Case Report

Primary Malignant Lymphoma Arising in the Pleura without Preceding Long-standing Pyothorax

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We report a very rare case of primary malignant lymphoma arising in the pleura with no history of persistent pyothorax. A 72-year-old male was hospitalized with dyspnea on effort and chest CT demonstrated a mass along the right chest wall. Right thoracotomy with complete en bloc resection of the pleural tumor was performed. Immunohistochemical examination of the pleural tumor showed that the histology was marginal zone B-cell malignant lymphoma. We considered that this tumor had originated from the soft tissue in the chest wall based on radiographical and surgical findings. As diagnosis and treatment of pleural malignant lymphoma seems to have been difficult in most cases reported in the literature, it is thought that early active and accurate biopsy with large-bore needles, or, if possible, surgical incision for early diagnosis and aggressive surgery to achieve complete resection combined with radiation therapy and/or chemotherapy would be very important for a good prognosis. (Ann Thorac Cardiovasc Surg 2004; 10: 297–300)

Key words: malignant lymphoma, pleural lymphoma, surgical treatment

Introduction

Primary tumors of the chest wall are uncommon. The incidence of malignancy in primary tumors of the chest wall is approximately 50%.[1] However, malignant lymphoma arising in the pleura are rare, comprising 2.4% of the primary chest wall tumors,[1] and most pleural lymphomas develop in association with preceding long-standing pleural disease such as long-standing chronic tuberculous pyothorax or artificial pneumothorax for lung tuberculosis.[2,3] We report a very rare case of primary malignant lymphoma arising in the pleura with no history of persistent pyothorax, and discuss pleural lymphoma based on the literature.

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Received April 9, 2004; accepted for publication April 21, 2004.
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Case Report

A 72-year-old male who had complained of dyspnea on effort for four months was admitted to our hospital. He had no history of persistent chronic tuberculous pyothorax or artificial pneumothorax therapy. Chest radiograph demonstrated a tumor-like shadow with pleural fluid on the right side (Fig. 1). CT demonstrated a tumor in the pleural wall with atelectasis of the middle lobe and pleural effusion on the right side, but without lymph node swelling (Fig. 2). On admission, laboratory findings did not demonstrate remarkable changes. The tumor markers resulted in a serum CEA-EIA level of 0.7 mg/dl, a serum NSE level of 2.1 mg/dl, and a serum SLX level of 0.9 mg/dl. Analysis of pleural effusion did not detect empyema, tuberculosis, atypical acid-fast bacterium, mycobacterium species, or mycelium, but there was a high hialuronic acid level of 19,400 ng/ml, and negative Rivalta response. Initially, malignant mesothelioma was suspected, but it could not be diagnosed by cytological examination of aspiration biopsies with a percutaneous thin needle. Surgery was performed for histological diagnosis. Under general anesthesia, right thoracotomy was per-

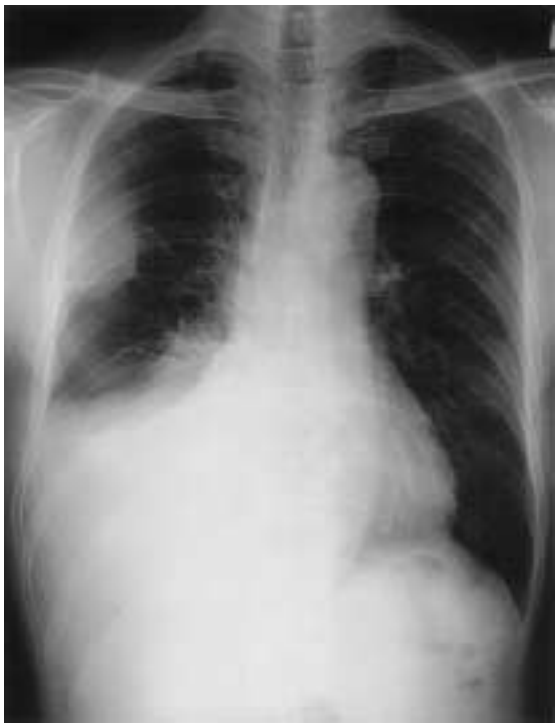

Fig. 1. Chest radiograph detected a tumor-like shadow with pleural fluid on the right side.

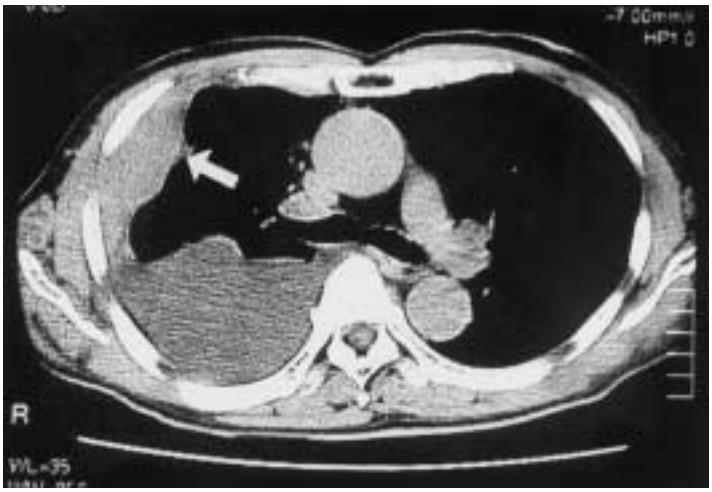

Fig. 2. CT demonstrated a tumor (arrow) in the pleural wall with atelectasis of the middle lobe and pleural effusion on the right side, but without lymph node swelling.

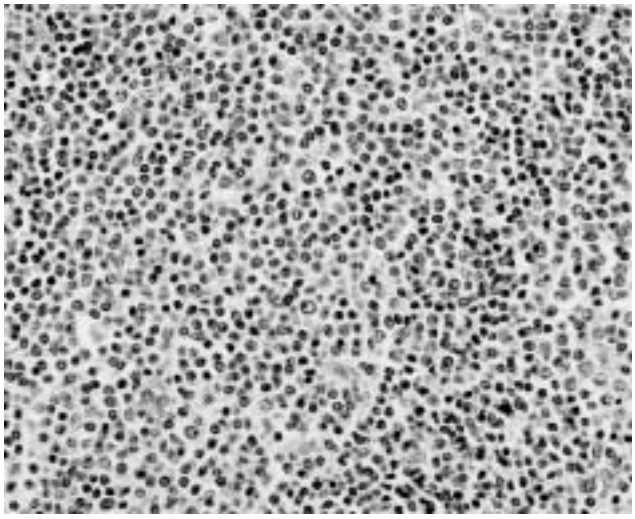

Fig. 3. Pathological findings of the pleural tumor showed marginal zone B-cell malignant lymphoma (H&E stain).

formed for complete en bloc resection of the pleural tumor with a 2-cm margin of normal tissue around the tumor. Macroscopically, the tumor was diffusely or locally proliferated with thickened pleura, but there was no invasion of the chest wall or ribs. Immunohistochemical examination of the pleural tumor showed that the histology was marginal zone B-cell malignant lymphoma (Fig. 3). These findings demonstrated that this tumor had originated from the soft tissue in the chest wall. The patient was discharged in good condition on the 20th postoperative day and was followed by the Clinical Hematology Department of another hospital, including determination of indications for chemotherapy or radiation therapy.

Discussion

Primary tumors of the chest wall are uncommon. Although most are neoplasms, and more than one-half are malignant, King et al. reported that malignant lymphoma is very rare, comprising 2.4% of primary chest wall tumors.[1)] However, most pleural lymphoma are usually closely associated with persistent chronic tuberculous pyothorax or artificial pneumothorax for lung tuberculosis in general. Therefore, primary malignant lymphoma arising in the pleura without chronic pyothorax is quite a rare tumor.

As for pyothorax-associated lymphomas, a review of the Japanese literature reported that lymphoma occurred in 2.2% of patients with chronic pyothorax who had been followed by a hospital specializing in chronic tuberculosis or after a 22- to 55- (mean 33) year history of pyothorax resulting from artificial pneumothorax for pulmonary tuberculosis and that the male-female ratio was 5 : 2 and mean age was 51.8 years.[2-9)] However, most cases of this

Table 1. Clinical findings in nine Japanese patients with primary malignant lymphoma arising in the pleura without a history of pyothorax

Author (year)	Age (year)	Initial symptoms	Pathology	EBV	Autoimmune disease	Therapy
1) Kitada (1996)	80/M	Left chest pain & swelling	DLB	-	No	R.C
2) Niitsu (1997)	22/M	Right chest pain & swelling	Peripheral T	Negative	No	C
3) Hara (1998)	39/M	Right chest pain & swelling	DLB	-	No	R.C
4) Ishikawa (1999)	67/F	Left chest pain	DLB	Negative	No	S
5) Kanno (1999)	63/F	Right pleural effusion	DLB	Negative	No	C
6) Chen (2000)	74/M	Right chest swelling	DLB	Negative	Yes? (hypo-thyroidism)	S.R.C
7) Nagai (2000)	82/F	Right chest pain	DLB	Negative	No	S.R.C
8) Shinjo (2000)	84/F	Right chest pain	DLB	Negative	No	C
9) Hirai (2004)	72/M	Right pleural effusion	Marginal zone B	-	No	S

DLB: diffuse large cell type B-cell lymphoma, Peripheral T: peripheral T-cell lymphoma, Marginal zone B: marginal zone B-cell lymphoma, R: radiotherapy, C: chemotherapy, S: surgery

disease were reported in Japan and there were few reports from Western countries, because artificial pneumothorax as therapy for lung tuberculosis has been performed much more frequently in Japan than in Western countries due to the greater prevalence of tuberculosis.[6)]

As a mechanism for pleural lymphoma, it had been suspected that there was chronic stimulation of B-cells in the pleural cavity such as that in long-standing chronic pleural disease, because it was reported that the most common malignant lymphoma arising in the pleura was B-cell non-Hodgkin's lymphoma of the diffuse large cell type histologically. However, to our knowledge, nine cases of pleural malignant lymphoma without a history of persistent pyothorax causing chronic stimulation have been reported recently in the Japanese literature since 1996, including our case (Table 1). As other mechanisms for primary pleural lymphoma, antecedent autoimmune diseases, such as Sjogren's syndrome, rheumatoid arthritis, malignant lymphoma, chronic lymphocytic thyroiditis, and thyroid lymphomas and Epstein-Barr virus (EBV) infection have been reported as possible etiologic factors. For example, seven cases of Sjogren's syndrome related to tumor development were reported by Zulman et al.[10, 11)] An association between chronic thyroiditis was confirmed by Holm et al.[12)] EBV DNA was detected by polymerase chain reaction (PCR) method and EBV-encoded RNAs by in situ hybridization in pleural tumors in patients with a history of pyothorax as sequelae of tuberculosis 35 to 47 years previously.[5)] However, eight patients did not seem to have any past history of autoimmune diseases, excluding one patient who had medication for hypothyroidism. Furthermore, EBV infection had not been detected yet. These findings indicate that the tumor development mechanism of malignant lymphoma arising in the pleura have not yet been established.

Diagnosis of pleural malignant lymphoma seems to be difficult in most cases. In particular, detection of neoplasms with necrosis or cystic degeneration near the pyothorax cavity is generally difficult in patients with pyothorax-associated lymphomas. Many patients with chronic pyothorax underwent surgery or were treated conservatively until death, and the existence of malignant neoplasms was first detected by surgical or autopsy specimens. It is thought that this failure caused a poor prognosis compared to that of other lymphomas. Based on these findings, we consider it very important that when malignancy is suspected based on symptoms or chest radiographs, further radiographic follow-up evaluation with CT and MR imagings[7)] and active and accurate biopsy with large-bore needles be performed, because aspiration biopsies with thin needles are useless. If possible, surgical incision via thoracoscopy is recommended for early diagnosis.

Our review of the literature indicates treatment for primary malignant lymphoma arising in the pleura requires early accurate diagnosis and complete surgical resection of chest wall tumors. This involves one stage surgery with adjuvant radio/chemo therapy according to the Ann-Arbor staging classifications.

Conclusion

We report a very rare case of primary malignant lymphoma arising from the soft tissue in the pleura with no history of persistent pyothorax detected on radiographical and surgical findings.

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