

A Case of Primary Leiomyosarcoma of the Chest Wall Successfully Resected under the Video-assisted Thoracoscopic Approach

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We report a case of a 62-year-old woman with primary leiomyosarcoma of the chest wall which was successfully resected under the video-assisted thoracoscopic approach. The disease was found during the treatment for a malignant melanoma of the left heel. On the preoperative CT images, the lesion was suspected to be a metastasis of the malignant melanoma. The thoracoscopic surgery revealed that the tumor originated from the parietal pleura, and it was resected with a 5-mm margin of normal pleura. Histopathologically, the tumor was diagnosed as low-grade leiomyosarcoma. Since no residual tumor cells were proven in the resected margins histologically, further resection was not performed. At present, she is alive and well with no sign of recurrence of leiomyosarcoma two years and one month after operation. Thoracoscopic surgery is worth trying for accurate diagnosis of and effective treatment for a chest lesion without apparent invasion of the chest wall on the preoperative CT images. (*Ann Thorac Cardiovasc Surg* 2001; 7: 368–70)

Key words: leiomyosarcoma, chest wall, thoracoscopic surgery

Introduction

Primary leiomyosarcoma of the chest wall is a rare neoplasm and is reported to occur in approximately 1–4 % of the patients with primary soft tissue sarcomas of the chest wall. It is recommended that its resection should include all of the involved soft tissues and bones safeguarding adequate margins of normal tissue all around.^{1–4)} Although indications of thoracoscopy for pleural diseases have been prevalent in the diagnosis and treatment in recent years,^{5–7)} thoracoscopic resection for primary soft tissue sarcomas of the chest wall has not yet been reported in the pertinent literature in English.^{1–4)}

We here present a case of leiomyosarcoma of the chest wall which was successfully removed under thoracoscopy.

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Case Report

A 62-year-old woman who had undergone a wide resection and skin transplantation for malignant melanoma of the left heel was admitted to our hospital for dissection of the left inguinal lymph nodes. A chest roentgenogram showed a mass of 3 cm in diameter in the right lower lung field (Fig. 1). Computed tomography (CT) of the chest revealed a well-demarcated tumor shadow adjacent to the right anterior chest wall without apparent invasion of the chest wall (Fig. 2a, b). The lesion was suspected to be a lung or pleural metastasis of the malignant melanoma. Needle biopsy was not performed to avoid pleural dissemination. Therefore, video-assisted thoracoscopic surgery was performed for diagnostic and therapeutic purposes.

The patient underwent general anesthesia and intubation with a double-lumen endotracheal tube in place to allow selective contralateral lung ventilation. She was placed in the left lateral decubitus position with the upper arm tied on a crossbar. A 10 mm thoracoscope with a 30°C lens and videocamera attached (Olympus, Tokyo,

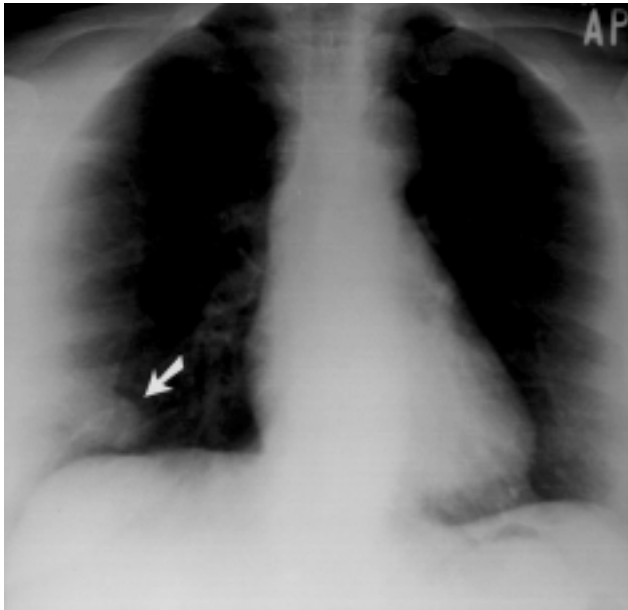


Fig. 1. A chest roentgenogram shows a mass of 3cm in diameter in the right lower lung field (white arrow).

Japan) was introduced through an 11 mm trocar needle inserted in the 8th intercostal space in the right posterior axillary line. Two more trocars were then placed to introduce the endoscopic instruments: one in the 6th intercostal space in the right posterior axillary line and the other in the 8th intercostal space in the right anterior axillary line. The tumor originated from the 5th intercostal space with its base partially onto the 6th rib (Fig. 3). It protruded into the pleural cavity, with its surface cov-

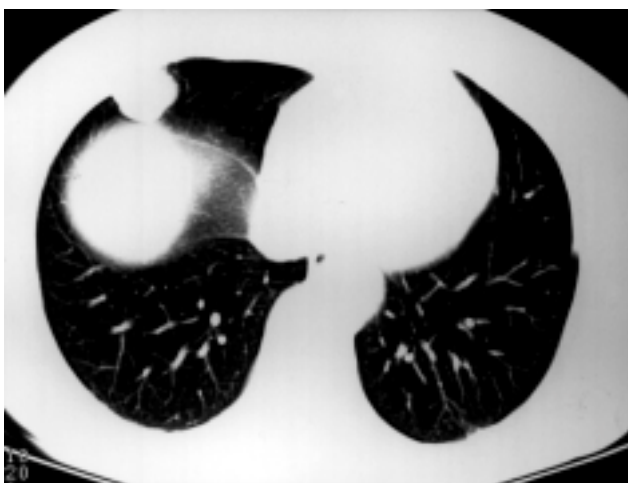
ered with the parietal pleura. No sign of invasion of the rib or intercostal muscles was observed. The tumor was completely resected with a 5-mm margin of normal pleura with use of electrocautery. Subsequently, the left inguinal lymphnode dissection was performed. The operative time for the thoracic procedure was 28 minutes and the amount of blood loss was about 10 mL.

The macroscopic features of the tumor were a soft, smoothly surfaced and encapsulated white mass of $2.3 \times 2.0 \times 1.7$ cm in size. Histological examination exhibited spindle cell proliferation in cords and sheets, nuclear pleomorphism and infrequent mitosis (Fig. 4). Immunohistologically, the tumor was not stained positive for melanin but for α -smooth muscle actin, desmin, vimentin and S-100 protein. The tumor was diagnosed as a low-grade leiomyosarcoma, not as a metastatic melanoma. Since no residual tumor cells were histologically proven in the resected margins, further excision was not performed.

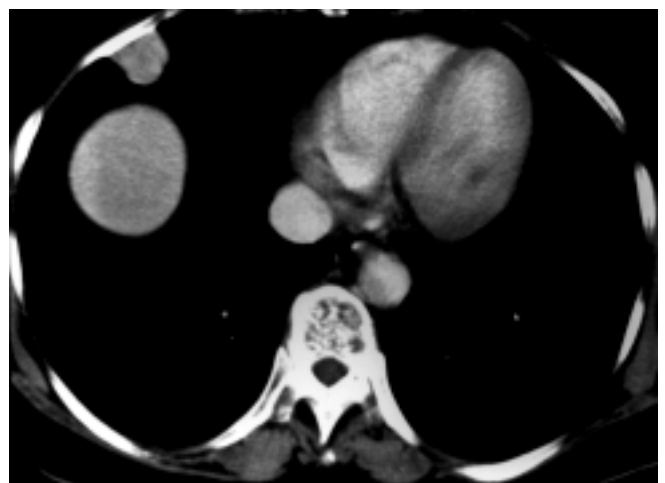
On the 2nd postoperative day, the chest tube was removed from the thoracic cavity and chemotherapy for the malignant melanoma of the heel started on the 7th postoperative day. At present, two years and one month after operation, the patient is alive and well with no sign of recurrence of leiomyosarcoma.

Discussion

The means of the diagnosis for undiagnosed chest lesions are needle biopsy, open thoracotomy and video-assisted thoracoscopic surgery. The generally accepted



a



b

Fig. 2. a, b: A computed tomography of the chest reveals a well-demarcated tumor shadow adjacent to the right anterior chest wall without apparent invasion into the chest wall.

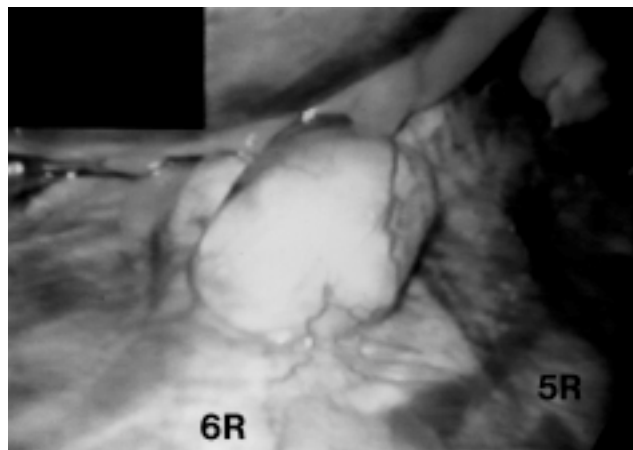


Fig. 3. The thoracoscopy reveals that the tumor originates from the 5th intercostal space with its base partially onto the 6th rib (6R). It protrudes into the pleural cavity, with its surface covered with the parietal pleura. No sign of invasion into the rib or intercostal muscles is observed. 5R: the 5th rib.

incidence of malignancy in primary chest wall tumors amounts to approximately 50%.²⁾ As King et al. advocated, chest wall tumors suspected of being a primary neoplasm should be diagnosed by excision rather than by incision or needle biopsies.²⁾ In our case, it was suspected that the chest lesion was a metastasis of the melanoma of the left heel to the lung or pleura. Needle biopsy, therefore, was withheld to avoid iatrogenic pleural dissemination. Instead, thoracoscopic surgery, which was less invasive than open thoracotomy,⁷⁾ was selected for the diagnosis and treatment.

In many previous reports, it is recommended that the resection should include all of the involved soft tissues and bones with an adequately ensured margin of normal tissue around.¹⁻⁴⁾ Indeed such wide chest wall resection contributes to decreasing local recurrences, but it does not lead to prolonged survival.¹⁻³⁾ Also Gordon et al. mentioned that the factors affecting prognosis were histological tumor grade and development of metastasis, but not margin status.¹⁾ To the contrary, Perry et al. reported that the most important factor affecting overall survival was margin status.⁴⁾ Whichever may be true, at least it is important that resected margins are tumor-negative. In our case, tumor-free margin resection was undertaken by thoracoscopic surgery, and further excision was not performed. Our patient needs to be followed up for local recurrence.

It has not previously been reported that primary soft

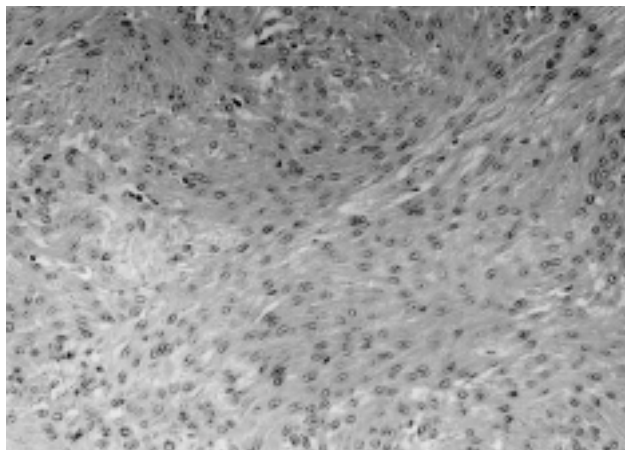


Fig. 4. Histological examination exhibits spindle cell proliferation in cords and sheets, nuclear pleomorphism and infrequent mitosis.

tissue sarcoma of the chest has been resected under the video-assisted thoracoscopic approach. Thoracoscopic surgery is worth trying for accurate diagnosis of and effective treatment for a chest lesion without apparent invasion of the chest wall on the preoperative CT images such as in the presented case.

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