sometimes in body position changes can suddenly completely block the airway causing suffocation death.

Diagnosis of bronchial lipoma

The main diagnosis methods of bronchial lipoma had chest high-resolution CT and three-dimensional reconstruction of airway, bronchoscopy [16], and the high resolution CT can find the location and size of the early lesion in lungs, and can determine the nature of lump

primarily according to CT value surveyed, lung lipoma belongs to low density organization, the edges of tumors are smooth, uniform density. The CT value of adipose tissue is between -40 Hu-120 Hu, so measuring the mass CT value can identify with other benign lung tumors.

Airway image 3D reconstruction technology, not only can show small lipoma in the airway and the degree of luminal stenosis, and can accurately measure the long axis of the pipe wall which assaulted by the mass, and the technology is helpful for making further treatment plan [17]. Ordinary X-ray sternum cannot very well display tracheal endobronchial tumor, may only show the atelectasis, pneumonia and other indirect signs [16]. Bronchoscopy is one of the important measures to diagnose the disease. It can be accurately found the lesion site, size, shape, mobility and the relationship between lump and its surrounding tissue, look straight the degree of luminal stenosis, then through partial excision biopsy, bronchoalveolar lavage, needle aspiration, brush inspection technologies such as, accessing to pathologic specimens, and then clear lesion property by the above ways. But because the lesion originates from the submucosal tissue, tumors surface is coated with ciliated columnar or squamous epithelium, and the mobility of tumor is large, so positive rate of TBLB is low. You will see the lung lipoma with a typical fat appearance, spherical, pale yellow, smooth surface, or with a thin capsule or pedicle by the bronchoscope, tumors generally within 3 cm, partially or completely blocks lumen [18]. Mainly of identify with lung benign tumor, such as: lung medullary lipoma, inflammatory pseudotumor, pulmonary hamartoma, etc.

Treatment of bronchial lipoma

Although bronchial lipoma belongs to benign tumors, growth speed is slow, but once found shall be removed as soon as possible. To grow in tumors of the bronchial lumen (intracanalicular type), most of scholars both Chinese and abroad promote excision under general anesthesia via rigid bronchoscopy, the microscopic interventional treatment method can be chosen according to the situation of lipoma, such as argon, carbon dioxide laser frozen, high-frequency electric coagulation trap electric cut, and lumen local radiotherapy, etc. [19-21] try to avoid cutting the breast, bronchial dissection

Bronchial lipoma

or lobectomy. For growing around the bronchus tumors, or difficulty in endoscopic resection or long-term atelectasis, obstructive pneumonia has caused irreversible bronchus and lung tissue damage of distal tube type lipoma and diagnosis is not clear or may be combined with malignant tumor it is suggested to consider surgery, but in cutting the breast to ablate tumor and the damaged lung should keep normal lung tissue as much as possible.

The patients with left upper lobe bronchial airway obstruction, a serious shortage of lung ventilation, due to its larger extent, we removed lipoma through rigid bronchoscope, fiberoptic bronchoscopy may be due to less operation space against surgery end quickly, and also, rigid bronchoscope can be continuous ventilation in order to ensure enough time to operate. The doctor can use rigid bronchoscope feel tumor texture, also facilitate the bleeding and APC, freezing operate successfully, during the operation no serious adverse events happened. Clinical symptoms significantly relieve, prognosis is good, and there is no recurrence in the follow-up.

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Disclosure of conflict of interest

None.

Address correspondence to: Drs. Changhui Wang and Xiaolian Song, Department of Respiratory Medicine, Shanghai Tenth People's Hospital, Tongji University, 301 Yanchang Rd(M), Shanghai 200072, China. E-mail: wangch63@hotmail.com (CHW); 120021288@qq.com (XLS)

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Bronchial lipoma

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