Case report

Pleural involvement of diffuse large B-cell lymphoma mimicking malignant pleural mesothelioma

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1. Introduction

Malignant pleural mesothelioma (MPM) has one of the poorest prognoses among respiratory diseases [1,2]. MPM is still a major public health problem, as it is related to environmental and occupational asbestos exposure. Given the incubation periods, the incidence of MPM in Japan is gradually increasing, and the total number of patients will peak in 2030. Because the clinical manifestations of MPM are usually non-specific, physicians often need a differential diagnosis of lung cancer, tuberculous pleurisy, or synovial sarcoma [3–5]. In contrast, diffuse large B-cell lymphoma (DLBCL) can be treated by chemotherapy, and its imaging findings are generally different from those of MPM. DLBCL usually invades superficial lymph nodes, such as cervical, axillary, and inguinal lymph nodes. As it is an extranodal disease, the gastrointestinal tract and lung are also targeted [6]. Here, we present a very rare case of a patient with DLBCL who was initially suspected to have MPM due to characteristic findings on positron emission tomography/computed tomography (PET-CT).
Fig. 1. Images of positron emission tomography/computed tomography (PET-CT).
CT showed a massive loculated pleural effusion in the right thorax (A). PET-CT showed an enlarged left subclavicular lymph node with accumulation of fluoro-deoxyglucose (FDG) (B, D). PET-CT also showed diffuse thick wall lesions and accumulation of FDG along the edge of the pleura and in multiple mediastinal lymph nodes (C, D).
which turned out to be negative.

We punctured the pleural effusion of the right chest. A haemorrhagic pleural effusion was recovered. Cytology results of the pleural effusion showed malignancy which suggesting haematological tumor (Fig. 2A–B). The results of cytology were inadequate to make a precise diagnosis. Because we suspected MPM, lung cancer or lymphoma, we performed a biopsy with thoracoscopy to confirm the diagnosis. Thoracoscopy revealed diffuse rough and irregular mucosa of the pleura with redness and swelling (Fig. 3A–B). A biopsy of the pleura with thoracoscopy revealed DLBCL (Fig. 4A–B). We confirmed that the lesions with high integration of FDG along the entire circumference of the pleura were DLBCL lesions. Magnetic resonance imaging of the head with contrast revealed no evidence of brain metastasis. After a precise diagnosis, the patient consulted a haematologist. The patient underwent chemotherapy with a combination of rituximab, cyclophosphamide, hydroxydaunorubicin, vincristine, and prednisolone (R-CHOP). The diffuse thickened pleural wall and massive pleural effusion in the right chest significantly improved after two cycles of chemotherapy.

3. Discussion

In this case, we experienced a rare type of DLBCL mimicking MPM. We highlight two important clinical messages in this case. First, even if a chest CT scan suggests typical MPM, other differential diagnoses should be kept in mind. MPM is strongly related to asbestos, and it is rare in people that have never been exposed to asbestos [7]. Therefore, when we encounter patients with typical MPM imaging but lacking a history of asbestos exposure, we should consider other diseases and should closely examine all aspects of malignant disease.

Second, it is important to be familiar with the atypical features of malignant lymphoma. Malignant lymphoma sometimes invades pulmonary regions, but diffuse intrapleural invasions are very rare [6]. Primary effusion lymphoma, which is a rare type of HIV-related malignant lymphoma, can invade pleural lesions but not the left subclavicular, mediastinal or abdominal lymph nodes [8]. In this case, the existence of multiple mediastinal and abdominal lymphadenopathies was important in determining the differential diagnosis. Furthermore, this case showed negative result of HIV test.

Although we searched the literature, we could not find a case identical to this one, but we did find some similar case reports. While malignant lymphoma typically forms nodular lesions as an extranodal disease, the formation of diffuse thick pleural lesions in patients with multiple myeloma has been previously reported [9]. There was also a report of a patient with DLBCL forming thick local lesions [10]. As with
the present case, we should keep in mind the pleural disease of malignant lymphoma. In the clinical setting, there were some difficulties in differentiating malignant lymphoma. sIL-2R is usually helpful when malignant lymphoma is suspected. However, this case lacked elevated sIL-2R levels. Furthermore, this patient did not have fever, body weight loss, or night sweats, known as B symptoms. Malignant lymphoma with atypical features may not present with typical clinical findings. Lacking a history of asbestos exposure suggested an atypical aspect of MPM. Obtaining an accurate medical history is also important for a precise diagnosis.

4. Conclusions

We encountered a rare case of pleural involvement of DLBCL mimicking MPM. Because both MPM and malignant lymphoma have poor prognoses without appropriate treatment, early diagnosis is important to improve survival. Clinicians should keep in mind the importance of differential diagnoses of MPM when they experience typical images compatible with MPM but lacking typical history or laboratory features.

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Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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Fig. 4. Histopathology of pleural biopsy specimens. Diffuse, large, atypical, naked nuclear cells infiltrated the centre of the tissues. (A, haemotoxylin & eosin staining, × 100). Lymphoma cells expressed CD20 on their cellular membrane, which suggested B-cell lymphoma (B, CD20 staining, × 100).