Case Report

Primary pulmonary synovial sarcoma

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A 50-year-old male patient was admitted to Department of Respiratory Medicine of Qilu Hospital on September 8, 2006 for “cough and expectoration accompanied with pain in the left chest for over a month” with diagnosis of “pulmonary infection”. The patient was healthy in the past, with long history of smoking and drinking. On physical examination, the temperature was 37.0°C, the pulse was 75/min, the respirations were 20/min, the blood pressure was 120/70 mmHg. The chest was symmetrical, with similar left and right respiratory movements. The respiratory sound was clear in the right chest, and coarse in the left chest with audible but light wheezing and moist rales. Supravacicular lymph nodes on both sides were palpable. Chest CT revealed a space-occupying lesion on the inferior lobe of the left lung (Fig. 1). Electronic bronchoscopy revealed necrotic tissues filled bronchia on the base segment of inferior lobe of the left lung (Fig. 2). Pathologic biopsy revealed chronic inflammation of bronchial mucosa with fibrinoid necrosis in partial interstitial tissue. Routine blood test showed the amount of white blood cells (WBC) was 6.63 x 10^9/L. The result of tuberculin test (PPD test) was negative. No acid-fast bacillus was found by sputum floating method. This case was diagnosed as space-occupying lesion on the lungs; the possibility of lung cancer could not be excluded. After anti-bacterial and anti-inflammatory treatment for two weeks, contrast-enhanced CT re-examination of the chest showed no apparent change in the space-occupying lesion on the left lung as compared with that discovered by previous CT examination; the lesion was irregularly enhanced. After a consultation with the doctors of the Department of Thoracic Surgery, the diagnosis of lung cancer was considered, and the patient had operation indications. No abnormality was discovered in lung functions, blood gases and coagulation functions. The patient had no absolute operation contradiction. Then, excision of the inferior lobe of the left lung and thorough excision of lymph nodes in the lung hilum and mediastinum had been performed on the patient under systemic anesthesia on September 25, 2006. The tumor was 6.5 cm x 4 cm x 3 cm in size, close to the lung hilum, with a hard texture and non-intact envelope. Postoperative pathologic examination confirmed synovial sarcoma on the inferior lobe of the left lung (Fig. 3); no cancer cells had been found in the bronchial section and six lymph nodes which had been sent for examination. Immunohistochemical examination showed CD99(+), Vim(+), syn(-), EMA(+), TTF-1(-), S100(-), MelanA(-), Desmin(-), CK5/6(-), CD34(-), CGA(-), SMA(-) and HMB45(-). The final diagnosis was primary pulmonary synovial sarcoma. The patient recovered well after operation, and was discharged on October 5, 2006. He was re-examined three weeks later; his general condition was good. No abnormality other than the changes due to excision of the inferior lobe of the left lung was revealed by chest CT examination. No further treatment was given to him. This patient is still under follow-up.

Discussion

The clinical symptoms of primary pulmonary synovial sarcoma are unspecific and related with tumor position, size and metastasis. The major clinical manifestations include cough, expectoration and chest pain. Chest CT image of pulmonary synovial sarcoma shows the following characteristics:1 (1) the lung tumor is large with a diameter of over 5 cm in general, and distinct margin, apparent enhancement, unapparent lobulation with notched or cast changes; (2) calcification is commonly detected in sarcoma; and (3) the tumor migrates mostly via local invasion and blood vessel metastasis, but seldom via lymph node metastasis. Pulmonary synovial sarcoma usually invades the pleura to cause pleural effusion, but no lymph node metastasis occurs in the lung hilum and mediastinum. As pulmonary synovial sarcoma might be caused by the metastatic sarcoma outside the lungs, primary synovial sarcoma foci outside the lungs should be ruled out.

It is very difficult to diagnose pulmonary synovial sarcoma according to clinical symptoms and imaging manifestations. The final diagnosis depends on the findings of pathologic and immunohistochemical examinations. According to the composition of epithelial cells and spindle cells in tumor tissue, synovial sarcoma is divided into the following four histological types: biphasic differentiated fibrous type, monophasic differentiated fibrous type, monophasic differentiated epithelial type, and poorly differentiated type. Immunohistochemically, almost all synovial sarcomas express cytokeratin, EMA, bcl-2 and vimentin, but do not express S2100, desmin, smooth muscle actin and vascular tumor markers.2 In this case report, the patient expressed CD99, Vim and EMA.
Okamoto S et al.\(^3\) reported a five year survival rate of 50% in patients with pulmonary synovial sarcoma. At present, no standard treatment for pulmonary synovial sarcoma is available. According to literature review, total tumor resection plus adjuvant treatments, such as chemotherapy and radiotherapy, could prolong the survival of pulmonary synovial sarcoma patients.\(^3\)

**References**


Figure 1. Chest CT shows a space-occupying lesion on the inferior lobe of the left lung. The lobulation of the lung is unapparent; the intensity of the lesion is asymmetric; no intumescent lymph node is noted in the lung hilum and mediastinum.

Figure 2. Electronic bronchoscopy shows necrotic tissues filled bronchia on the base segment of inferior lobe of the left lung.

Figure 3. Morphology of synovial sarcoma on the inferior lobe of the left lung (HE x200). Both epithelial cells and spindle cells exist in the lesion.