CASE REPORT

HIV-associated primary effusion lymphoma presenting as a paracardial mass

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SUMMARY

Primary effusion lymphoma (PEL), a rare type of non-Hodgkin's lymphoma, is an AIDS-defining illness and always associated with human herpesvirus 8 (HHV-8). Classic presentations involve the pleural, pericardial or peritoneal cavities. Infrequently, extracavitary solid tumours develop. Treatment of PEL requires chemotherapy and highly active antiretroviral therapy (HAART).

We report a case of a 46-year-old man, who presented with right-sided chest pain, dyspnoea and night sweats. Evaluation revealed decreased breath sounds and dullness to percussion on the right side of the chest. Imaging demonstrated a 6.1 cm×6.3 cm right paracardial mass and right-sided pleural effusion. Pleural fluid was HHV-8 positive. The patient was diagnosed with PEL with extracavitary involvement and treated with chemotherapy and concurrent HAART.

This case is the first reported case of extracavitary paracardial involvement and adds new insight to the accepted treatment for PEL with extracavitary lesions.

BACKGROUND

There are few cases in the literature of primary effusion lymphoma (PEL) with extracavity involvement. The areas described in literature include the gastrointestinal (GI) tract, lungs, bone marrow, lymph nodes, central nervous system and only seven cases showed intracardiac involvement. Paracardial extracavitary involvement has never been described in the literature. Furthermore, this case is important because there are no prospective trials evaluating the treatment regimens of PEL with extracavitary masses; thus, the efficacy and outcome of the treatment can only be derived from case reports. This case will serve as an addition to the current literature and provide new insight on the treatment of PEL with paracardial extracavitary involvement.

CASE PRESENTATION

A 46-year-old man presented with 2 weeks of right-sided pleuritic chest pain and posterior lower rib pain. He described the pain as intermittent and sharp, relieved when sitting forward and associated with a non-productive cough, dyspnoea, fatigue and night sweats. The patient denied a history of trauma, fever, weight loss, recent travel or sick contacts. He had a 10-pack-year smoking history but quit 10 years prior to the current chest pain. He admitted to sexual intercourse with men, without the use of condoms.

Physical examination revealed tachycardia with decreased breath sounds over the right mid and lower lung fields with egophony, dullness to percussion and tenderness to palpation over the right lower ribs. Heart sounds were rapid but audible. Left anterior cervical chain adenopathy was palpated.

CT of the chest with contrast demonstrated a 6.1 cm×6.3 cm right paracardial mass extending into the adjacent anterior epicardial fat pad and traversing the pericardium, with possible invasion into the myocardium at the anterolateral margin of the right ventricular and right atrial junction (figure 1). There was an associated moderate right-sided pleural effusion. Transthoracic echocardiogram demonstrated a normal ejection fraction and a loculated pericardial effusion with a right atrial paracardial mass.

Cardiothoracic surgery was consulted for possible biopsy of the paracardial mass; however, it was felt that the invasive procedure could be done if the pathology from the pleural fluid did not confirm a diagnosis.

Immunohistochemical analysis and flow cytometry of the pleural fluid stained positive for CD30, CD38, CD138, MUM1, PAX-5, EMA, HHV-8, κ and Epstein-Barr virus, and negative for CD3, CD19, CD20, CD45, CD71m and CD79a (figure 2). The patient was diagnosed with PEL, with extracavitary involvement presenting as a paracardial mass. Bone marrow core biopsy and aspirate showed hypocellular marrow with no evidence of lymphoma.

Figure 1 CT of the chest with contrast demonstrating a 6.1 cm×6.3 cm right-sided paracardial mass exerting a mass effect on the myocardium. A right-sided pleural effusion and resultant compressive atelectasis of the right lower lobe also visible.

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Figure 2 Pleural fluid analysis showing heterogenous malignant lymphocytic population with abundant cytoplasm and prominent nucleoli (A) which is negative for CD20 (B) and positive for MUM1 (C), human herpesvirus-8 (D), EMA (E) and demonstrates Epstein-Barr virus (F).

As part of the evaluation of the anterior paracardial mass, the patient was tested for HIV. He was newly diagnosed with AIDS having a CD4+ T-cell count of 90 cells/L and a viral load of greater than 72 000 copies/mL.

DIFFERENTIAL DIAGNOSIS

Primary cardiac tumours:

► Benign cardiac tumours:

- Myxoma
- Lipoma
- Papillary fibroelastoma
- Rhabdomyoma
- Fibroma
- Angioma
- Teratoma

► Malignant cardiac tumours

- Angiosarcoma
- Rhabdomyosarcoma
- Leiomyosarcoma
- Liposarcoma
- Osteosarcoma
- Fibrosarcoma
- Malignant fibrous histiocytoma

Secondary cardiac tumours from metastatic disease most commonly from melanomas, lung cancer, breast cancer, renal cancer and lymphomas.

TREATMENT

The patient was treated with combination chemotherapy, cyclophosphamide, doxorubicin, vincristine and prednisone (CHOP), and highly active antiretroviral therapy (HAART) with lamivudine/zidovudine and raltegravir.

OUTCOME AND FOLLOW-UP

After two cycles of chemotherapy over 5-weeks, follow-up CT of the chest with contrast revealed near-complete resolution of the right paracardial mass with only a focal area of pericardial thickening measuring 13 mm (figure 3). After completion of six

cycles of CHOP and HAART, repeat staging positron emission tomography/CT showed no fluorodeoxyglucose uptake in the area that previously showed the mass (figure 4).

DISCUSSION

PEL is a rare type of non-Hodgkin's lymphoma, most commonly seen in the setting of HIV and is considered an AIDS-defining illness.^{1–3} PEL also occurs in other immunodeficiency conditions, such as transplant recipients.⁴ Known as a 'body cavity-based lymphoma', PEL is an HHV-8-associated, large B-cell neoplasm that occurs as an effusion classically in the pleural, pericardial or peritoneal cavities, and is not associated with a solid tumour.⁵

Clinical presentation usually involves B symptoms, including fevers, night sweats and weightloss. Diagnosis is by lymphomatous effusion fluid analysis, which display tumour cells with

Figure 3 CT of the chest with contrast revealing a localised pericardial thickening measuring 13 mm at site of prior mass and interval resolution of the right pleural effusion.

Figure 4 Repeat staging positron emission tomography/CT after six complete cycles of chemotherapy showing no fluorodeoxyglucose uptake in the area that previously showed the mass.

large basophilic cytoplasm, irregular nuclei and prominent nucleoli. Cells commonly express markers of lymphocytic activation such as CD45, CD30, CD38, CD71 and human leucocyte antigen DR, and markers of plasma cell differentiation, such as CD138. Markers specific to B and T cells are usually absent.^{6 7}

Treatment of PEL requires the combination of chemotherapy with HAART. The only agents with activity specifically against HHV-8 include ganciclovir and cidofovir.⁸ Chemotherapy with CHOP is the first-line treatment. However, modified regimens of hyperfractionated cyclophosphamide, vincristine, doxorubicin, dexamethasone (Hyper-CVAD) or CHOP with etoposide (EPOCH) have been utilised as well. In rare cases where PEL cells are CD20, rituximab is added to the regimen. Median survival with chemotherapy is around 5–6 months, which is double of that seen without treatment.^{2 9} One-year survival is less than 40%. However, if patients achieve complete resolution following treatment, the 1-year survival more than doubles. Further, prognosis is associated with the number of body cavities involved; specifically, a median of 18 months for single cavity involvement as compared to 4 months with two plus cavity involvement.¹⁰

Infrequently, extracavitary development of solid tumours arise in association with PEL. The most common sites include skin, lungs, the GI tract and the central nervous system.^{11–16} Prognosis has not yet been delineated with respect to these unique presentations. In a handful of cases, cardiac involvement has been identified, all intracardiac in origin.^{11 17–21} We describe the first reported case of a patient with PEL and an associated paracardial mass.

In 2002, Maric *et al*²⁰ described the first case of an extracavitary site involving the heart, specifically an intracardiac mass within the atria in an HIV-positive patient with PEL and treatment with CHOP. Tanaka *et al* discovered interatrial septal cardiac infiltration in an HIV-positive patient with PEL. Complete remission with long survival up to 17 months was achieved using HAART with a modified EPOCH regimen.²¹ Kriekard *et al*¹⁸ described the use of EPOCH with biatrial intracardiac masses resulting in dramatic tumour size reduction and improved cardiac function. Henao-Martinez *et al*¹⁷ reported similar results using EPOCH with substantial reduction in intracardiac mass size and remission up to 8 months following diagnosis.

Currently, CHOP is considered the first-line treatment for PEL. CHOP and EPOCH were effective in producing remission in the few case reports published regarding PEL and associated intracardiac masses. Our patient has had a highly favourable response to treatment further validating the success of HAART in combination with CHOP.

Learning points

- ▶ Primary effusion lymphoma with extracavitary lesions must be considered in a patient with a paracardial mass.
- ▶ Patients who present with an isolated cardiac-associated mass with localised effusion need to be evaluated for HIV.
- ▶ Primary effusion lymphoma with paracardial extracavitary involvement is treated similarly to treatment described in the literature for intracardiac extracavitary involvement, which includes a combination of chemotherapy with CHOP and highly active antiretroviral therapy.

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Competing interests None.

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