Case Report

Primary Pleural Schwannoma Mimicking a Pleural Neoplasm: A Case Report

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Abstract

Background: Primary pleural schwannoma is an uncommon peripheral nerve sheath tumour and may mimic a primary or metastatic pleural neoplasm on imaging. We report a 55-year-old woman with a four-year history of left-hand tingling followed by persistent dull aching left-sided chest pain, without respiratory or constitutional symptoms. Contrast-enhanced computed tomography demonstrated a well-defined pleural-based heterogeneous enhancing mass adjacent to the apicoposterior segment of the left upper lobe, with central necrosis and internal calcification, involvement of the extrapleural fat plane, but no rib erosion or extrathoracic extension. Magnetic resonance imaging showed a well-marginated lesion measuring approximately 3.8 × 5.3 × 4.0 cm. Core biopsy revealed a spindle-cell tumour without mitotic activity. Immunohistochemistry showed SOX10 positivity, diffuse strong S100 positivity and calretinin positivity, with negative CD34, CD56, desmin, ALK-1 and TTF-1; Ki-67 was <1%, supporting schwannoma. This case highlights the value of integrating imaging, histopathology and immunohistochemistry when evaluating an unusual pleural-based mass.

Keywords: Pleural schwannoma; peripheral nerve sheath tumour; pleural mass; SOX10; S100; chest pain.

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Introduction

Schwannomas are usually benign, slow-growing neoplasms arising from Schwann cells of peripheral nerve sheaths. Within the thorax they more commonly occur in the mediastinum; origin from the pleural surface is distinctly uncommon.[1-4] Because a pleural-based schwannoma can resemble a malignant pleural, pulmonary or chest-wall lesion, radiological appearances alone may not establish the diagnosis. Histopathology with an appropriate immunohistochemical panel is therefore central to diagnosis. We describe a symptomatic pleural schwannoma in a middle-aged woman in whom cross-sectional imaging raised concern for a pleural neoplasm and tissue evaluation established the diagnosis.

Case Report

A 55-year-old woman presented with left-sided chest pain of four years' duration. Her symptoms had initially begun as pain and tingling in the left hand and subsequently progressed to persistent, dull aching pain over the left chest. The pain was non-radiating and was not related to exertion, posture or diurnal variation. She denied dyspnoea, cough, fever, loss of weight, loss of appetite, paroxysmal nocturnal dyspnoea, orthopnoea or pedal oedema. She had a history of biomass-fuel exposure for approximately 35 years, discontinued three years earlier. Examination documented bilateral air entry and no major cardiorespiratory abnormality.

An outside contrast-enhanced MRI of the cervical spine demonstrated a moderate-to-large, oval, well-marginated soft-tissue lesion measuring approximately 3.8 × 5.3 × 4.0 cm, raising the possibility of a primary pleural schwannoma. Contrast-enhanced CT of the thorax and abdomen subsequently showed a well-defined pleural-based heterogeneous enhancing mass in the costal pleura adjacent to the apicoposterior segment of the left upper lobe. The lesion contained central necrosis and internal calcification and involved the extrapleural fat plane, but there was no rib erosion or extrathoracic extension. Mediastinal and bilateral hilar lymph nodes, including calcified nodes, were also present and were considered likely related to chronic granulomatous disease. The radiological differential remained a primary versus metastatic pleural neoplasm, and histopathological correlation was advised [Figure 1 and 2].

An initial ultrasound-guided fine-needle aspiration from the mass was non-diagnostic, showing blood and constituent leukocytes. Subsequently, ultrasound-guided core biopsy yielded a spindle-cell tumour with scattered inflammatory cells and no mitotic activity. The initial differential diagnosis included a neural tumour and inflammatory myofibroblastic tumour.

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Immunohistochemistry demonstrated positivity for SOX10, diffuse strong S100 and calretinin. The tumour cells were negative for CD34, CD56, desmin, ALK-1 and TTF-1, while the Ki-67 proliferative index was <1%. The combined morphology and immunophenotype favoured a low-grade neural tumour consistent with schwannoma [Figure 3]. The patient remained clinically stable and was discharged with the diagnosis of schwannoma. Definitive surgical resection and long-term follow-up were not documented in the available records.

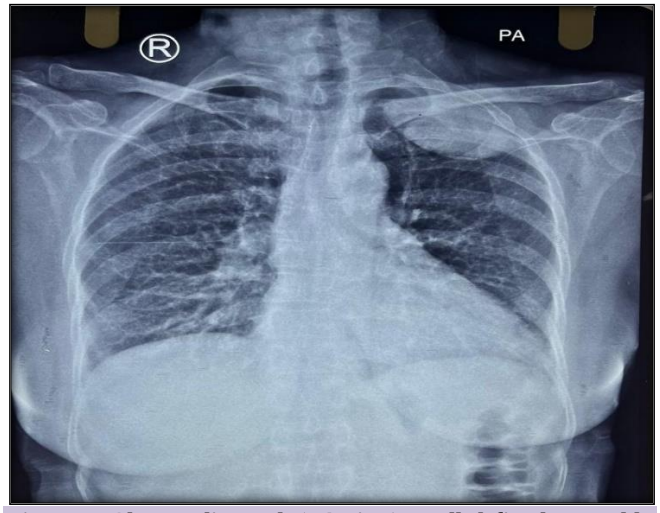

Figure 1: Chest radiograph (PA view): Well-defined, smoothly marginated, rounded-to-ovoid soft-tissue opacity in the left upper hemithorax/apical-parapical region, projected beneath the left clavicle and closely related to the superior lateral chest wall. The peripheral location and smooth contour suggest an extrapulmonary/pleural-based lesion. No obvious adjacent rib destruction is identified on the radiograph.

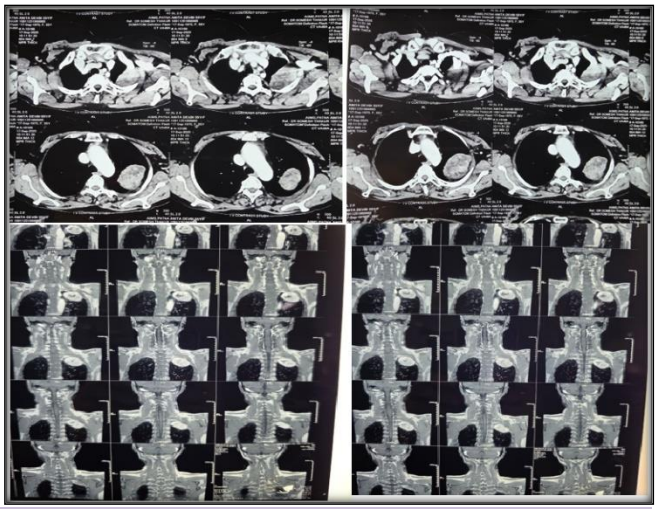

Figure 2: Cross-sectional imaging of the pleural mass. (A–B) Contrast-enhanced CT images showing a well-defined pleural-based heterogeneous enhancing mass along the left costal pleura adjacent to the apicoposterior segment of the left upper lobe, with central non-enhancing/necrotic areas and internal calcification; no rib erosion or extrathoracic extension is seen. (C–D) MRI images demonstrating the well-marginated pleural-based soft-tissue lesion, approximately 3.8 × 5.3 × 4.0 cm.

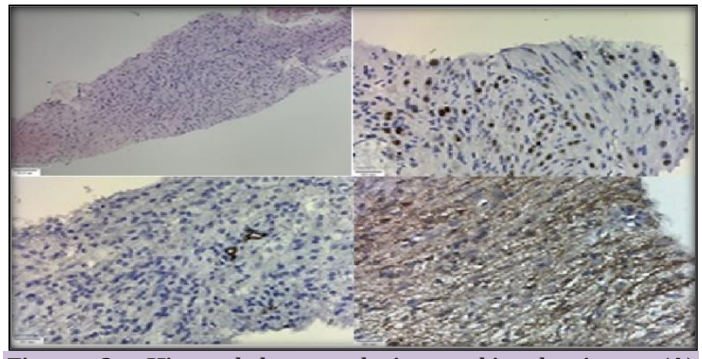

Figure 3: Histopathology and immunohistochemistry. (A) Hematoxylin and eosin section showing a spindle-cell tumour with scattered inflammatory cells and no evident mitotic activity. (B) S100 immunostain showing diffuse strong positivity. (C) SOX10 immunostain showing tumour-cell positivity. (D) Low Ki-67 proliferative index (<1%).

Discussion

Primary pleural schwannomas are rare benign peripheral nerve sheath tumours thought to arise from autonomic or intercostal nerve fibres associated with the pleura.[1-4] They are frequently discovered incidentally, although chest pain, dyspnoea, cough or neuropathic symptoms may occur because of local mass effect or nerve involvement.[2,3] The long history of left-hand tingling followed by chest pain in our patient is noteworthy and provides a clinical clue to the neural origin of the lesion.

On CT, schwannomas are generally well-circumscribed masses, but heterogeneous enhancement, cystic or degenerative change and calcification may occur, particularly in larger lesions.[2-5] These features are not specific, and a pleural-based lesion in an older adult appropriately raises consideration of primary pleural malignancy, metastatic disease and other soft-tissue tumours. In the present case, extrapleural fat-plane involvement and central necrosis increased the radiological concern for neoplasia, whereas absence of rib erosion or extrathoracic extension suggested a relatively indolent process.

Histology and immunohistochemistry were decisive. Schwannomas are composed of spindle cells and characteristically express S100 and SOX10, reflecting Schwann-cell differentiation.[1-4] The diffuse strong S100 and SOX10 positivity in this case, together with absence of mitotic activity and a Ki-67 index below 1%, strongly supported a benign neural tumour. Negative CD34, desmin, ALK-1 and TTF-1 helped exclude several important spindle-cell and thoracic mimics in the context of the biopsy. Recent pleural schwannoma reports similarly emphasize that radiological findings may be non-specific and that tissue diagnosis with neural markers is essential.[1-3]

Complete surgical excision is generally considered definitive management for symptomatic, enlarging or diagnostically uncertain localized schwannomas and also provides complete pathological assessment.[2,5] Because definitive resection and subsequent follow-up were not available in the records reviewed for this report, no postoperative outcome is inferred here.

The present case emphasizes that a pleural-based mass demonstrating heterogeneous enhancement, necrosis or calcification should not automatically be assumed to represent an

aggressive pleural malignancy. Schwannoma, although rare at this site, should remain within the differential diagnosis. Integration of radiological characteristics, histomorphology and appropriately selected immunohistochemical markers can establish the diagnosis even using a minimally invasive image-guided biopsy.

Conclusion

Pleural schwannoma should be considered in the differential diagnosis of a well-defined pleural-based mass, particularly when neuropathic symptoms accompany chest pain. Imaging helps define the site, extent and relationship to the chest wall, but definitive diagnosis may require core biopsy and immunohistochemistry. Strong S100 and SOX10 expression with low proliferative activity can provide a decisive diagnostic clue and prevent misclassification as a malignant pleural neoplasm.

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Nil.

Conflicts of interest

There are no conflicts of interest.

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