

A Case of Diffuse Pleural Mesothelioma in Which Contralateral Exploratory Thoracoscopy Assisted the Selection of Therapy

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Diffuse pleural mesothelioma is a rare condition with a poor prognosis. Recent reports have indicated that extensive surgery combined with chemotherapy and radiotherapy prolongs the survival of selected patients with early disease. Thoracoscopy allows complete visualization of the pleural cavity and provides high-quality biopsy samples. We present a case of successful diagnosis of bilateral pleural mesothelioma by thoracoscopy. It is important to observe the contralateral pleural cavity by thoracoscopy to confirm the presence or absence of a tumor before considering extrapleural pneumonectomy for mesothelioma. (Ann Thorac Cardiovasc Surg 2005; 11: 252–5)

Key words: diffuse pleural mesothelioma, video-assisted thoracic surgery, thoracoscopy, contralateral

Introduction

Making a diagnosis of diffuse pleural mesothelioma is difficult. This disease causes no specific local or general symptoms and is difficult to find on chest X-ray, while chest computed tomography (CT) is normal except for pleural effusion. Thoracoscopy is a safe and easy procedure for observation of the thoracic cavity and for performance of biopsy, especially when it is important to obtain multiple biopsies from the parietal pleura, visceral pleura, and diaphragm. Boutin et al.¹⁾ reported that the diagnostic rate for mesothelioma is 20.7% by needle biopsy and 26% by cytology of pleural fluid, but is much higher 98% by video-assisted thoracic surgery (VATS). Ceresoli et al.²⁾ reported similar results, i.e., a diagnostic rate of 10% for pleural effusion cytology versus 89% for VATS. The results of surgery for diffuse mesothelioma are usually poor and it is necessary to reassess the operative indications.¹⁴⁾

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Case Report

A 65-year-old man was admitted to Juntendo University Hospital. He complained of back pain on the right side and chest X-ray showed right pleural effusion that was suspected to be caused by mesothelioma (Fig. 1). His past medical history was unremarkable. The serum carcinoembryonic antigen (CEA) level was 1.3 ng/ml. In the pleural effusion, the LDH level was 1,555 IU/L and the hyaluronic acid level was 51,000 ng/ml. Chest CT showed right pleural effusion and a tumor 3 cm in diameter on the hemidiaphragm (Fig. 2). On preoperative radiological examination, no lesions were found in the contralateral pleural cavity or the peritoneal cavity. Since pleuritis carcinomatous could not be excluded, VATS was performed to make a pathological diagnosis. At thoracoscopy, there was a bloody pleural effusion (1,440 ml) and the tumor was found to diffusely involve the visceral and parietal pleura as well as the diaphragm (Fig. 3). Biopsies were taken from the tumor on the diaphragm and parietal pleura. The tumor invaded the parietal pleura and showed proliferation into papillary and ductal structures. There were few atypical cells and no mitotic figures were observed. Diffuse pleural mesothelioma was diagnosed (Fig. 4). After the patient gave informed consent, right



Fig. 1. A chest X-ray reveals right pleural effusion.



Fig. 2. Computed tomography shows right pleural effusion and a tumor of the right hemidiaphragm.

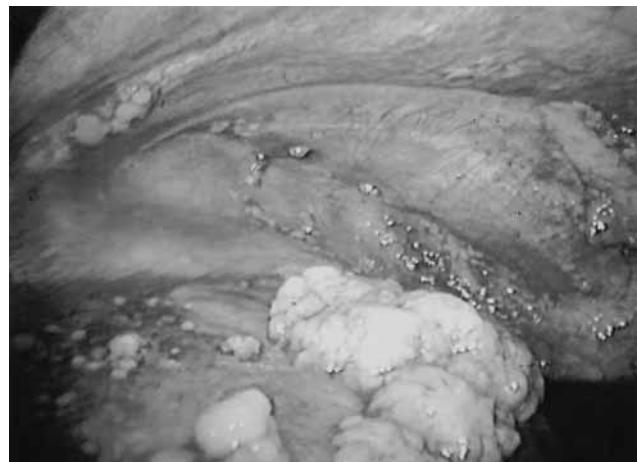


Fig. 3. Tumor involved the visceral pleura, parietal pleura, and diaphragm at thoracoscopy.

extrapleural pneumonectomy was planned. However, contralateral exploratory thoracoscopy was performed because a small left pleural effusion was revealed by chest X-ray on hospital day 18 (Fig. 5). When VATS was done on the left side, yellowish pleural fluid (100 ml) was found and small white spots like millet seeds were scattered over the parietal pleura. Some of these lesions were biopsied and mesothelial cells proliferating to form papillary or tubular structures were detected. Invasion of the muscle layer was seen in the some areas. Accordingly a diffuse pleural mesothelioma was diagnosed on the left side (Fig. 6). Based on the above findings, bilateral diffuse mesothelioma was diagnosed, so the patient was not indicated for extrapleural pneumonectomy. Instead systemic chemotherapy was performed with cisplatin and gemcitabine and was followed by the Department of Respiratory Medicine of our hospital.

Comment

Most patients with diffuse pleural mesothelioma have a poor prognosis with a median survival time of 7 to 17 months after diagnosis.³⁻⁵⁾ Recently, there have been reports⁶⁾ of a better outcome being achieved as a result of multimodal therapy using surgical treatment combined with adjuvant chemotherapy and radiotherapy. At present, the surgical indications for diffuse mesothelioma have not

been clearly established.

Recurrence rarely involves hematogenous metastasis and this tumor generally remains localized until the terminal stage. Therefore, many authors⁶⁻¹⁰⁾ have recommended extrapleural pneumonectomy to completely remove the lung and pleura on one side. Butchart et al.⁷⁾ first proposed the use of extrapleural pneumonectomy and reported results for 29 patients. The 2-year survival rate was 10% and the 5-year survival rate was 3.5%, but the operative mortality rate was a very high 31%.

Thereafter, DaValle et al.⁸⁾ reported improved results with a 2-year survival rate of 24% and a 5-year survival rate of 6%, while operative mortality decreased to 9%.

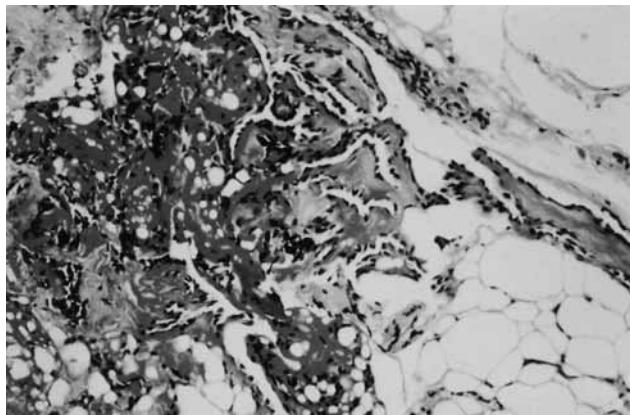


Fig. 4. Photomicrograph reveals the epithelial type of pleural mesothelioma on the right side (H&E \times 100).



Fig. 5. A chest X-ray shows left pleural effusion.

Rusch et al.⁹ performed a prospective study of 83 patients to confirm the value of panpleuropneumonectomy. They showed a longer disease-free survival period after panpleuropneumonectomy in comparison with the unoperated group or the group receiving pleurectomy, but there were no differences of overall survival and extrapleural pneumonectomy was only useful in certain patients. Sugarbaker et al.¹⁰ found that extrapleural pneumonectomy was the only treatment that could prolong the survival of patients with early mesothelioma.

Chemotherapy is not a curative treatment for pleural mesothelioma. New anticancer agents have been developed, but very little has been published about the influence on survival of chemotherapy alone. Recently Byrne et al.¹¹ conducted a Phase II study of cisplatin and gemcitabine in patients with pleural mesothelioma. Zellos et al.¹² suggested that marked improvement of local control may be obtained in the future by multimodal treatment using chemotherapy and other methods. In the present patient, systemic chemotherapy with cisplatin and gemcitabine may help to improve the outcome.

The classification of Butchart⁷ which was published in 1976, is still widely used as the standard classification of pleural mesothelioma. However, the more recent international TNM classification (IMIG classification¹³) is also available. Among the T categories, T3 refers to locally advanced tumors that are potentially respectable, while T4 means locally advanced and technically unresectable tumors involving all of the ipsilateral pleura with or without direct extension to the contralateral pleura. In the present patient, it is unclear whether the contralateral metastases should be classified as distant metastasis



Fig. 6. Photomicrograph reveals the epithelial type of pleural mesothelioma on the left side (H&E \times 50).

(M1) or as multicentric onset. Should M1 in the IMIG classification be used or should a new category be established? This point needs to be considered for such patients in the future, since more accurate staging of pleural mesothelioma is needed. Reconsideration of the indications for ipsilateral pneumectomy is also necessary.

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