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Case Report

Pulmonary oncocytoma: a case report

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Abstract: A 70-year-old man complained of no discomfort was admitted to our hospital because of a nodules was found in his lung. Chest computer tomography showed a nodules arising from the upper lobe of the left lung, and the lesion became larger in 2 years follow-up period. The patient underwent video-assisted thoracoscopic surgery of lobectomy to remove the nodules. Histologically, the tumor specimen contained multiple glandular structures with oncocytic cells lining. Immunohistochemical staining showed the tissue did not include some neuroendocrine granules. Finally, He was diagnosed as pulmonary oncocytoma. The patient discharged from our hospital after surgery and with no recurrence in 29 months period.

Keywords: Oncocytoma, surgery, immunohistochemical staining, eosinophilic

Introduction

Oncocytoma is an uncommon benign tumor which is characteristically composed of large eosinophilic cells with eosinophilic granular cytoplasm and vesicular nucleus. They mostly are found in the salivary glands, thyroid, and kidney [1-3], and involvement of the lung is very rare, which is seen in 2 cases report in recent two decades [4, 5]. Now, we present our encounter with one such case.

Case report

A 70-year-old man was admitted to our hospital due to lung nodules in November 19, 2012. The patient was revealed with left lung nodules by computer tomography (CT) in a routine examination 2 years ago (**Figure 1A**), with no cough, sputum, fever, chills, pain or tightness of chest, wheezing, weight loss or fatigue, night sweats and edema of lower extremities, and no further treatment was taken at that time. Thereafter patient regularly followed up in our hospital and complained of no discomfort. Patient was admitted to our hospital because of CT showed the left lung nodules became larger than before in November 17, 2012 (**Figure 1B**), which was considered with the possibility of lung cancer. He had history of pulmonary tuberculosis which had been cured for 50 years and hypertension for more than 10 years. Smoking history was 80 pack-years and did not quit. On physical examination, the patient was well built and nourished. He had no clubbing, icterus or generalized lymphadenopathy. Clinical examination of the respiratory, cardiovascular, gastrointestinal, and nervous systems was normal. His routine laboratory results including blood tumor markers were normal. Pulmonary function tests revealed a forced vital capacity (FVC) of 2.56 L (61.3% of predicted), a forced expiratory volume in one second ($FEV_{1.0}$) of 1.94 L (60.5% of predicted), a $FEV_{1.0}$ to FVC ratio of 75.8%, and a peak expiratory flow (PEF) of 6.10 L/s (74.7% of predicted). Flexible bronchoscopy examination was normal.

The patient underwent video-assisted thoracoscopic surgery (VATS) of left upper lobectomy and lymphadenectomy. The histopathology after surgery showed a sharply marginated nodule, 18 × 15 × 15 mm in size, was composed of multiple glandular structures with oncocytic cells lining (**Figure 2A** and **2B**). Some of the oncocytic cells were stratified or pseudostratified accompanied by trend of squamous metaplasia. There were a large number of plasma

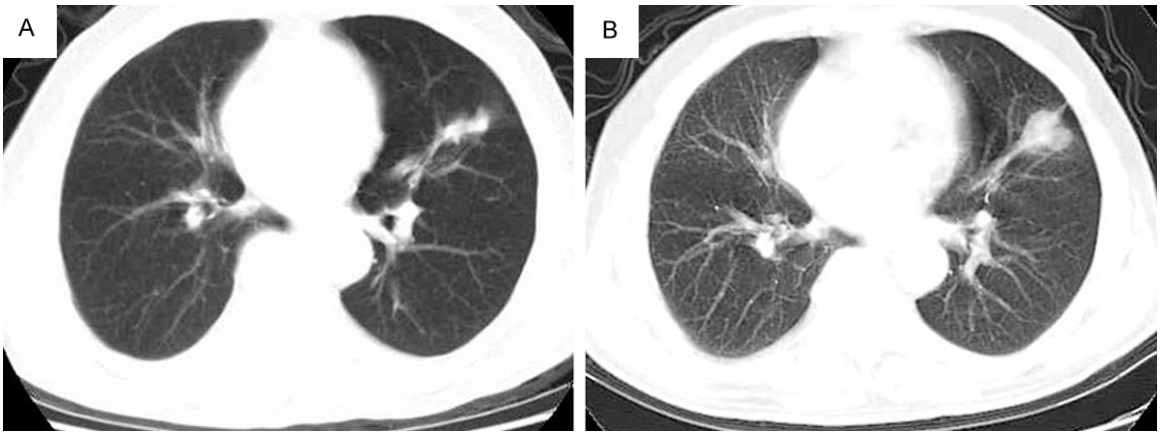

Figure 1. Computer tomography (CT) image of patient. A. CT scan revealing a nodules in the left upper lobe of the lung (November 2010). B. CT scan revealing nodules increased obviously (November 2012).

cells infiltrated between the gland and mass of inflammatory necrosis was found in the lumen of gland. Sclerosis and hyaline degeneration of small arteries were commonly seen in the lung tissue which related to the long term history of hypertension. Immunohistochemical staining showed that cytokeratin 5/6 (CK5/6), cytokeratin 7 (CK7) (**Figure 2C**), epidermal growth factor receptor (EGFR), P63 protein (P63) with positive expression, and negative expression were seen in thyroid transcription factor-1 (TTF-1), CD56 (**Figure 2D**), chromogranin A (CgA) (**Figure 2E**), synaptophysin (Syn) (**Figure 2F**). Thus, the diagnosis was pulmonary oncocytoma.

The patient had an uneventful recovery in the postoperative period and discharged from hospital at December 10, 2012. In the brief follow-up of 29 months, he was asymptomatic and further imaging of his chest did not show any recurrence.

Discussion

Oncocytoma is an uncommon benign tumor, multiple of which originate primarily in the salivary glands, thyroid, and kidney [1-3], and involvement of the lung is very rare. The clinical manifestations of oncocytoma have no specific and the diagnosis depends on pathological study. Burrah *et al* [4] reported a case of 16-year-old girl with a history of cough, expectoration, low grade fever, and occasional hemoptysis of 6 months duration. CT scan showed a mass lesion in the posterior segment of the left upper lobe. The girl underwent a thoracotomy and pulmonary oncocytoma was finally confirmed by pathological diagnosis [4]. Tashiro and coworkers showed another case of pulmonary oncocytoma who was a 51-year-old woman with no respiratory symptoms, but tumor was incidentally found in the peripheral portion of the right middle lobe of the lung when she consulted a physician for cardiac angina. The woman received surgical removal of the middle lobe and oncocytoma was confirmed by pathological study [5]. In our case, an elderly man with no respiratory symptoms was found a nodules in left upper lobe of the lung through CT and regular follow up showed the nodules became larger which did not exclude pulmonary malignant lesion. He was considered as lung cancer when admitted but pulmonary oncocytoma was confirmed by postoperative pathological examination.

Pulmonary oncocytoma is a rare benign tumor of lung and its pathological diagnosis usually requires a combination of immunohistochemistry to distinguish with other rare pulmonary eosinophilic granular cytoplasm differentiated tumors. Oncocytic carcinoma of the lung is also called malignant oncocytoma. Pathological observation revealed that the tumor showed invasive growth, no envelope, with regional lymph node metastasis, cell atypia, mitotic activity, pathological karyokinesis, abundant cytoplasm, containing a large number of eosinophilic granules, no neuroendocrine granules. However, the pulmonary oncocytoma usually had intact envelope, tumor cells were relatively uniform in size, less cell atypia, mitosis, with no local invasion and distant metastasis. The eosinophilic carcinoid is another rare malignant

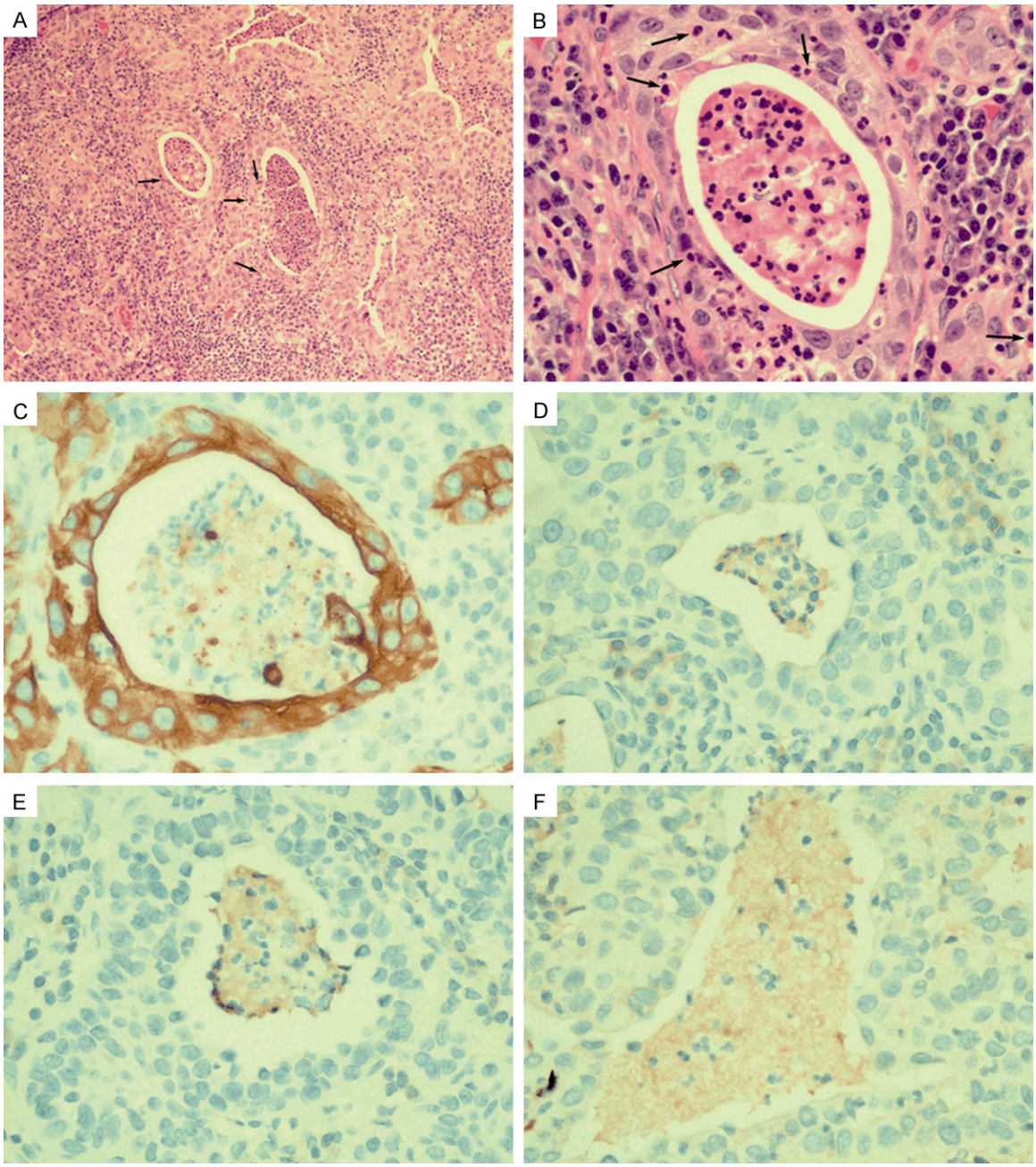

Figure 2. Histopathological and immunohistochemical image of patient. A. Histopathology shows multiple glandular structures with oncocytic cells lining, plasma cells infiltrate between the gland and mass of inflammatory necrosis is found in the lumen of gland (hematoxylin and eosin staining, magnification × 100). B. Higher magnification shows single glandular structure and oncocytic cells lining (hematoxylin and eosin staining, magnification × 400). C. Immunohistochemistry shows positive staining of CK7 in the tumor (diaminobenzidine staining, magnification × 400). D-F. Immunohistochemical staining of CD56, CgA, Syn are negative in the tumor (diaminobenzidine staining, magnification × 400).

tumor of the lung. The biggest difference between eosinophilic carcinoid and oncocytoma lies in the cytoplasm containing neuroendocrine granules. Immunohistochemistry indicated positive staining of CD56, CgA, Syn, NSE and other neuroendocrine antibodies and electron microscopy confirmed containing neuroendocrine granules in the tissue of eosinophilic carcinoid. The patient we reported with negative immunohistochemical staining of CD56,

CgA, Syn which could distinguish with eosinophilic carcinoid, while positive staining of CK7 indicated that the source of tumor was pulmonary epithelium. Pulmonary metastasis of renal oncocytic carcinoma and thyroid oncocytic carcinoma are easily confused with pulmonary oncocytoma. The former usually find with component of varying amounts of clear cell carcinoma in the tumor tissue and immunohistochemical staining of vimentin (Vim) is positive, the later often have thyroid papillary or follicular structures with calcific colloid in follicles and immunohistochemical staining for thyroglobulin is positive, both of which can be easily distinguished with pulmonary primary oncocytoma by combination of clinical history.

Surgical resection is the main way of the treatment for pulmonary oncocytoma. In our patient, we successfully removed the tumor using VATS of left upper lobectomy, patient was in good condition for the 29 months follow-up duration, but longer follow-up is necessary to confirm the absence of recurrence or malignant transformation.

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Disclosure of conflict of interest

None.

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References

[1] Zhou CX and Gao Y. Oncocytoma of the salivary glands: a clinicopathologic and immunohistochemical study. Oral Oncol 2009; 45: 232-238.

[2] Oueslati Z, Ben-Assouna H, Touati S, Gritli S, el-May A, Gamoudi A, Benna F and Ladgham A. [Thyroid oncocytomas]. Rev Laryngol Otol Rhinol (Bord) 2002; 123: 235-238.

[3] Dalli J and Camilleri-Brennan J. Synchronous colonic adenocarcinoma and renal oncocytoma: a case report and literature review. Scot Med J 2011; 56: 181.

[4] Burrah R, Kini U, Correa M and Srirangapatna S. Pulmonary Oncocytoma: A Rare Case. Asian Cardiovasc Thorac Ann 2006; 14: 113-114.

[5] Tashiro Y, Iwata Y, Nabae T and Manabe H. Pulmonary oncocytoma: report of a case in conjunction with an immunohistochemical and ultrastructural study. Pathol Int 1995; 45: 448-451.