

Cardiac lymphoma successfully treated with high dose chemotherapy followed by autologous hematopoietic stem cell transplantation

We report a patient with cardiac lymphoma (CL) successfully treated with high dose chemotherapy followed by autologous hematopoietic stem cell transplantation (AHSCT). A 19-year-old female suffering from dry cough and chest pain was treated with combined chemotherapy under a diagnosis of diffuse large B-cell type non-Hodgkin's lymphoma (NHL) by open-thoracic biopsy. After obtaining complete remission (CR), she received high dose chemotherapy with AHSCT, and since then has been in CR for 7 years. Although many reports have demonstrated the poor prognosis of CL, the present report suggests that intensive therapy with AHSCT enables improved outcomes in patients with CL. The incidence of patients displaying NHL accompanied by cardiac symptoms is rare,¹ and the prognosis for CL is generally poor.² We report a patient with CL successfully treated using high dose chemotherapy followed by AHSCT.

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A 19-year-old female presented to a local hospital with a dry cough and chest pain in September 1994. Computed tomography (CT) revealed a large mediastinal tumor (80x70 mm²). Open thoracic biopsy for pathological examination revealed ML (NHL, diffuse large B-cell type) (Figure 1 A and B). Radiotherapy (40 Gy) at that hospital decreased tumor size. After 3 months, two-dimensional transthoracic echocardiography (Figure 2A) and magnetic resonance imaging (MRI) (Figure 2B) revealed tumor regrowth (45_40 mm²) to the left atrium. She transferred to our hospital in June 1995 and was treated with combined chemotherapy (a combination of vincristine 1 mg/m² once weekly i.v. in week 1 – 4 and 8, adriamycin 40 mg/m² once weekly i.v. in week 1, 3 and 8, cyclophosphamide 350 mg/m² once weekly in week 1 – 4, 500 mg/m² once weekly in week 8, prednisolone 40 mg/m² twice weekly p.o. on week 1 – 4 and 8, etoposide 150 mg/m² once weekly in week 5 and 6, procarbazine 100 mg everyday p.o. in week 5 – 6, methotrexate 400 mg/m² once weekly in week 7). Complete remission (CR) was obtained after 2 courses. In October 1996, she received high dose chemotherapy (a combination of ranimustine 200 mg/m² once daily i.v. on day 1 and 6 (total dose 400 mg/m²), carboplatin 300 mg/m² once daily i.v. on day 2 – 5 (total dose 1200 mg/m²), etoposide 500 mg/m² once daily i.v. on day 3 – 5 (total dose 1500 mg/m²) and

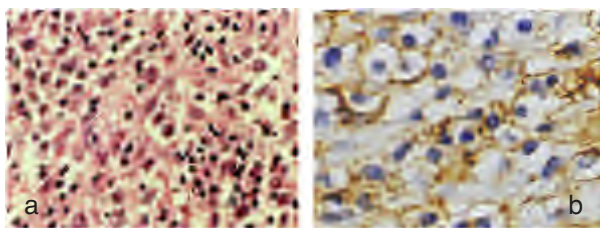


Figure 1 Pathological of lymph node (a) Hematoxylin-eosin, (400 x) and (b) immunological staining by B220 antibody (400 x) showing diffuse, large, B-cell type non-Hodgkin's lymphoma.

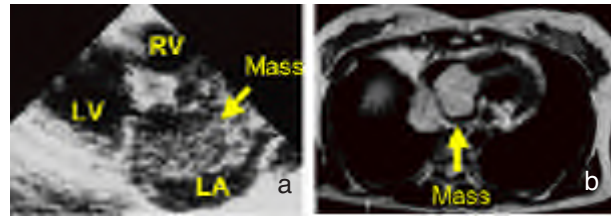


Figure 2. (a) Transthoracic 2D echocardiography and (b) Magnetic resonance imaging (MRI). They show a 45 x 40 mm² hyperechoic mass occupying the lower part of the left atrium. LA; left atrium, LV; left ventricle cardiac lymphoma, RV; right ventricle cardiac lymphoma.

cyclophosphamide 50 mg/kg once daily i.v. on day 6 and 7 total dose 100 mg/kg) with AHSCT (CD34 positive cells; 2.78x10⁶ /kg), and since then has been in CR for 7 years.

PCL, defined as NHL involving only the heart and/or pericardium or as a lymphoma with the bulk of the tumor located in the heart³ is extremely rare in immunocompetent patients, accounting for 1.3% of primary cardiac tumors,⁴ and 0.5% of all extranodal lymphomas. However, the incidence of cardiac infiltration in NHL is from 10 to 20% in autopsy studies of patients with malignant lymphoma (ML).⁵ So cardiac involvement in disseminated lymphoma is more frequent. The incidence of lymphoma or atypical lymphoid proliferation associated with immunosuppression by HIV infection or in transplant recipients has recently increased.⁶

The rarity and heterogeneous clinical presentation of CL make diagnosis difficult. Until the CL grows in size to block cardiac output or cause embolization, the CL remains asymptomatic. The present case had chest pain and dry cough at onset. Chest pain is the most common symptom occurring in 26%, dyspnea in 20%, superior vena caval syndrome in 9%, congestive heart failure in 6%, and sudden death in 3%. Hemiparesia due to embolization occurs in 9%. Constitutional symptoms are reported in 17%.⁷

Two-dimensional transthoracic echocardiography clearly demonstrated a tumor mass occupying the lower part of the left atrium. This clinical technique is a widely used diagnostic examination for the detection of heart tumors. Intracavitary tumor masses were reported in 74% of cases in the literature⁷ using this technique. Therefore this technique should be the first line investigation in malignant lymphoma whenever a cardiac tumor is suspected.⁸

Pathologically, diffuse B-cell lymphoma, mainly of large cell subtype, according to the WHO classification is observed in most cases (near 80%). The prognosis of PCL is generally poor.³ Since 1970, chemotherapy, mainly CHOP, has been used in 31 out of 66 patients with a median survival of 7 months (range 0 – 48 months).⁹ Of the reviewed cases, 10 patients underwent surgery with no evidence of improvement in survival. Prompt anthracycline-based chemotherapy was administered in 51%

of the reviewed cases, resulting in 61% of complete remission (mean follow-up times 17 months; range 3 – 40 months). Radiation therapy was delivered to 17% of patients, alone or combined with chemotherapy, with a further improvement in survival. A tumor dose of 20 to 40 Gy is usually delivered, with radiation therapy alone.

The present case received chemotherapy followed by ASCT and is alive after 7 years. Whatever the subsequent treatment, many reports have demonstrated the poor prognosis of CL, and, approximately 60% of patients died of their tumor 1.8 months after diagnosis. However, the present report of successful chemotherapy followed by ASCT suggests that intensive therapy enables improved outcomes in patients with CL.

*K. Arimura, N. Arima, H. Hamada, T. Kukita,
K. Matsushita, C. Tei*

*First Department of Internal Medicine, Faculty of Medicine,
Kagoshima University, Kagoshima, Japan*

Correspondence: Dr. Naomichi Arima

*First Department of Internal Medicine, Faculty of Medicine,
Kagoshima University, Sakuragaoka, Kagoshima, Japan
Tel: +81-99-275-5318 Fax: +81-99-265-8447*

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