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Case report

Pleural Schwannoma: An Uncommon Cause of Intrathoracic Mass — A rare Case Report

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Abstract
A woman in her 40s was incidentally found to have a right-sided pleural-based mass on imaging. Further evaluation with contrast-enhanced computed tomography (CT) of the chest, followed by CT-guided percutaneous biopsy, was undertaken. Histopathological analysis confirmed the diagnosis of a schwannoma, a rare, slow-growing benign tumor arising from Schwann cells—the principal glial cells of the peripheral nervous system responsible for supporting nerve fibers. Primary pleural schwannomas are uncommon, accounting for approximately 1–2% of all thoracic tumors, and are thought to originate from the autonomic nerve sheath within the pleura. The patient was referred to thoracic surgery, where definitive surgical resection was recommended and is currently pending.
Keywords. Schwannoma, Pleural, Mass, Surgical Resection.

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Introduction

Pleural schwannomas represent one classification of peripheral nerve sheath tumors (PNSTs) arising from autonomic nerve fibers within the pleura. Intrathoracic PNSTs more commonly occur in the mediastinum, whereas pleural involvement is distinctly uncommon. (1) In one series of 75 intrathoracic PNSTs, only 21 were classified as benign pleuropulmonary tumors, of which 13 were schwannomas; the remainder included neurofibromas, perineuriomas, and ganglioneuromas. (2) Pleural schwannomas are typically solitary, slow-growing, and asymptomatic, and are most often detected incidentally on imaging performed for unrelated indications. Approximately 90% of schwannomas occur sporadically; however, they may also be associated with certain genetic syndromes, including neurofibromatosis type 2, schwannomatosis, and Carney complex (3). We report a case of a primary pleural schwannoma in a 49-year-old woman, incidentally identified on chest radiography and subsequently confirmed by histopathological examination. This case underscores the importance of including schwannoma in the differential diagnosis of pleural lesions.

Case report

A 49-year-old woman with no significant past medical history presented to her general practitioner (GP) with a 5-day history of dry cough, rhinorrhea, and generalized myalgia. She denied fever, sore throat, shortness of breath, or wheezing. There was no history of constitutional symptoms, including weight loss or night sweats. On presentation, the patient was hemodynamically stable. Her vital signs were within normal limits: temperature 36.8 °C, blood pressure 118/72 mmHg, heart rate 78 beats per minute, respiratory rate 16 breaths per minute, and oxygen saturation 98% on room air. Physical examination, including respiratory and cardiovascular assessment, was unremarkable. A chest radiograph was requested by her GP and demonstrated an oval-shaped, well-circumscribed, pleural-based peripheral opacity suggestive of an extrapulmonary lesion (Figure 1). She was a lifelong non-smoker and reported no history of occupational or environmental exposure to respiratory irritants. There was no personal or family history of malignancy.

The patient was managed conservatively with symptomatic treatment for a presumed upper respiratory tract infection and was referred to the pulmonary clinic for further evaluation of the incidental radiographic finding. She was reviewed in the pulmonary clinic one week later. At that time, her respiratory symptoms had completely resolved, and she remained asymptomatic with no new complaints.

For further characterization of the lesion, a contrast-enhanced computed tomography (CT) scan of the chest was performed. Imaging revealed a well-defined, semi-rounded pleural-based mass arising from the right lateral chest wall at the level of the third and fourth intercostal spaces. The lesion measured approximately 3.8 × 3.3 × 2.7 cm in three orthogonal planes (Figure 2). The patient subsequently underwent a CT-guided percutaneous biopsy of the lesion for further characterization. Histopathological examination confirmed the diagnosis of schwannoma. (Figure 3). Following confirmation of the diagnosis, the patient was referred to the thoracic surgery service for definitive surgical resection.

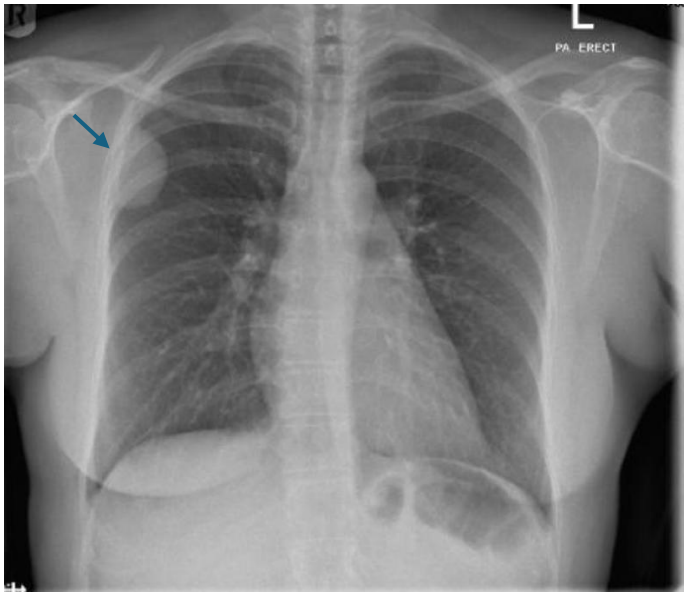

Figure 1: Chest x-ray showed an oval-shaped, well-circumscribed opacity in the upper right hemithorax. The mass abutted the chest wall and formed an obtuse angle, suggesting an extrapulmonary origin of the lesion. (Blue arrow)

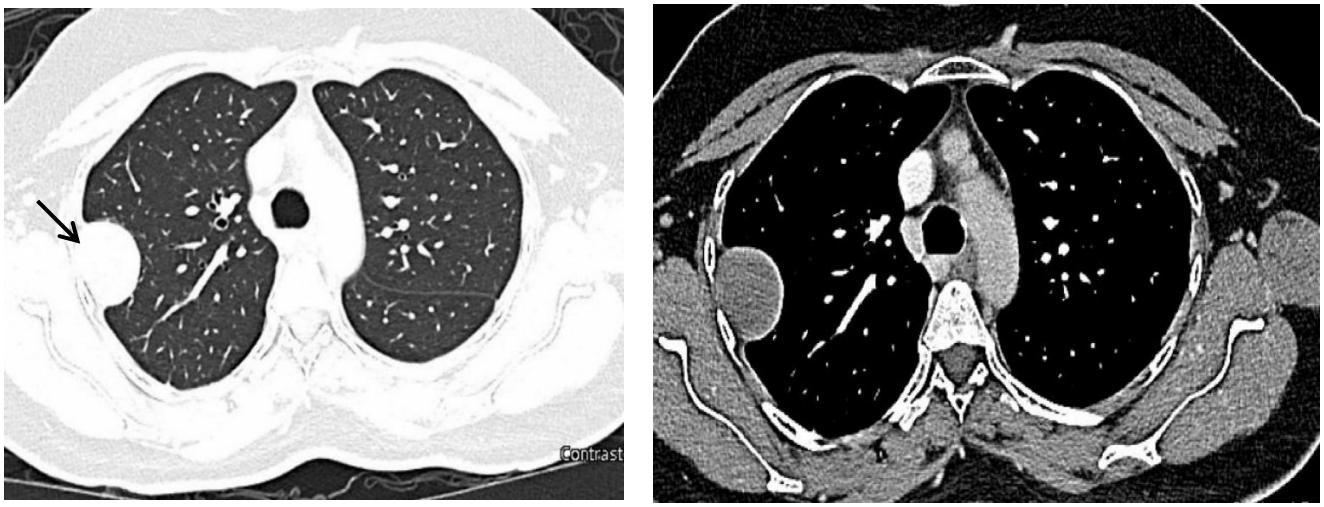

Figure 2. ***(A) Chest CT scan demonstrating a well-circumscribed, semi-rounded pleural-based mass arising from the right lateral chest wall, measuring approximately 3.8 × 3.3 × 2.7 cm in orthogonal dimensions (black arrow). (B) The lesion demonstrates low soft-tissue attenuation with peripheral enhancement along the medial aspect, likely representing adjacent pleural enhancement (green arrow).***

Discussion

Schwannomas, also known as neurilemmomas, are benign, slow-growing peripheral nerve sheath tumors arising from Schwann cells that surround peripheral nerves. They most commonly occur in the head and neck region and along the flexor surfaces of the extremities. Less commonly, they present as deep-seated lesions within the mediastinum or retroperitoneum (4). The majority of schwannomas are benign, and malignant transformation is exceedingly rare (5). They occur more frequently in males, with a reported mean age at diagnosis of approximately 45 years and an average tumor diameter of about 4.4 cm (6). Most pleural schwannomas are asymptomatic and are often discovered incidentally during imaging performed for unrelated reasons. In rare cases, patients may present with symptoms depending on the affected nerve and the degree of compression of adjacent structures, such as chest pain, obstructive pneumonia, or hemorrhagic pleural effusion (1,7).

Plain radiographs are not specific; however, pleural schwannomas typically appear as solitary pleural lesions. The differential diagnosis for solitary pleural masses includes lipomas, liposarcomas, hemangiomas, elastofibromas, solitary fibrous tumors, mesotheliomas, single metastatic lesions, and other neurogenic tumors (8). Computed tomography (CT) of the chest aids in detecting schwannomas but is not diagnostic due to relatively nonspecific findings. These tumors typically appear as solid, solitary, well-circumscribed masses, with a Hounsfield unit (HU) density on CT of approximately 35 ± 16.9 (9). Magnetic resonance

imaging (MRI) usually shows isointense signals on T1-weighted images and hyperintense signals on T2-weighted images, although cystic lesions may demonstrate low signal intensity (4).

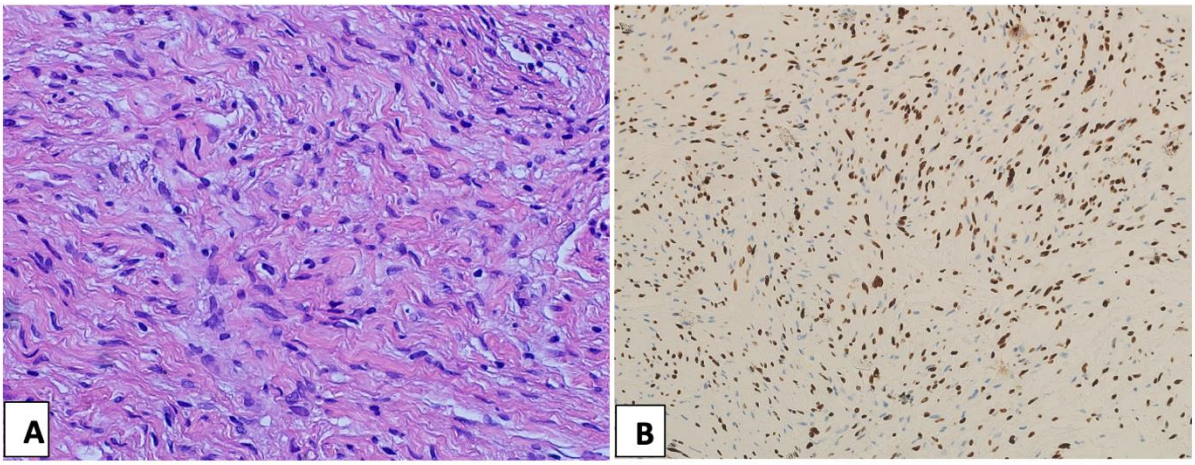

Figure 3: (A) Sections show cores of a benign neural lesion, comprising bland spindle cells with wavy nuclei. Intervening thin-walled vessels are noted. No prominent mitotic activity, overt atypia, necrosis or malignancy is seen. (B) Immunohistochemical staining for SOX10 shows diffuse nuclear positivity in the lesional spindle cells, supporting neural differentiation.

Despite advances in imaging modalities, the diagnosis of pleural schwannoma remains challenging. A definitive diagnosis can only be established through histopathological examination. Macroscopically, schwannomas may be well-marginated, spherical, lobulated, or dumbbell-shaped. Microscopically, schwannomas are classified based on cellular organization into Antoni A (highly cellular areas) and Antoni B (loosely arranged myxoid areas) (10). Immunohistochemical techniques assist in diagnosis. In our examination, histopathological assessment of the biopsies revealed positive staining for S100 and SOX10, which are recognized as markers with high sensitivity and specificity for schwannomas (11). The preferred treatment for pleural schwannoma is complete surgical excision. In selected cases where the tumor is located near critical neurovascular structures, stereotactic radiosurgery may be considered as an alternative therapeutic option (12).

The prognosis is generally excellent, and recurrence following complete resection is uncommon. Pleural schwannoma remains an extremely rare entity, and reporting such cases contributes valuable information to the medical literature. Awareness of this tumor is important when considering the differential diagnosis of intrathoracic masses (8).

Conclusion

Pleural schwannoma is a rare intrathoracic tumor that should be considered in the differential diagnosis of solitary pleural masses. Imaging may suggest the diagnosis; however, definitive confirmation requires histopathological examination. Surgical resection remains the treatment of choice, with an excellent prognosis and low risk of recurrence. Reporting such cases contributes valuable knowledge to the limited literature on pleural schwannomas.

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