

## Extrathoracic Neurilemoma of the Lateral Chest Wall Mimicking a Subcutaneous Tumor: Report of a Case

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Neurilemomas of the chest wall are usually solitary lesions which bulge toward the pleural cavity in the posterior mediastinum. We report a rare case of neurilemoma growing outside the thorax from the intercostal nerve. A 33-year-old man was admitted with a chest wall bulging mass. His past history was unremarkable. Computed tomography showed a well-circumscribed mass toward the extrathorax adjacent to the ninth intercostal space. Surgical resection was performed for a firm diagnosis and treatment. This tumor was easily dissected from the surrounding tissues without passing into the pleural cavity by percutaneous approach, and then completely resected. He has been followed-up for 16 months without recurrence. (*Ann Thorac Cardiovasc Surg* 2006; 12: 133–6)

**Key words:** thorax, chest wall, neurilemoma

### Introduction

Neurilemoma is the most common neurogenic tumor of the thorax.<sup>1)</sup> Intrathoracic neurilemomas are benign nerve sheath tumors that are usually found in paravertebral locations.<sup>2,3)</sup> Surgical resection is considered the primary treatment.<sup>2,3)</sup> Neurilemomas usually bulge from the inner surface of the bony thorax toward the thoracic cavity.<sup>2,4)</sup> Therefore, an intrathoracic surgical approach such as videothoracoscopy is commonly preferred.<sup>3)</sup> We report here a patient with neurilemoma that grew outside the thoracic cavity in the lateral chest wall, which was excised by a percutaneous surgical approach.

### Case Report

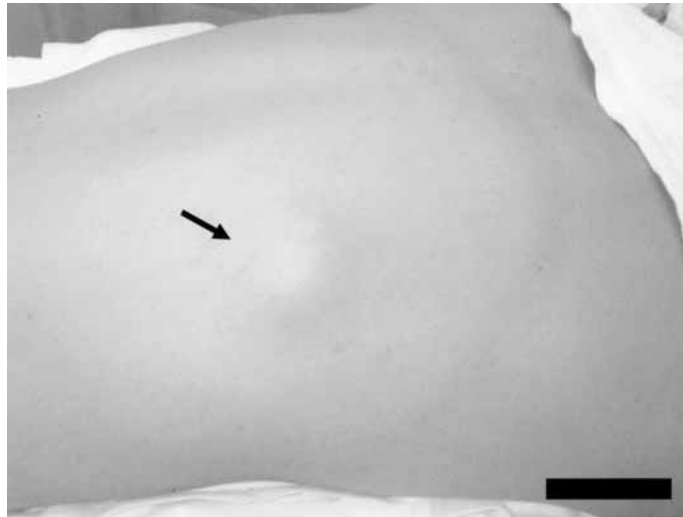
A 33-year-old man with a chest wall mass visited our hospital in April, 2004. The mass was first noticed in 2000. It gradually became a tender bulging mass and increased in size. The mass was elastic and firm. His past history

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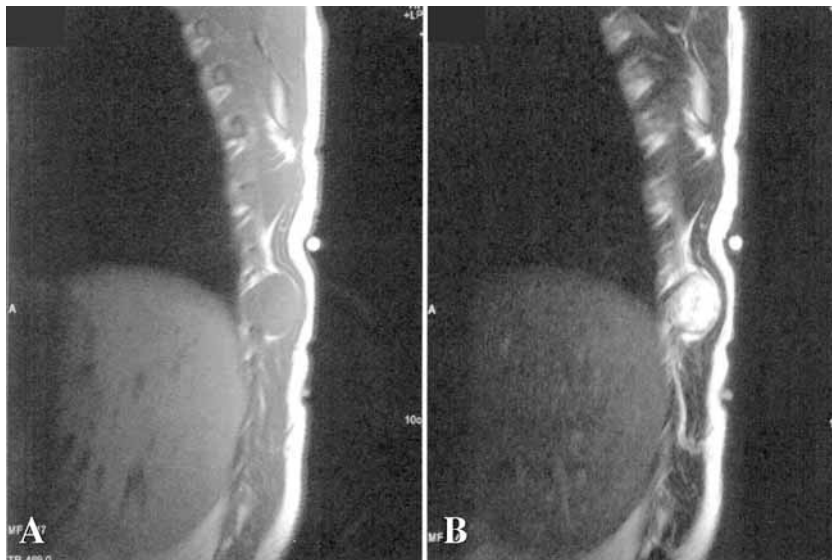
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and family history were unremarkable. The physical examination revealed a chest wall bulging mass at the posterolateral part ranging over the ninth to tenth ribs (Fig. 1). The rest of the physical examination showed no abnormalities. His peripheral blood and blood chemistry findings were within normal limits. A chest roentgenogram showed a projecting soft tissue shadow without bone destruction. Computed tomographic scan of the chest revealed a well-defined, low-density mass that measured 4.2×2.5 cm, with heterogeneous contrast enhancement. This tumor arose outside the pleural cavity. In magnetic resonance imaging (MRI), the mass showed a low signal intensity on T1-weighted images and a high intensity and heterogeneous contrast enhancement on T2-weighted images (Fig. 2). Surgical excision was performed for a definitive diagnosis and treatment. Skin incision was performed above the tumor and the tumor was easily dissected from the intercostal muscle, ribs, and parietal pleura without passing into the thoracic cavity, and then completely resected. Since the tumor showed continuity with the ninth intercostal nerve, the nerve was ligated and divided. Grossly, the tumor was oval, measured 4.0×3.5×2.5 cm, and bulged from the ninth intercostal space toward the extrathorax. The outer and cut surfaces of the tumor revealed encapsulation and central cystic degeneration (Fig. 3). Microscopically, the tumor consisted of areas that showed a dense spindle cell pattern with nuclear pali-



**Fig. 1.** Physical finding showing a chest wall tumor with a bulge ranging over the ninth to tenth ribs (arrow).



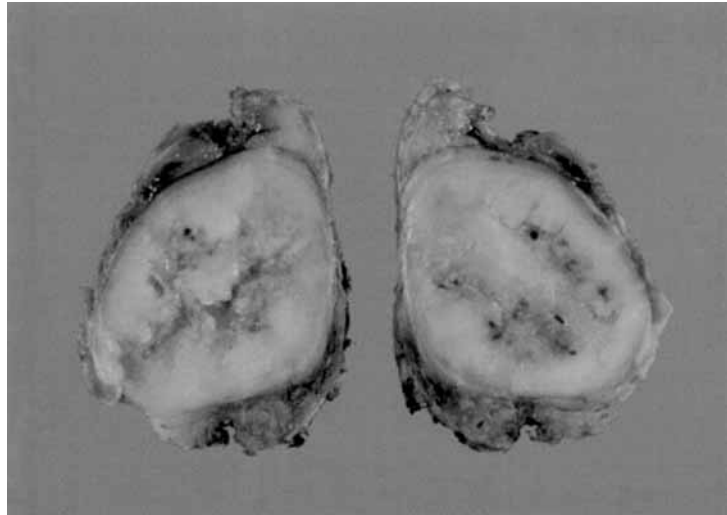
**Fig. 2.** Chest MRI showing a mass with a low signal intensity on T1-weighted images (A) and a high intensity and heterogeneous contrast enhancement on T2-weighted images (B).

sading and interlacing fascicles, and areas that were less cellular and showed myxomatous changes (so-called Antoni A and B types) (Fig. 4). Immunohistochemically, the tumor cells were positive for S-100 protein. The definite diagnosis was neurilemoma.

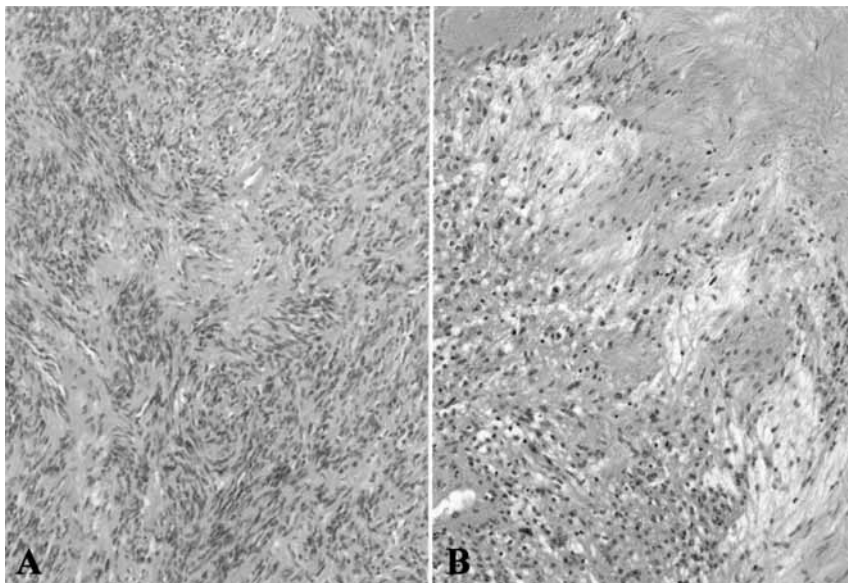
His postoperative course was uneventful. He has been followed-up for 16 months with no evidence of recurrence.

## Discussion

Most primary chest wall tumors are malignant, and only about 20% are benign.<sup>1)</sup> Neurilemoma is the most common benign tumor of the chest wall,<sup>1)</sup> and in most cases the tumor, which usually bulges from paravertebra toward the thoracic cavity, is located in the posterior mediastinum. Only about 5% of thoracic neurogenic tumors arise



**Fig. 3.** Cut surface of the operative specimen showing encapsulation and central cystic degenerative change.



**Fig. 4.** Microscopically, the tumor is composed of compact spindle cells that are arranged in short bundles or interlacing fascicles (Antoni A type) (A), and spindle or oval cells that are arranged haphazardly in myxoid matrices (Antoni B type) (B).

from an intercostal nerve of the lateral chest wall.<sup>2)</sup> Moreover, it is likely that neurilemoma rarely develops outside the pleural cavity as a mode of growth. Such a case of neurilemoma of the chest wall has not yet been reported. This growth of neurilemoma may be associated with an anatomical anomaly of an intercostal nerve. Intercostal nerves usually lie along the costal groove with

intercostal vessels. Therefore, the neurovascular component lies in the upper limits of the intercostal space. In this case, the nerve might lie downward away from the upper limits of the intercostal space.

Neurilemomas are well-encapsulated benign tumors that originate from Schwann cells and are ordinarily solitary lesions.<sup>5)</sup> The treatment of choice is gross total re-

section of the tumor. Incomplete excision may result in slow local recurrence, although the recurrence of neurilemmomas is rare.<sup>2)</sup> On the other hand, there can be a rare instance of malignant transformation of neurilemmomas.<sup>5)</sup> A close relationship has been reported between malignant transformation and histologic epithelioid appearance in neurilemmomas.<sup>5)</sup> In our case, tumor resection was pathologically complete and microscopic collections of epithelioid cells were not found.

The preoperative MRI signal pattern in this case was compatible with neurilemmoma based on low signal intensity on T1-weighted images and high intensity on T2-weighted images.<sup>4)</sup> The heterogeneous contrast enhancement on T2-weighted images corresponded to pathological alternating Antoni A and B areas. We did not perform a preoperative biopsy of the tumor, considering the possibility of malignancy such as sarcoma. The tumor was treated by local excision according to the intraoperative findings of a well-encapsulated lesion.

In summary, we experienced a neurilemmoma that

showed an exceedingly rare mode of development outside the chest wall.

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