CASE REPORT

A unique case of primary effusion lymphoma-like lymphoma showing disappearance and recurrence of the body cavity effusion

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Abstract

Primary effusion lymphoma-like lymphoma (PEL-LL) is a rare B-cell lymphoma that the etiology remains unclear. We describe a case of PEL-LL with a pleuropericardial effusion. Diagnosis required long period of time as it followed a unique progress of disappearance and recurrence of the body cavity effusion. We finally had a diagnosis of B-cell lymphoma by the immunocytochemistry of effusion using the cell block procedure. Authors consider that it is valuable to actively try the cell block procedure at the time of the first drainage for early diagnosis, if the body cavity effusion due to the malignancy is suspected.

KEYWORDS
malignant lymphoma, pericardial effusion, primary effusion lymphoma-like lymphoma

1 | INTRODUCTION

Primary effusion lymphoma (PEL) is one of the diffuse large B-cell lymphomas (DLBCL) which is characterized by lymphomatous effusion in body cavities without detectable tumor masses.\(^1\) PEL is known as a rare disease that accounts for approximately 4% of all human immunodeficiency virus (HIV)-associated non-Hodgkin's lymphoma.\(^2\) All PEL cases have human herpes virus 8 (HHV-8) infection, and the 90% of the all cases also contain Epstein-Barr virus (EBV).\(^3\) Recently, some reports described PEL-like disease process in HHV-8 as negative cases. These diseases are referred to PEL-like lymphoma (PEL-LL).\(^4\)

2 | CASE PRESENTATION

A 75-year-old male was admitted to a local hospital for dyspnea and chest oppression with jugular venous distention. The blood pressure at the time of the admission was 119/92 mm Hg, and heart rate was 120 beats per minute. Chest computerized tomography (CT) scan showed a large pericardial and bilateral pleural effusion (Figure 1), and laboratory data were as follows (Table 1): the elevation of liver enzymes, mild renal dysfunction. There was no sign of hypoalbuminemia and cirrhosis. The antinuclear antibody, rheumatoid factor, thyroid-stimulating hormone, free T3, and free T4 were normal distribution. There was no finding of special note such ST elevation on electrocardiograph. Echocardiography revealed interventricular septum wall motion abnormality and pericardial effusion. We diagnosed the patient's condition as a circulatory insufficiency due to pericardial effusion, and he underwent drainage of pericardial and left pleural effusion, and the former did not appear again. These fluids were hemorrhagic effusion-doubted relation of malignant disease. Cytologic examination of pericardial and pleural effusion demonstrated large monotonous cells with an increased nuclear cytoplasmic (N/C) ratio (Figure 2), but no lymph nodes were enlarged, and his sIL-2R value was not high at 341 U/mL. Upper endoscopy and contrast-enhanced CT scan showed no evidence of malignancy in any of the patient’s organs, and the pleural effusion disappeared without using the medicine. Bacteriological examination
and mycobacterium tuberculosis polymerase chain reaction assay in pleural effusion were negative. Coxsackievirus A16 antibody titer in paired sera was over four times; therefore, a possibility of viral pericarditis was required as a differential diagnosis. Infective pericarditis was ruled out because he neither have a chest pain nor antecedent infection. Furthermore, electrocardiograph and echocardiography did not show any abnormal findings.

Eighty-three days after the first contact, the subject developed a further right pleural effusion again. We performed drainage and immunocytochemistry with the cell block procedure in this right pleural effusion which have shown the same atypical lymphocytes as the pericardial and left pleural effusion. Many cells were positive for cluster designation (CD) 79a and paired box-5, but were negative for CD4, CD5, CD8, CD10, CD20, CD30, B-cell lymphoma-6, AE1/AE3, and thyroid transcription factor-1 (Figure 3). Positron emission tomography-CT showed a marked increase in $^{18}$F-fluorodeoxyglucose (FDG) uptake in the right pleura, and we performed right pleural and pericardial biopsy. Pleural biopsy only showed inflammatory cells, but tissues from pericardial biopsy demonstrated that the atypical lymphocytes were positive for B-cell markers such as CD20, CD79a, and bcl-2. In addition, pleural effusion and pericardial tissue were negative for HHV-8 antibody. Based on the result of pericardial biopsy and clinical course, we diagnosed the patient with PEL-LL. Indeed, it was associated with B-cell neoplasm without HHV-8 infection, and high EBV antibody titer. We performed systemic chemotherapy with rituximab, pirarubicin, cyclophosphamide, vincristine, and prednisolone (R-CHOP therapy) in six courses. A definitive diagnosis for this patient took 15 months to achieve, and the patient showed no increase in body cavity effusion or complications.

**TABLE 1  Laboratory data of blood, cavity fluid, and pericardial tissue**

| Cell blood counts |  |
|-------------------|--|
| White blood cell | 820×10^3/μL |
| Red blood cell | 380×10^3/μL |
| Hemoglobin | 12.7 g/dL |
| Hematocrit | 37.9% |
| Platelet | 22.1×10^3/μL |

| Biochemistry |  |
|--------------|--|
| C-reactive protein | 5.14 mg/dL |
| Soluble interleukin-2 receptor | 341 U/mL |
| Aspartate aminotransferase | 231 IU/L |
| Alanine aminotransferase | 264 IU/L |
| Lactate dehydrogenase | 736 IU/L |
| Total protein | 6.7 g/dL |
| Albumin | 3.6 g/dL |
| Blood urea nitrogen | 27.2 mg/dL |
| Creatinine | 1.23 mg/dL |
| Brain natriuretic peptide | 61.6 pg/mL |
| Thyroid-stimulating hormone | 0.79 μU/mL |
| Free T3 | 1.72 pg/mL |
| Free T4 | 1.3 ng/mL |
| Human T-lymphotropic virus-1 antibody | Negative |
| Human immunodeficiency virus antibody | Negative |
| Helicobacter pylori antibody | 17.6 U/mL |
| Coxsackievirus A16 antibody titer in acute-stage single serum | <1:4 |
| Coxsackievirus A16 antibody titer in paired sera | 1:90 |
| EBV viral capsid antigen-IgG antibody titer | 1:160 |
| EBV EBV nuclear antigen-IgG antibody titer | 1:80 |
| Hepatitis B surface antigen | Negative |
| Hepatitis C virus antibody | Negative |
| Antinuclear antibody | Negative |
| Rheumatoid factor | Negative |

**Pleural effusion**

| Lactate dehydrogenase | 4983 IU/L |
| Bacteriological examination | Negative |
| Mycobacterium tuberculosis PCR assay | Negative |
| Human herpes virus-8 antibody | Negative |

**Pericardial effusion**

| Rivalta reaction | Positive |
| Specific gravity | 1.037 |
| Hyaluronic acid | 44 260 ng/L |

**Pericardial tissue**

| Human herpes virus-8 antibody | Negative |

3 | **DISCUSSION**

To date, few papers have investigated the clinical features and the treatment of PEL-LL patients who are generally elderly, express CD20

**EBV, Epstein-Barr virus.**

for pan-B-cell antigens, and have a slow prognosis for mortality.5,6 PEL has a strong prognosis for mortality during the early phase, whereas the literature includes numerous reports of favorable responses to
chemotherapy in patients with PEL-LL. It has been reported that etoposide, prednisolone, vincristine, cyclophosphamide, doxorubicin (DA-EPOCH therapy or CDE therapy), or ganciclovir is effective for PEL,8,9 but treatment-based evidence for PEL and PEL-LL has not yet been established. Expecting an effect of rituximab to CD20 antigen, we performed R-CHOP therapy.10 There was no recurrence of the body cavity effusion after chemotherapy, and it seemed that a constant effect was provided.

This case was suffered from a diagnosis of malignant lymphoma as the sIL-2R value was within the standard value, and it followed a unique progress of disappearance and recurrence of the body cavity effusion. The causes of the pericardial effusion as for the ratio that a malignant lymphoma accounted for were 6%, and an unidentified accounted for 9%. In addition, several reports have demonstrated that the sIL-2R value was low in patients with PEL-LL.12,13 It may be necessary to consider possibility of latent PEL-LL regardless of the sIL-2R value.

Terasaki et al.7 have reported disappearance of malignant cells by first drainage with PEL-LL, and it seems that performing secondary drainage becomes difficult. Thus, the cell block procedure which can make multiple specimens at the time of the first drainage in anticipation of the immunocytochemistry may be the best technique for examination of body cavity effusions when the case of relationship of malignant lymphoma cannot be denied. PEL-LL is a rare disease; it seemed that the primary care physician is the first one to contact the patient with the body cavity effusion, and it was considered as one of the differential diagnoses at the first contact.

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CONFLICT OF INTEREST
The authors have stated explicitly that there are no conflicts of interest in connection with this article.

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