

## Primary Synovial Sarcoma of the Parietal Pleura: A Case Report

Min-Kyun Kang, M.D.<sup>1</sup>, Kwang-Hyun Cho, M.D.<sup>1</sup>, Yang-Haeng Lee, M.D.<sup>1</sup>, Il-Yong Han, M.D.<sup>1</sup>,  
Young Chul Yoon, M.D.<sup>1</sup>, Kyung-Taek Park, M.D.<sup>1</sup>, Do Kyun Kang, M.D.<sup>2</sup>, Bo-Mi Kim, M.D.<sup>3</sup>

Synovial sarcoma is a malignant soft tissue tumor that most commonly occurs in the extremities of young and middle-aged adults, in the vicinity of large joints. Although synovial sarcoma is frequently associated with joints, it may arise in unexpected sites, such as the mediastinum, heart, lung, pleura, or chest wall. Primary synovial sarcoma of the pleura is rare. To date, nearly 36 cases of primary synovial sarcoma of the pleura have been reported since Gaertner et al. published the first case in 1996. The oncologic characteristics, treatment, and prognosis for pleural synovial sarcomas are not well defined because of a paucity of data. However, a multimodal approach, including surgical resection, chemotherapy, and radiotherapy, has generally been suggested. We report the outcome of one patient with primary pleural synovial sarcoma treated with radical resection and adjuvant treatment.

Key words: 1. Primary synovial sarcoma  
2. Pleura  
3. Synovial sarcoma

### CASE REPORT

A 53-year-old woman was admitted to the Department of Cardiothoracic Surgery because of upper right back pain for 2 weeks. Her vital signs were within normal limits, and physical examination revealed no abnormal findings. Her laboratory findings were also within normal limits. Computed tomography of the chest demonstrated a heterogeneous mass (4.0×3.0×3.0 cm) attached to the right parietal pleura with direct invasion of the posterior arch of the right 4th rib (Fig. 1). Positron emission tomography demonstrated a hypermetabolic mass attached to the right parietal pleura. The maximum standardized uptake value of the mass was 8.0. There was no evidence of definite metastasis. The patient underwent

surgical resection through a right posterolateral thoracotomy. Intraoperatively, there was an encapsulated soft mass in the posterior portion of the right 3rd intercostal space. There was direct invasion of the right 3rd and 4th ribs; however, there was no invasion of the right lung. A radical resection of the tumor including the right 3rd and 4th ribs was performed. The chest wall defect was repaired with a Gore-Tex Dual-Mesh patch (2 mm). On histopathological examination (Fig. 2), the tumor was confirmed to be a poorly differentiated monophasic synovial sarcoma. The histopathological specimen showed synovial sarcoma composed of spindle cells with a hemangiopericytoma-like vascular pattern. The tumor cells showed immunohistochemical positivity for vimentin, a sarcoma tumor marker for identifying mesenchyme; focal

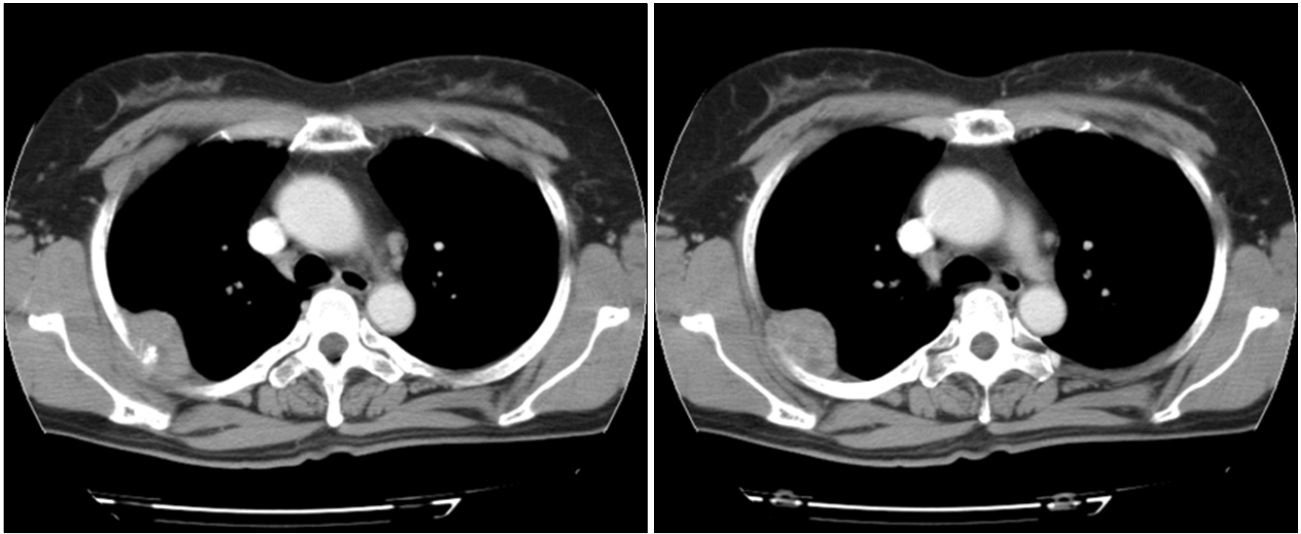
Department of Thoracic and Cardiovascular Surgery, <sup>1</sup>Inje University Busan Paik Hospital, Inje University College of Medicine, <sup>2</sup>Inje University Haeundae Paik Hospital, Inje University College of Medicine, <sup>3</sup>Department of Pathology, Inje University Busan Paik Hospital, Inje University College of Medicine

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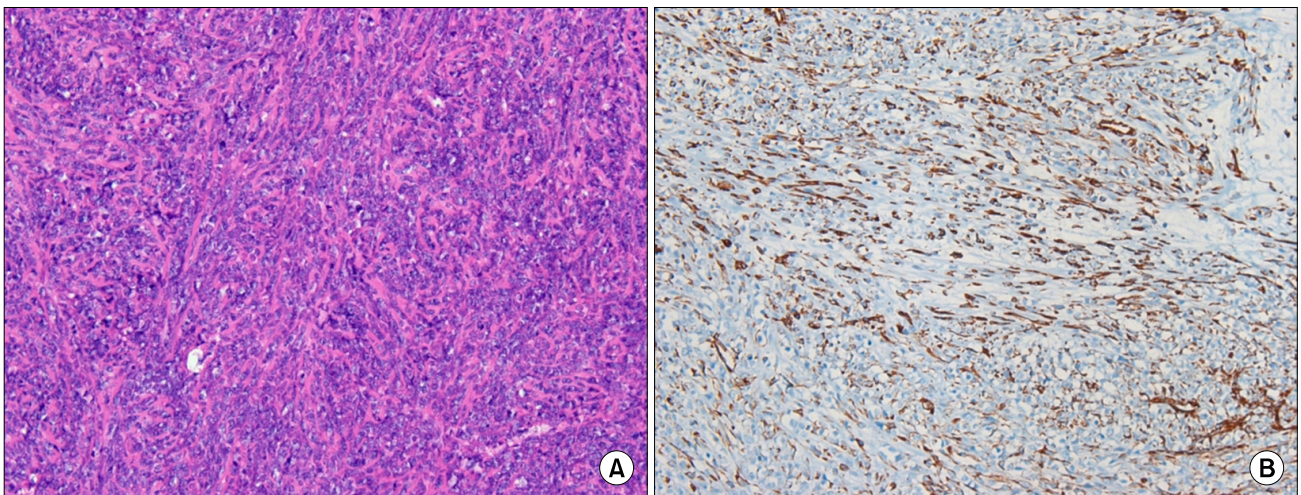
Corresponding author: Kwang-Hyun Cho, Department of Thoracic and Cardiovascular Surgery, Inje University Busan Paik Hospital, Inje University College of Medicine, 75 Bokji-ro, Busanjin-gu, Busan 614-735, Korea  
(Tel) 82-51-890-6834 (Fax) 82-51-891-1297 (E-mail) [ctsckh@inje.ac.kr](mailto:ctsckh@inje.ac.kr)

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**Fig. 1.** Computed tomography of the chest shows a heterogeneous mass attached to the right parietal pleura with direct invasion of the posterior arch of the right 4th rib.



**Fig. 2.** Histopathological examination. (A) The specimen shows synovial sarcoma composed of spindle cells with a hemangiopericytoma-like vascular pattern (H&E,  $\times 200$ ). (B) The tumor cells showed immunohistochemical positivity for vimentin (vimentin stain,  $\times 200$ ).

weak positivity for epithelial membrane antigen; but immunohistochemical negativity for S-100 protein, CD34 and actin, the other fibrous tumor markers. The patient was discharged in stable condition 5 weeks after the operation and she received adjuvant radiotherapy at another hospital.

## DISCUSSION

Synovial sarcoma most commonly occurs in the extremities

of young and middle-aged adults, typically in the vicinity of large joints. It may arise in unusual locations. Primary synovial sarcoma of the pleura is rare [1]. To date, nearly 36 cases of primary synovial sarcoma of the pleura have been reported since Gaertner et al. [2] published the first case in 1996. Only one case of primary synovial sarcoma of the pleura was reported in Korea in 2005 by Lee et al. [3]. On computed tomography of the chest, a synovial sarcoma of the pleura is characterized commonly as a heterogeneously en-

hanced mass with well-defined margins, cortical bone destruction, tumor calcifications, and tumor infiltration of the chest wall musculature. The histogenesis of synovial sarcomas is not well known, but the tumors may be derived from pluripotent mesenchymal cells capable of epithelial differentiation. The specific chromosomal translocation (X:18) is found in more than 90% of synovial sarcomas and can be detected by the fluorescence in-situ hybridization method [4]. Synovial sarcoma encompasses two histologic subtypes: monophasic and biphasic. The presence of poorly differentiated tumor cells within lesions of either subtype is considered to be a poor prognostic factor [5]. In this report, the tumor was a poorly differentiated monophasic synovial sarcoma. In general, treatment for soft tissue sarcoma comprises a combination of surgical resection, radiotherapy, and chemotherapy [6]. Although there is no gold standard of treatment for primary pleural synovial sarcoma, a multidisciplinary approach, including surgical resection, chemotherapy, and radiotherapy has been suggested. Radical resection is the mainstay of treatment. Adjuvant radiotherapy is usually recommended in cases of incomplete resection or extensive resection of a large tumor [7]. The benefits of chemotherapy are unclear. However, neoadjuvant chemotherapy can be beneficial prior to radical resection since it can cause reduction in tumor volume and potentially treat micrometastasis [8]. The 5-year survival rate for synovial sarcoma is 50% to 80%, depending on the patient's age, the tumor size, and its resectability [9]. The primary synovial sarcoma of the chest has a high recurrence rate. Duran-Mendicuti et al. [10] reported that the disease-free interval was 2 to 14 months after surgical resection of primary pleural synovial sarcoma. Because a synovial sarcoma of the pleura is rare, data regarding its natural history and published cases are limited. In our medical center, radical resection was performed for synovial sarcoma arising in the parietal pleura. After radical resection, adjuvant radiotherapy was performed. In conclusion, further investigation and data

collection are required to optimize treatment for primary synovial sarcoma of the pleura.

## CONFLICT OF INTEREST

No potential conflict of interest relevant to this article was reported.

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