

Case Report

Solitary Fibrous Tumors of the Pleura: Report of Two Cases Resected by Video-assisted Thoracoscopic Surgery

Shigetoshi MATSUO,¹ Satoshi YAMAGUCHI,¹ Takashi AZUMA,¹ Akira FURUICHI,¹ Sayaka HARUNO,¹ Shigeru KAWABATA,² Shiro OBATA,³ Takashi KANEMATSU⁴

¹Department of Surgery, Nagasaki Prefectural Shimabara Hospital, Nagasaki, Japan

²Department of Internal Medicine, Nagasaki Prefectural Shimabara Hospital, Nagasaki, Japan

³Department of Radiology, Nagasaki Prefectural Shimabara Hospital, Nagasaki, Japan

⁴Division of Surgery, Nagasaki University Graduate School of Biomedical Sciences, Nagasaki, Japan

We herein present two cases of solitary fibrous tumor (SFT) of the pleura. In case 1, a 66-year-old female was admitted with a nodule in the left lung field gradually increasing in size for a period of two years. During video-assisted thoracoscopic surgery (VATS), the tumor showed a pedunculated tumor arising from the visceral pleura. Resected specimens were diagnosed to be SFT of the pleura with a malignant potential. In case 2, a 69-year-old female was admitted with a mass lesion in the left lower lung field. MRI showed a tumor with very low signal intensity on T2 weighted images, which was compatible with SFT of the pleura. During VATS, the tumor adhered to the parietal pleura with some fibrous bands but was easily removed. Resected specimens were diagnosed to be a benign SFT of the pleura. MRI was considered to be a helpful modality for the preoperative diagnosis of SFT.

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Introduction

Solitary fibrous tumors (SFTs) of the pleura, which have been formerly recognized as of mesothelial origin¹ but are now widely considered to be nonmesothelial,^{2,3} are rare neoplasms. By now, these spindle cell neoplasms, first described as arising from the pleura, have been reported in any sites of the body.⁴⁻⁶ We herein report two cases of SFT of the pleura, one having a malignant potential while the other being benign, which were resected by video-assisted thoracoscopic surgery (VATS), and we discuss their diagnosis and treatment.

Case report

Case 1

A 66-year-old female was admitted to Nagasaki Prefectural Shimabara

Hospital for further examination of a nodule in the left lung field, gradually increasing in size, on January 19, 2001. The patient had hypertension but no respiratory symptoms. Complete blood counts, blood chemistries and electrolytes were within normal limits. Serum levels of tumor markers such as carcinoembryonic antigen (CEA), SCC, SYFRA and ProGRP were also within normal limits. Chest X-ray revealed a homogenous, clear-shaped nodule in the left lung field, measuring 25×20 mm in size (Figure 1A). The tumor measuring 14×10 mm in size was initially pointed out in November 1998. The tumor gradually increased in size, and was measured to be 18×14 mm in diameter on December 1999. Computed tomography (CT) revealed a clear-shaped tumor with a homogenous enhancement (Figure 1B). Because a definite diagnosis was not made by a CT-guided tumor biopsy, VATS was performed on April 11, 2001. During surgery, a pedunculated tumor originating from the visceral pleura was easily resected (Figure 1C). Resected specimens showed partly a proliferation of spindle cells with some mitoses (Figure 1D)

Address correspondence: Shigetoshi Matsuo, M.D., Department of Surgery, Nagasaki Prefectural Shimabara Hospital, 7895 Shimokawajiri, Shimabara, Nagasaki 855-0861 JAPAN

TEL: +81-(0)957-63-1145, FAX: +81-(0)957-63-4864, E-mail: simachon@jn4.so-net.ne.jp

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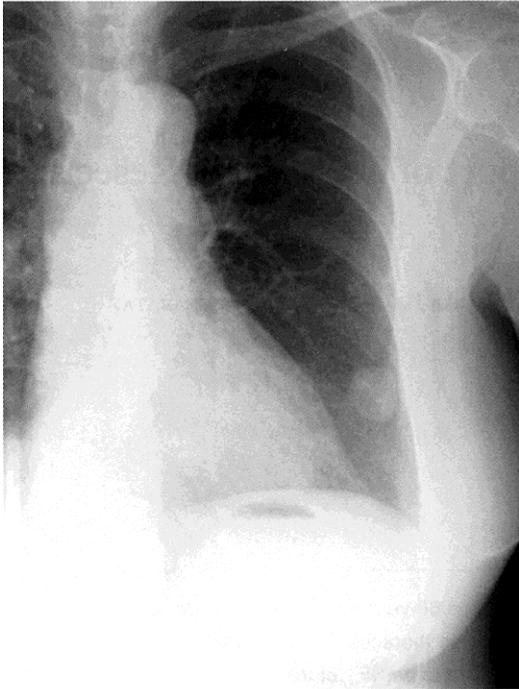


Figure 1A. Chest X-ray revealed a homogenous, clear-shape nodule in the left lung field.

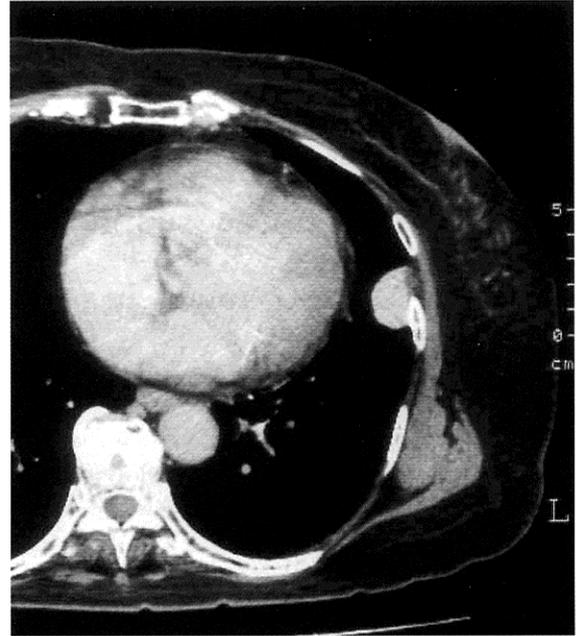


Figure 1B. Contrast-enhanced CT demonstrated a clear-shaped tumor with homogenous enhancement. The tumor appeared to be based widely on the parietal pleura.



Figure 1C. Intraoperative findings of VATS. The tumor was pedunculated, originating from the visceral pleura.

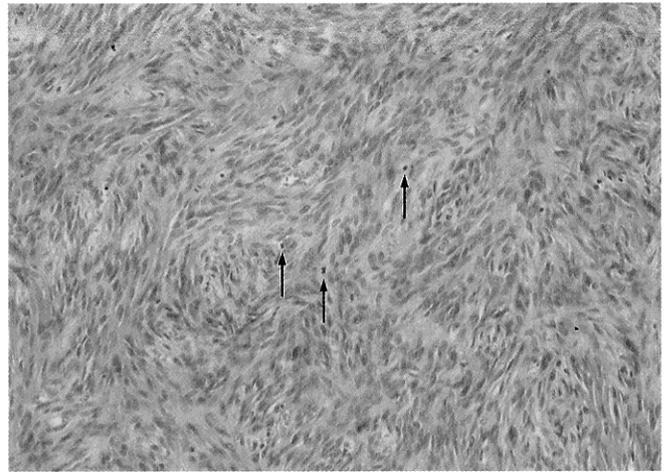


Figure 1D. Resected specimens showed a proliferation of spindle cells with some mitoses (arrows). (H&E $\times 200$)

and was shown to be immunohistochemically positive for vimentin (VI) and CD34, and negative for cytokeratin (KER). Finally, the tumor was diagnosed to be a SFT of the pleura with a malignant potential. The patient has had no recurrence two years and 7 months after surgery.

Case 2

A 69-year-old female was admitted to our hospital for a mass lesion in the left lung field on August 21, 2002. The patient had no

respiratory symptoms. Complete blood counts, blood chemistries and electrolytes were within normal limits. Serum levels of tumor markers such as CEA, SCC, SYFRA, and ProGRP were also within normal limits. Chest X-ray revealed a homogenous, clear-shaped mass in the left lower lung field, measuring 50 \times 30 mm in size, (Figure 2A). CT showed a tumor based on the parietal pleura. Magnetic Resonance Imaging (MRI) demonstrated a tumor, measuring 50 \times 65 \times 30 mm in size, with very low signal intensity on T2 weighted images (Figure 2B). Under the diagnosis of SFT of the pleura, VATS was performed on September 20, 2002. During surgery,

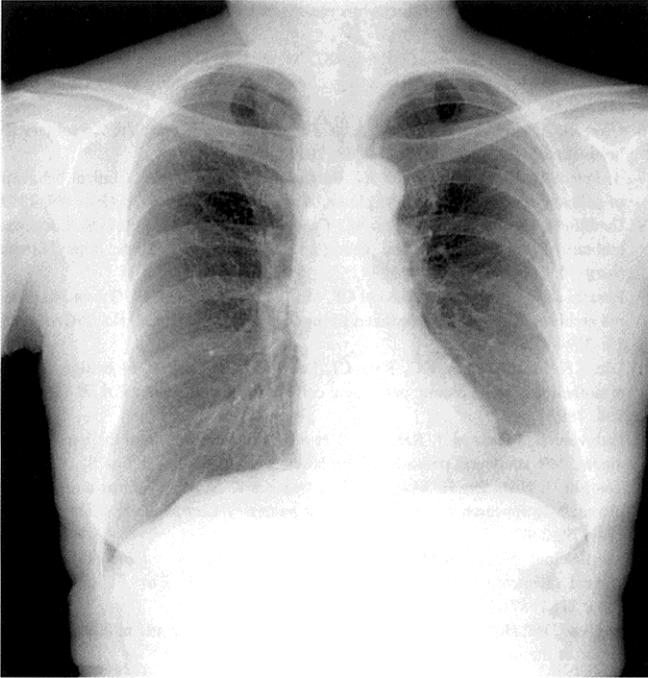


Figure 2A. Chest X-ray revealed a homogenous, clear-shaped mass in the left lung field.

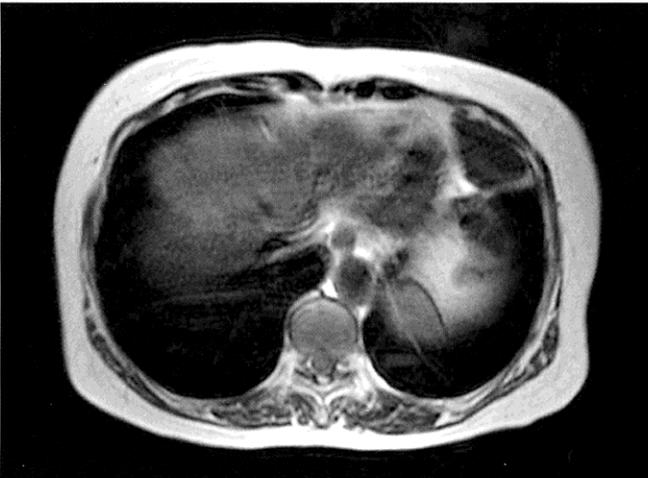


Figure 2B. MRI demonstrated a tumor with very low signal intensity on T2 weighted image (TR/TE=2250/88.5).

the tumor adhered to the parietal pleura with some fibrous bands but was easily removed. Resected specimens revealed histologically scanty proliferation of spindle cells and collagen fibers without mitoses (Figure 2C) and was shown to be immunohistochemically positive for CD34. The tumor was diagnosed as a SFT of the pleura without malignancy. The patient had no recurrence one year and two months after surgery.

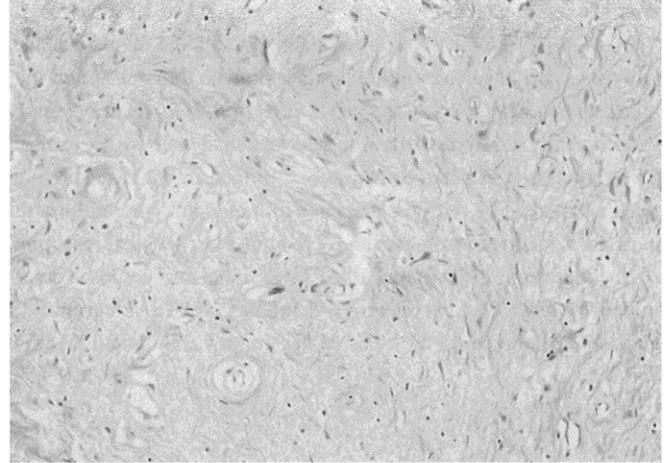


Figure 2C. Resected specimens showed scanty proliferation of spindle cells and collagen fibers without mitoses. (H&E ×200)

Discussion

SFTs arise at all anatomic sites of the body, but most commonly appear within the thoracic cavity. SFTs originating from the pleura comprise approximately 37% of all SFTs.⁶ SFTs based on the visceral pleura predominates those of the parietal pleura. More than half of the tumors arising from the visceral pleura are pedunculated, while all tumors arising from the parietal pleura are nupedunculated.^{7,8} From the archives of the Armed Forces Institute of Pathology, benign SFTs ranged in size from 2 to 30 cm (mean, 13.2 cm), and malignant tumors ranged from 3 to 23 cm (mean, 14.4 cm).⁹

CT and/or MRI are the useful methods for obtaining preoperative diagnostic clues. CT scan shows a homogenous mass in small tumors like our present cases, but shows areas of low attenuation caused by myxoid, cystic, or hemorrhagic degeneration in large tumors.^{8,10} MRI generally shows low signal intensity on both T1- and T2-weighted images, while heterogenous signal intensity has been documented on both T1- and T2-weighted images (78% and 83%, respectively).^{9,11,12} The variegated patterns of MRI signal intensity may relate to the size of the tumor and the composition of the tumor tissue, such as the accumulation of tumor cells, fibrous tissues, and vascular networks.

To our knowledge, only two related articles about VATS resection for SFTs have been published in the literature in English.^{8,13} VATS is considered to be a beneficial surgical treatment of choice for the removal of the tumor, because it allows surgeons to correctly arrive at an intraoperative assessment of free surgical margins without an excessive resection.⁸ If the tumor appears to be a malignant, or a broad-based, VATS could be easily converted into open thoracotomy. Cardillo et al. reported that VATS could be performed in 71% of 55 patients,⁸ while Magdeleinat et al. reported that it could be performed in only 10% of 60 patients.¹³ This difference may depend on the number of benign and malignant SFTs and their size. Indeed, the former found only four in malignant variants,⁸ on the

contrary malignant tumors were in 22 cases in the latter series.¹³

In general, benign SFTs are considered to have no recurrence. Only one case has been reported which showed transformation into a malignant tumor six years after resection.⁷ However, even in histologically malignant tumors, pedunculated and easily excised SFTs have usually behaved benignly.¹⁴ In fact, in our case showing pedunculated SFTs with the presence of malignant potential, no recurrences occurred two years and 7 months after surgical resection.

In conclusion, the presence of SFTs of the pleura could be determined by MRI as a preoperative diagnosis. VATS is currently a treatment of choice on the basis of the tumor's anatomical location and behavior.

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