

Mediastinal peripheral T-cell lymphoma diagnosed by repeated biopsies after an initial diagnosis of fibrosing mediastinitis

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Keywords

Fibrosing mediastinitis (FM), mediastinal peripheral T-cell lymphoma not otherwise specified (PTCL-NOS), mediastinal tumour.

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Abstract

We report a case of mediastinal peripheral T-cell lymphoma not otherwise specified (PTCL-NOS) diagnosed by repeated biopsies. A 44-year-old man was admitted to our hospital with a 2-week history of facial swelling, neck distension, and dyspnoea on exertion. Computed tomography of the chest showed a mediastinal mass. Initial needle biopsy and video-assisted thoracoscopic biopsy revealed the pathological diagnosis of fibrosing mediastinitis (FM). Glucocorticoid therapy (prednisolone) was temporarily effective in reducing tumour size. However, other laboratory features suggested that the diagnosis of FM might not be correct. After repeated biopsies, we established the diagnosis of mediastinal PTCL-NOS. With this correct diagnosis, appropriate therapy for PTCL resulted in the improvement of the clinical manifestations. This report suggests that the presence of malignant lymphoma should be considered in cases of mediastinal tumours, and repeated biopsies may be occasionally needed for consistent diagnosis.

Introduction

Mediastinal tumours (MTs) are either benign or cancerous. Malignant lymphoma (ML) accounts for 55% of MTs [1]. Therefore, ML should always be considered in MT patients. Among mediastinal MLs, the major histological types are nodular sclerosing Hodgkin's lymphoma and large cell diffuse ML [1]; the occurrence of peripheral T-cell lymphoma (PTCL) in the mediastinum is very rare. PTCL not otherwise specified (PTCL-NOS) belongs to a group of heterogeneous diseases. However, they cannot be classified further using existing World Health Organization classification. Fibrosing mediastinitis (FM), a rare disorder characterized by extensive fibrotic reaction involving the mediastinum, can be caused by *Histoplasma capsulatum* infection, tuberculosis and other infections, or mediastinal irradiation. It results in compromise of the airways, great vessels, and other mediastinal structures [2]. We discuss the importance of understanding the high frequency of ML in MT patients and repeating biopsy for accurate diagnosis.

Case Report

A 44-year-old man was admitted for facial swelling, neck distension, and dyspnoea on exertion (mMRC: 1), which had developed over 2 weeks. His past history was unremarkable. He had a 24-pack-year history of smoking. Chest radiography revealed a mass in the right upper anterior mediastinum (Fig. 1). Contrast-enhanced computed tomography (CT) of the chest revealed that it ranged from the superior to anterior of the mediastinum and was 10 cm in diameter. We noted narrowing of the brachiocephalic vein and superior vena cava in the mass; however, patency of these veins was maintained. There were few necrotic tissues in the mass. The mass showed high signal intensity in diffusion-weighted images obtained on contrast-enhanced magnetic resonance imaging. Fluorodeoxyglucose-positron emission tomography showed hypermetabolism in the mediastinal mass (standardized uptake value max 10.4, delayed phase 12.0). Physical examination and CT revealed no lymph node swelling. Laboratory findings showed slightly elevated C-reactive

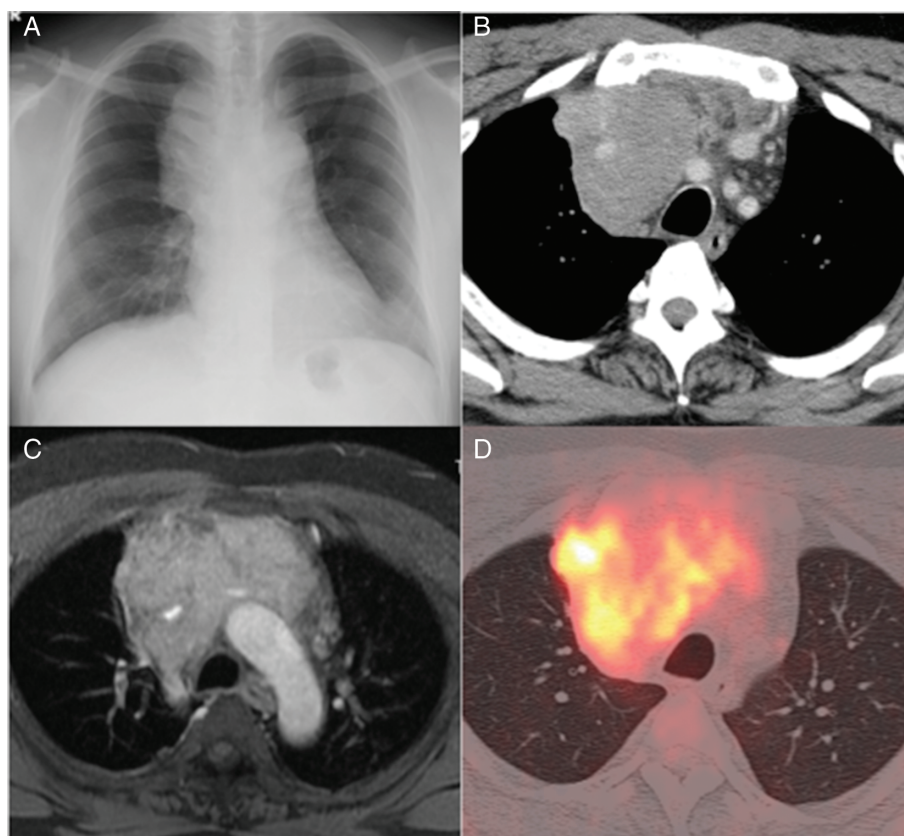


Figure 1. At the point of initial examination: (A) chest radiography, (B) chest contrast-enhanced computed tomography, (C) contrast-enhanced magnetic resonance imaging, and (D) fluorodeoxyglucose-positron emission tomography (standardized uptake value max 10.4, delayed phase 12.0).

protein (0.38 mg/dL; standard range <0.3 mg/dL) and elevated soluble interleukin-2 receptor (sIL-2R) (575 U/mL; standard range <496 U/mL) levels. Markers for lung cancer, immunoglobulin G (IgG) and IgG4 were within the normal range. Histoplasma antibody test yielded a negative result for histoplasmosis. CT-guided percutaneous needle biopsy for the mediastinum mass was performed using a 21 Gy needle. Pathological findings revealed infiltration of lymphocytes and plasma cells in a tight fibrous tissue, but no malignancies, leading to the diagnosis of FM. Additionally, video-assisted thoracoscopic biopsy was performed, and the same diagnosis was established.

During the following 2 months, the mediastinal mass gradually increased in size, and symptoms of dyspnoea on exertion progressed. Histoplasmic infection, tuberculosis, IgG4-related diseases, sarcoidosis, and collagen diseases were excluded; thus, FM treatment using systemic glucocorticoid therapy (60 mg/day of prednisolone) was initiated which reduced the mass size. However, when prednisolone dosage was decreased to 20 mg/day, the mass increased in size. Therefore, the dose was increased to 30 mg/day; however, the mass further increased in size. After 6 months of glucocorticoid therapy, percutaneous needle biopsy for the mass using a 17 Gy needle was performed again. The pathological finding was again

FM. Prednisolone (30 mg/day) was continued, but the mass further increased in size and the superior vena cava syndrome also exacerbated. After 4 months, sIL2R level increased to 1623 U/mL. Based on these clinical examinations and laboratory findings, we strongly considered the mass to be an ML. We performed a fourth percutaneous needle biopsy for the mass using a 17 Gy needle. The histology this time revealed large atypical lymphoid cells; immunohistochemistry revealed positivity for CD3, CD4, and part of CD30, and negativity for TdT, CD8, CD56, and CD20 (Fig. 2). These histological and immunohistochemical features led to the diagnosis of PTCL-NOS, after which, chemotherapy was administered. The mediastinal mass subsequently reduced in size.

Discussion

As in this case, patients with mediastinal ML, who were initially diagnosed pathologically with FM, have been reported, including two cases of nodular sclerotic Hodgkin's lymphoma [3] and a case of anaplastic large cell lymphoma [4]. In each case, multiple biopsies were performed, and finally, a definitive diagnosis was established using immunohistochemistry. These reported cases and

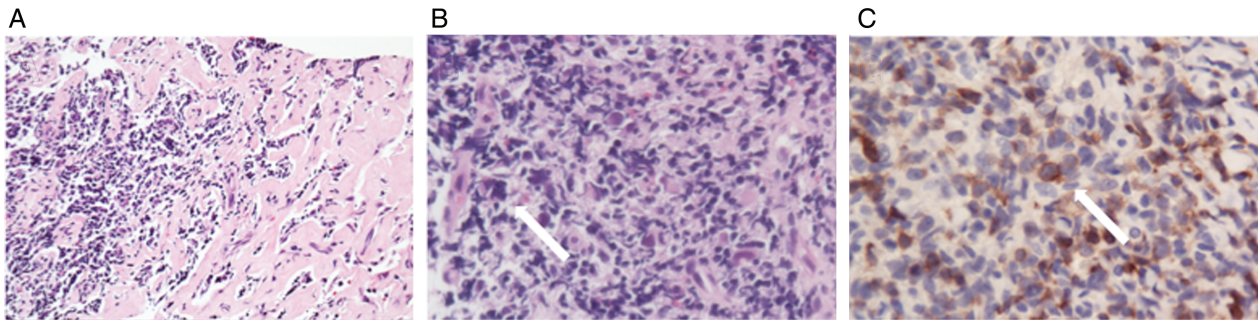


Figure 2. (A) Haematoxylin and Eosin staining of the mediastinal mass, 200 \times . (B) Haematoxylin and Eosin staining of the mediastinal mass, 400 \times . (C) Immunohistochemical staining demonstrated that the malignant lymphoma cells were positive for CD3 (white arrow), 400 \times .

our case emphasize on the consideration of ML as a differential diagnosis in cases of mediastinal masses. In this case, we could only find fibrous tissue in the first three biopsies; therefore, we had to diagnose it as FM. Finally, a fourth biopsy was performed, which demonstrated PTCL of the mediastinum.

We considered the pitfalls for this case. First, the malignant neoplasms often induce fibrosis [4] as a desmoplastic reaction. Second, the diagnosis of PTCL can be quite difficult [5], because reactive lymphocytes and tumour cells have the same phenotypes that it is difficult to distinguish them. Third, despite the inability to obtain adequate volume and quality of tissue samples for the pathologists, needle biopsy remains a better option than surgical biopsy for mediastinal masses after surgery. Repeated histological examinations may be needed if ML is suspected.

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Disclosure Statements

No conflict of interest declared.

Appropriate written informed consent was obtained for publication of this case report and accompanying images.

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