[症例報告]Metastatic pleural mesothelioma presenting as omental masses : Report of a case with an immunohistochemical and electron microscopic study

Metastatic pleural mesothelioma presenting as omental masses : Report of a case with an immunohistochemical and electron microscopic study

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ABSTRACT

We herein report a case of malignant mesothelioma from onset which developed as pleural effusion related to metastasis and later presented as an omental tumor over a 2.5 year period. A 49-year-old man developed right pleural effusion in August 1995, which was cured by thoracocentasis. One year later, his chest X-ray showed diffuse pleural thickening in August 1996, and two nodules were found in his right lung in September 1996. He was referred to the University Hospital in January 1997 because of right chest and right upper abdominal pain. The X-ray and CT of the chest revealed diffuse, irregular thickening of the right chest wall with many nodules in the lung. A CT scan of the abdomen showed three tumors in the upper abdomen. There was no history of asbestos exposure. At laparotomy, the tumors were confined to the omentum with no widespread tumor deposits. Histologically, this tumor was a malignant mesothelioma with a fibrous form mimicking fibrosarcoma. On immunohistochemical staining, the tumor cells were positive for cytokeratin and vimentin. Electron microscopy showed rare desmosomes and sparse microvilli. The patients was still undergoing chemotherapy at the time of writing. *Ryukyu Med. J., 18(1, 2)41~44, 1998*

Key words: mesothelioma, pleura, metastasis, omentum

INTRODUCTION

Malignant mesothelioma is a rare neoplasma, which mostly has a pleural origin[1-3]. Malignant mesotheliomas are essentially diffuse tumors arising from mesothelial cells. Peritoneal mesotheliomas form hard nodules or masses over the peritoneal surfaces and also extend into the surrounding tissue[4-6]. In this report, we describe a case of a natural history of malignant mesothelioma from the onset which developed as pleural effusion to the metastasis presenting as an omental tumor over a 2.5 year period with the corresponding morphologic changes of the lesion on both the chest X-ray and computed tomography (CT) findings. The clinical course of our patient is noteworthy in the fact that it helps us to understand the tumor behavior of pleural mesothelioma.

CASE REPORT

A 49-year-old man was referred to our Department of Surgery for an exploratory laparotomy of abdominal tumors on April 17, 1997.

The patient developed right pleural effusion in August 1994 (Fig. 1, left). After the effusion was successfully treated (thracocentesis), a follow-up chest X-ray in 1994 showed no evidence of recurrent disease and pleural thickening. The chest X-ray revealed right diffuse pleural thickening in August 1995 and thereafter two nodules in the lung field in September 1996. He was later referred to our University Hospital in January 1997 after experiencing right chest pain and right upper abdominal pain over a period of a few weeks. During hospitalization at the Department of Internal Medicine, the X-ray and CT findings of the chest showed a diffuse and irregular thickening of the chest wall and an increased number of nodules in the right chest (Fig. 1, right) (Fig. 2, top). A simultaneous abdominal CT revealed three tumors ranging from 6 cm to 10 cm in maximum dimension in the upper abdomen (Fig. 2, bottom). Needle biopsies of the thickened chest wall showed only hyalinized connective tissue. No definite diagnosis of the chest lesions were made based on histologic materials. Therefore, the patient

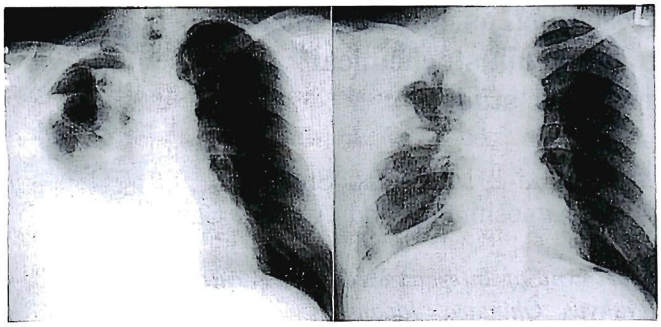

Fig. 1 An X-ray of the chest showing right pleural effusion in August 1994 (left) and right pleural thickening with many nodules in the lung in May 1997 (right).

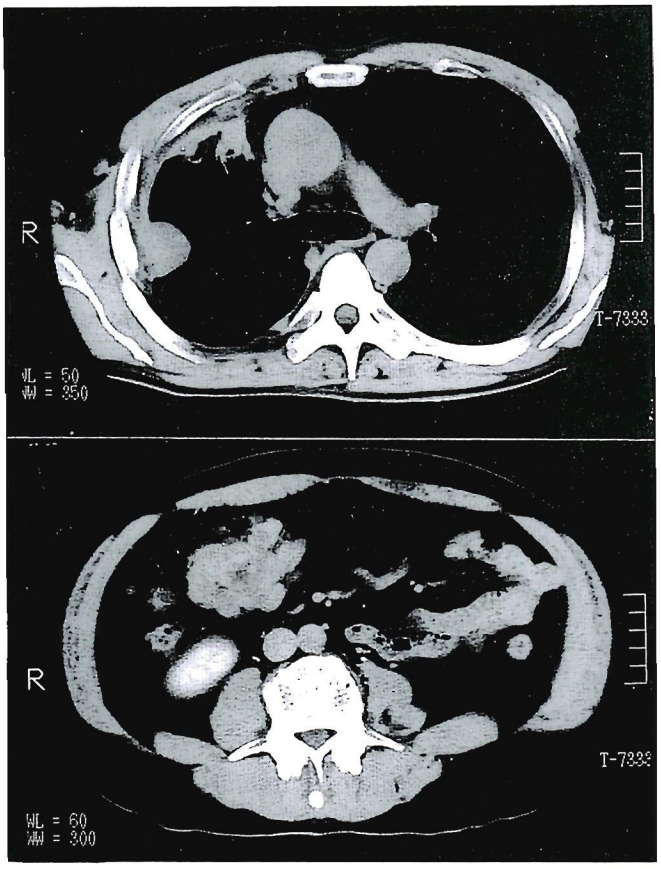

Fig. 2 A CT scan of the chest revealing pleural thickening and nodule formation (top) and a CT scan of the abdomen showing a mass in the upper abdomen (right) in March 1997.

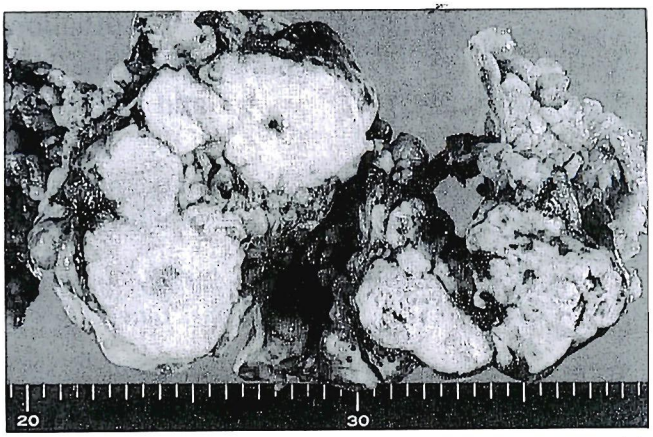

Fig. 3 Resected specimens revealed solid tumors with variegated sectioned surfaces containing fleshy, yellow to gray areas.

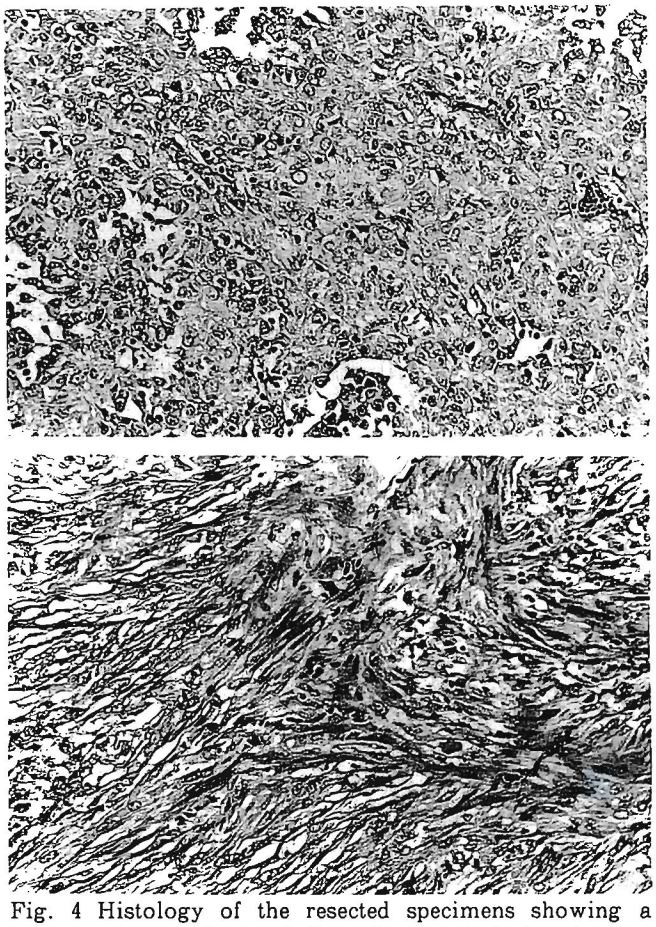

Fig. 4 Histology of the resected specimens showing a tumor composed of spindle cells in interlacing bundles mimicking fibrosarcoma in almost all parts of the tumor (top, HE, X 50), and an epitheloid component area demonstrating a nest-like arrangement over quite a small area (bottom, HE, X 50).

was referred to our department to undergo an exploratory laparotomy in oerder to make a definite diagnosis. The patient had smoked two packs of cigarretes per day for over 25 years. He had a cherry blossom tattooed on his back at 20 years of age. There was no history of asbestos exposure.

At laparotomy, three isolated tumors of various sizes were confined to the omentum adjacent to the transverse colon without any evidence of widespread abdominal deposits of the tumor. The patient underwent an omentectomy together with the tumors. A small segment of the transverse colon involved by the tumor was thus removed. The three resected tumors were isolated, and found to vary in shape and size. They measured 6, 13 and 10 cm in

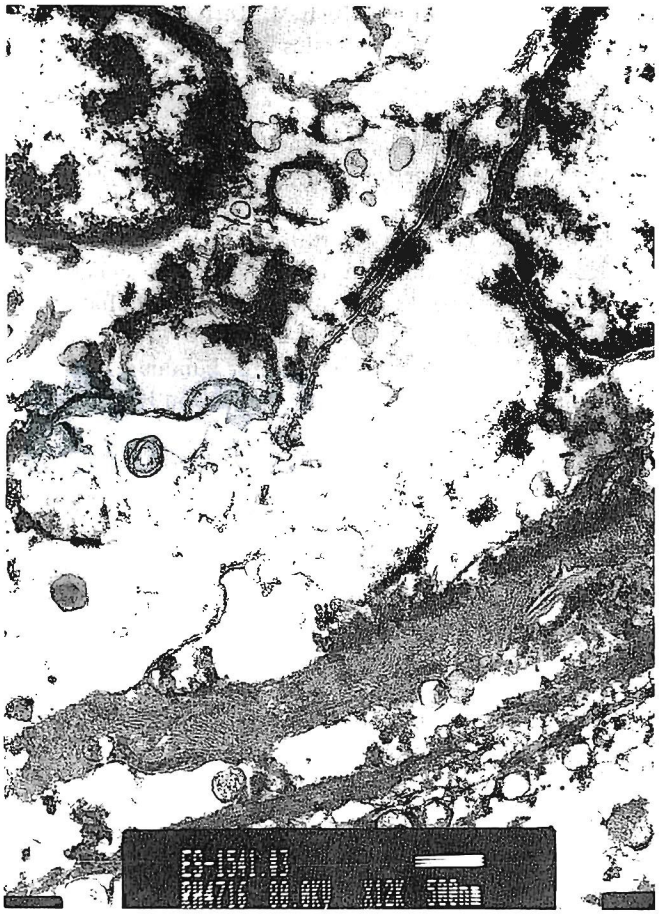

Fig. 5 Electron microscopy findings of the tumor cells reveal the presence of rare desmosomes (X12,000)

maximum dimension, respectively, and were found to be solid tumors with variegated sectioned surfaces containing fleshy, yellow to gray areas (Fig. 3).

Histologic examination of the tumor cells showed spindle shaped and polygonal colls with plump nuclei and occasional mitotic figures in orderly interlacing bundles in almost all parts of the tumors (Fig. 4, top). We could find a small epitheloid component area with either gland-like structures or a nest-like arrangement composed of uniformly round or oval cells (Fig. 4, bottom). However, this tumor could not be clearly distinguished from fibrosarcoma based on the histologic findings alone. Regarding immunohistochemical staining, the tumor cells were positive for cytokeratin and weakly positive for vimentin. Electron microscopy showed the presense of some desmosomes (Fig. 5).

DISCUSSION

Malignant mesothelioma is an uncommon neoplasm, and mostly has a pleural origin[3]. Accordingly, peritoneal mesotheliomas are easily mistaken by both surgeons and pathologists for one of the more common primary or metastatic neoplasms of the abdomen[5-7]. In our case, the diagnosis of mesothelioma of the pleura was not made based on the histologic findings because repeated needle biopsies of the affected chest wall revealed only hyalinized tissue. Subsequently, for purposes of treatment, we required a histologic confirmation of the diagnosis of mesothelioma.

The majority of fibrous mesotheliomas of the pleura appear as a solitary and bulky tumor. However, our patient showed diffuse thickening in the right thorax which was characteristic of the epithelial type[8]. The abdominal mesothelionmas was typically the fibrous type. Therefore, our needle biopsy of the chest probably only consisted of stroma specimens, and thus a definite diagnosis of mesothelioma could not be made. Subsequently, as mentioned above, our patient developed abdominal tumors with pain which presented as omental masses. In order to make a definite diagnosis and, if possible, perform a curative resection of the omental tumors, a surgical resection was thus performed. Immunohistochemical and electron microscopic studies of the omental masses confirmed a diagnosis of mesothelioma. Whether the omental mesothelioma in our case was a primary or metastatic tumor remains controversial[9, 10].

The most ommon sites of metastases in pleural malignant mesotheliomas are the chest, abdomen and other areas[1]. About two-thirds of them remain localized in the chest throughout the course of the disease. In the remaining cases, the tumor spreads to the abdomen or distant metastases. In this patient, the mesotheliomas were confined to the omentum with no evidence of wide spread abdominal deposits of the tumors. On the contrary, primary malignant peritoneal mesotheliomas appear as hard, whitish plaques or masses scattered over the peritoneal surfaces. Serosal spread to other organs is common[4, 10]. There is no report morphologically distinguishing primary malignant peritoneal mesothelioma from metastatic peritoneal tumors. In our case, the patient initially developed pleural effusion of unknown origin one year before the probable diagnosis of malignant pleural mesothelioma was made. He then suffered from abdominal tumors 2.5 years after the onset of pleural effusion. Subsequently he had advanced disease. The typical omental involvement of malignant mesothelioma, with the tumor confined to the serosa and omentum, in the setting of extensive pleural disease, usually does not suggest a primary peritoneal tumor. Although the possibility of a multicentric origin cannot be ruled out, the clinical chronological sequence in this case suggests the pleura to be the primary involved site, followed by a spread to the omentum.

The outlook for patients with mesotheliomas, especially in advanced disease, remains poor. The role of surgery is often limited due to the advanced stage of the disease, which precludes any curative resection. The purpose of the operation in most instances is only to establish a tissue diagnosis[9-14] and palliative procedures

are normally indicated. In addition, posotive responses can also occationally be achieved with chemotherapy or radiotherapy[15]. Our patient was still undergoing chemotherapy after surgery at the time of writing.

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