



Thoracoscopic surgery for pulmonary oncocytoma, an uncommon neoplasm

B. Zhang MD, J. Jin MD,* Z. Ye MD,* and H. Zheng MD[†]*

ABSTRACT

Oncocytoma is an uncommon neoplasm with a characteristic histologic feature of abundant eosinophilic granular cytoplasm. It almost always occurs in kidney, thyroid, or salivary gland. Pulmonary oncocytoma is a rare pulmonary neoplasm, with fewer than 10 cases reported so far in the available English literature. We encountered one such case that was successfully managed by thoracoscopic lobectomy.

KEY WORDS

Pulmonary neoplasm, oncocytoma, thoracoscopic surgery

1. INTRODUCTION

Oncocytoma is an uncommon neoplasm of oncocytes (cells of epithelial origin), characterized by abundant eosinophilic granular cytoplasm¹. Hamper first coined the term “oncocytes” for large, highly eosinophilic granular cells associated with Hürthle cell tumours of the thyroid gland in 1950².

Oncocytomas are most commonly found in kidney, thyroid, and salivary gland³. Tumours arising in the lung are exceptionally rare, with fewer than 10 cases having been reported to date in the English literature. Here, we present the case of a male patient with a histologically proven pulmonary oncocytoma that was successfully managed by thoracoscopic lobectomy, and we review the literature about this rare clinical entity.

2. CASE REPORT

A 70-year-old male patient, with no chief complaint, was found to have a nodular lesion in the left upper lung on chest radiography (Figure 1) and was admitted to our hospital. The patient was known to have had hypertension for the preceding 10 years, and he was receiving regular treatment with sustained-release

felodipine (5-mg tablets) and sustained-release metoprolol tartrate (47.5-mg tablets). The patient had also had type 2 diabetes mellitus for 2 years, for which he was not receiving any medication. He had had pulmonary tuberculosis 50 years earlier, but was not receiving any regular medication.

Findings of the physical examination were unremarkable: pulse 80 bpm, blood pressure 140/88 mmHg, and respiratory rate 19/min. Blood test results were unremarkable, and a screening test for tuberculosis was negative. Contrast-enhanced computed tomography imaging of the chest showed

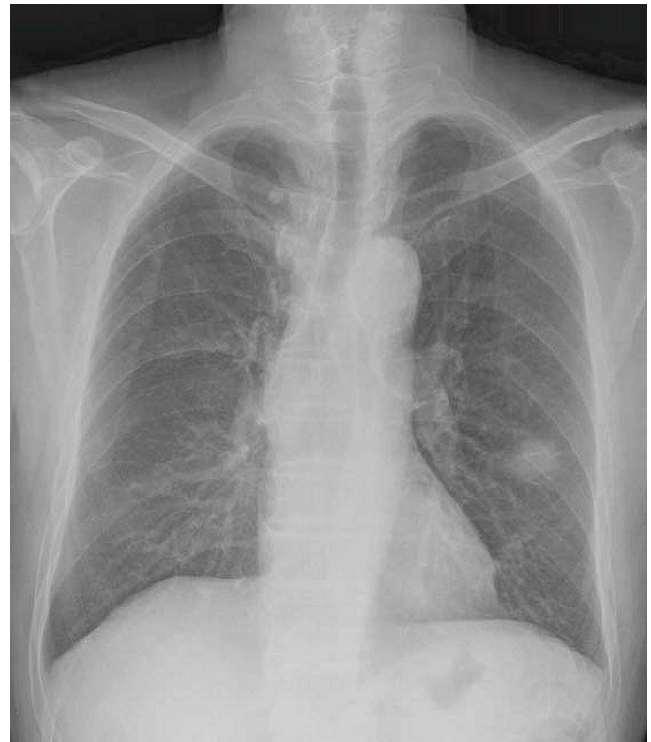


FIGURE 1 Chest radiograph showing a nodular lesion in the left upper lung.

an enhanced mass, approximately 2.5×2.2 cm, with a value of approximately 56 HU. The nodular lesion was irregular, with visible leaf-like short spikes, located in the posterior segment of the left upper lobe (Figure 2). Ongoing antimicrobial treatment did not seem to have an effect.

Thoracoscopic lobectomy was successfully performed after an assessment of the patient's respiratory, cardiovascular, and gastrointestinal systems. The mass was completely resected. Histopathology showed a nodule with a clear boundary consisting of oncocytic cells with abundant eosinophilic cytoplasm arranged in multiple glandular cavity-like structures (Figure 3). The mass was composed in part of stratified columnar epithelium (pseudostratified layer) with squamous metaplasia and bronchial columnar epithelial cell migration. Analysis of sections showed the presence extensive inflammatory necrosis within the gland lumen, with small pulmonary arteriosclerosis and hyaline degeneration. On immunohistochemistry, the tumour cells stained negative for thyroid transcription factor-1 but positive for cytokeratins 5/6 and 7, epidermal growth factor receptor, Ki-67 (10% positive), and p63.

3. DISCUSSION

Pulmonary oncocytoma is an exceptionally rare tumour, composed of oxyphilic cells with abundant mitochondria⁴. There is no consensus about the typical clinical manifestations and management of this tumour. Reported asymptomatic cases have been identified mostly by chest radiography. A diagnosis can be made by histologic examination of aspiration biopsy specimens from lung⁵ or of surgical specimens. The granular eosinophilic cytoplasm is the characteristic feature of an oncoocyte under electron microscopic examination, which may be essential to confirm the diagnosis of oncocytoma^{1,6}.

Oncocytomas are usually regarded as histologically benign lesions. To date, metastasis of pulmonary oncocytoma to other organs has not been described, and so adequate surgical excision is considered to be curative⁴. In our case, the lesion was confined to the left upper lobe, and complete excision was obtained through thoracoscopic wedge resection. Intraoperative quick-frozen-section analysis indicated a diagnosis of lung adenocarcinoma, and left upper lobectomy and lymph node dissection were therefore

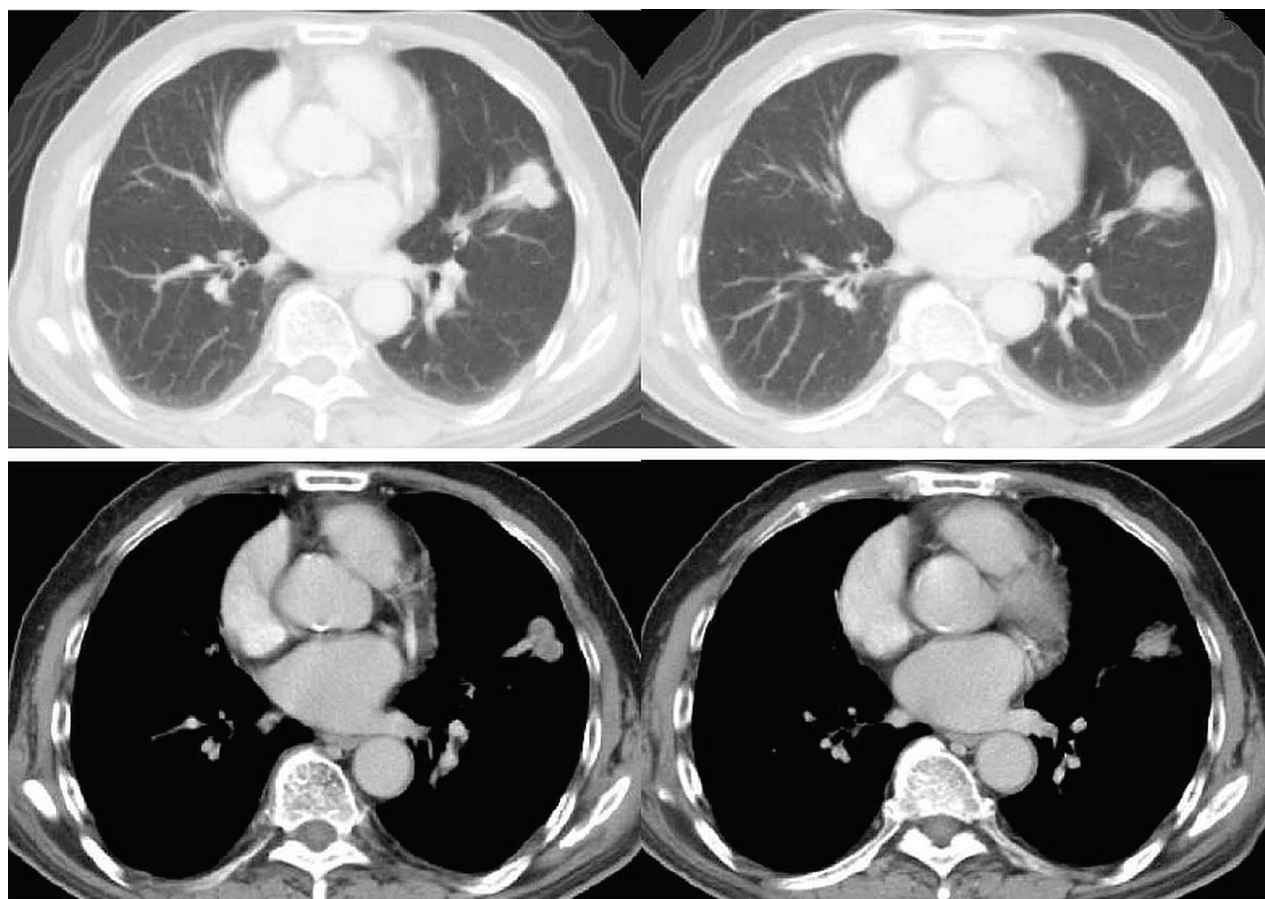


FIGURE 2 Computed tomography image showing an irregular nodular lesion with visible leaf-like and short spikes in the posterior segment of the left upper lobe.

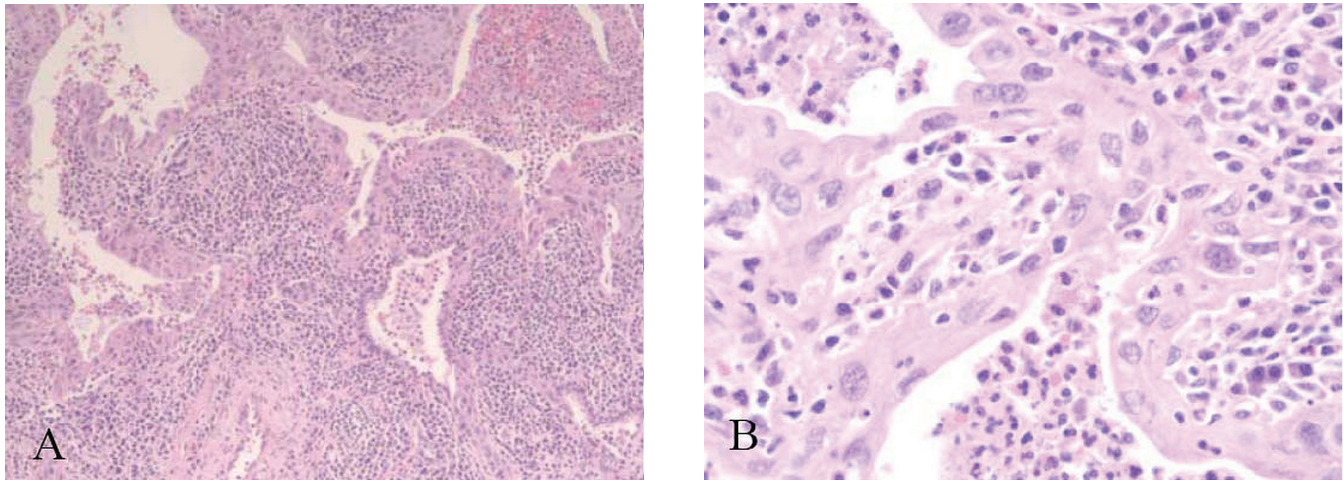


FIGURE 3 Histopathology shows the presence of a nodule with a clear boundary, consisting of oncocytic cells with abundant eosinophilic cytoplasm arranged in multiple glandular cavity-like structures. Hematoxylin and eosin stain. (A) 100× original magnification. (B) 400× original magnification.

performed. However, the case was later conclusively diagnosed as pulmonary oncocytoma because the excised tumour demonstrated the cytologic and ultrastructural characteristics of an oncocytoma on conventional histopathology.

As of the last follow-up visit, no recurrence or metastasis had been noted.

4. SUMMARY

Pulmonary oncocytoma shares many imaging features with common mass lesions in the lung. This tumour could therefore easily be misdiagnosed or missed, given its extreme rarity and lack of typical clinical behavior. Accordingly, lung oncocytoma should be regarded as part of the differential diagnosis in an evaluation of lung neoplasms.

5. CONFLICT OF INTEREST DISCLOSURES

The authors have declared that no competing interests exist.

6. REFERENCES

1. Fernandez MA, Nyssen J. Oncocytoma of the lung. *Can J Surg* 1982;25:332–3.

2. Hamperl H. Oncocytes and the so-called Hürthle cell tumor. *Arch Pathol* 1950;49:563–70.
3. Roy AA, Jameson C, Christmas TJ, Aslam Sohaib S. Retroperitoneal oncocytoma: case report and review of the imaging features. *Br J Radiol* 2011;84:e161–3.
4. Burrah R, Kini U, Correa M, Srirangapatna S. Pulmonary oncocytoma: a rare case. *Asian Cardiovasc Thorac Ann* 2006;14:e113–14.
5. Laforga JB, Aranda FI. Multicentric oncocytoma of the lung diagnosed by fine-needle aspiration. *Diagn Cytopathol* 1999;21:51–4.
6. Tashiro Y, Iwata Y, Nabae T, Manabe H. Pulmonary oncocytoma: report of a case in conjunction with an immunohistochemical and ultrastructural study. *Pathol Int* 1995;45:448–51.

Correspondence to: Zhongrui Ye, Department of Thoracic Surgery, Taizhou Hospital, Wenzhou Medical College, 150 Ximen Road, Linhai, Zhejiang 317000 PR China.

E-mail: yezr666760@163.com, zhbo1112@gmail.com

* Department of Cardiothoracic Surgery, Taizhou Hospital, Linhai, Zhejiang, PR China.

† Department of Pathology, Taizhou Hospital, Linhai, Zhejiang, PR China.