Solitary fibrous tumour presenting as a pedunculated lung mass with associated lung atresia: report of a case

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ABSTRACT

This case report describes a solitary fibrous tumour presenting as a pedunculated mass arising from an almost completely atretic right middle lobe of lung. The intraoperative findings and pathologic diagnostic criteria used are described. To our knowledge, this is the first case report of a solitary fibrous tumour associated with partial lung atresia.

KEY WORDS

Lung, solitary fibrous tumour, case report

1. CASE DESCRIPTION

A 55-year-old Hispanic woman was referred to thoracic surgery for a pleural-based mass incidentally discovered on computed tomography (CT) imaging of the abdomen and pelvis. Upon further evaluation, the patient had no symptoms related to this finding. She denied fever, chills, cough, hemoptysis, weight loss, night sweats, or exposure to asbestos, silica, bird droppings, tuberculosis, or other known occupational and environmental hazards. She had a past medical history remarkable for depression, hypertension, and hyperlipidemia. Past surgical history included cholecystectomy and vaginal hysterectomy without oophorectomy. Family history was negative for malignancy, and the patient denied any history of tobacco or illicit drug use. Physical examination was unremarkable.

Initial imaging demonstrated a 9.4×5.6×12.3-cm pleural-based, homogeneous, mildly enhancing mass in the lateral aspect of the lower right hemithorax adjacent to the diaphragm, with associated mild mass effect on the adjacent right lower lobe, lateral aspect of the right hemidiaphragm, and adjacent liver parenchyma (Figure 1). Given concern for chest-wall involvement, a CT-guided core-needle biopsy of the mass was performed. Cytopathology was consistent with a spindle-cell neoplasm. Cells were noted to have minimal atypia; difficult-to-find mitoses; positivity for cluster of differentiation CD34+, Bcl-2, and CD99 (focally); and negativity for desmin and S-100. Findings were suggestive of a solitary fibrous tumour.

Preoperative pulmonary function tests revealed no evidence of airway obstruction, with normal lung volumes and normal maximum voluntary ventilation. The flow-volume loop suggested fixed airway obstruction.

Intraoperative flexible bronchoscopy revealed no endobronchial lesions and no other abnormalities. A muscle-sparing right posterolateral thoracotomy was performed, and a large, firm pedunculated mass arising from the right middle lobe was identified. There was no evidence of invasion into the chest wall or pleural involvement of the tumour.
wall or diaphragm, but the mass was associated with a severely atretic (almost absent) right middle lobe. No associated lung, pleural, or diaphragmatic lesions were identified. A wedge resection at the base of the pedicle was performed using two deployments of an Echelon thoracic stapler (Ethicon Endo-Surgery, Cincinnati, OH, U.S.A.).

Final surgical pathology demonstrated a firm, 12×9×4-cm tan-pink encapsulated mass, which, when sectioned, revealed a tan-white whorled multinodular structure (Figure 2). Sections of the mass revealed a proliferation of bland spindle cells arranged in a patternless fashion, with interweaving of collagen bundles and hyalinization. Numerous vessels and scattered mast cells were noted within the stroma. No areas of necrosis or degeneration were observed, and the mitotic index was less than 1 in 10 per high-power field. Immunoperoxidase stains revealed that the tumour cells were positive for CD34, Bcl-2, and CD99. Findings were consistent with a pathologic diagnosis of solitary fibrous tumour.

The patient’s postoperative course was unremarkable, and she was discharged on postoperative day 4.

2. DISCUSSION

Solitary fibrous tumours are rare, and usually benign, tumours derived from mesenchymal tissue. They commonly present as visceral pleural-based masses, but may arise from parietal pleura or be found in the mediastinum, lung parenchyma, or extrathoracic sites. There is no sex preponderance, and most cases are diagnosed later in life (60s).

Common presenting symptoms include cough, shortness of breath, and chest pain. Patients may also be asymptomatic. These tumours may present with hypertrophic pulmonary osteoarthropathy or with hypoglycemia secondary to ectopic production of insulin-like growth factor. Definitive treatment typically requires complete excision with negative margins. Postoperatively, long-term follow-up is mandatory; recurrences have been reported up to 20 years post resection.

The role of preoperative biopsy is controversial. In the correct clinical setting and with radiologic findings suggestive of resectability, biopsy is usually unnecessary. However, in our case, given an incidentally discovered mass with apparent invasion of the chest wall and diaphragm, preoperative biopsy assisted with operative planning for an anticipated wide local excision and possible chest wall and diaphragm resection and reconstruction. There is a theoretical risk (and an isolated case report) of tumour seeding along the biopsy tract. The use of a protective guide needle during image-guided biopsies (as was done in this patient) likely significantly lowers the risk of recurrent disease along the biopsy tract. However, it is prudent to postoperatively monitor patients for possible recurrences along the biopsy tract when they have undergone a preoperative biopsy.

Approximately 800 cases of solitary fibrous tumour have been reported in the medical literature. To our knowledge, this is the first case report of a solitary fibrous tumour associated with almost complete atresia of the right middle lobe of lung.
3. CONFLICT OF INTEREST DISCLOSURES

The authors have no financial conflicts of interest to declare.

4. REFERENCES


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