

Interleukin 6 Activity Associated with a Cardiac Lymphoma

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ABSTRACT

Primary cardiac B-cell lymphoma is an extremely rare heart tumor that may be difficult to diagnose because of non-specific clinical manifestations. Cardiac myxomas and mediastinal lymphomas show increased levels of serum cytokines, which correlate with symptoms and tumor size. We present a case of an intracardiac large B-cell lymphoma in a 75-year-old woman who had high serum levels of interleukin 6 that decreased after tumor excision. These data suggest a possible correlation between cardiac B lymphoma symptoms and interleukin 6 overproduction.

INTRODUCTION

Primary cardiac lymphoma is a rare entity (1.3% of cardiac tumors) and has been described as a lymphoma involving only the heart and/or the pericardium [Lam 1993]. Diagnosis is late, often postmortem, and carries a poor prognosis. Patients may present with signs of heart failure, arrhythmias, and/or pericardial effusion, depending on the tumor site. We report a case of a patient with a large B-cell cardiac lymphoma with mediastinal lymphadenopathy and high levels of serum interleukin 6.

CASE REPORT

A 75-year-old woman was admitted with dyspnea (New York Heart Association functional class III), fever, fatigue, and a recent history of heart failure. A preoperative echocardiography evaluation showed a large mass in the left and right atria with partial obstruction of the tricuspid valve and superior vena cava, with an aspect consistent with a myxoma diagnosis. In addition, the patient had mediastinal lymphadenopathy and an adrenal mass. The operative risk as evaluated by EuroSCORE was 10%.

The operative procedure involved complete excision of the tumor (Figure 1), which required removal of the atrial septum, a large portion of the left atrium, and most of the right atrium. The left atrium and the atrial septum were reconstructed with glutaraldehyde-treated autologous pericardium, and the right atrium was replaced with bovine pericardium. A histologic examination revealed a diffuse B-cell lymphoma (Figures 2 and 3).

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The patient had a standard postoperative course and was discharged without fever on day 7 in New York Heart Association functional class II. The patient refused a follow-up at our clinic because it was a long distance from her home.

A 5-mL blood sample was obtained before surgery and at 24 and 48 hours after surgery. The interleukin 6 serum concentration was measured with an enzyme-linked immunosorbent assay (Invitrogen/BioSource, Camarillo, CA, USA).

The patient had an elevated interleukin 6 concentration before the procedure (91.1 pg/mL), compared with the concentrations for 5 healthy controls (mean, 2.1 ± 0.4 pg/mL). The level had rapidly decreased by 24 and 48 hours after the operation (46.7 pg/mL and 36.1 pg/mL, respectively), suggesting that this cytokine was actively released from the cardiac lymphoma.

COMMENT

Although abnormal production of cytokines has been demonstrated in other cardiac tumors, such as myxomas and Castleman disease [Frizzera 1988; Mochizuki 1998], no data on circulating levels of interleukin 6 in B-cell cardiac lymphoma have been published. Interleukin 6 is a potent B-cell differentiation and proliferative factor, and, in the case of myxomas, constitutional symptoms and immunologic abnormalities have been attributed to an overproduction of this cytokine [Yee 1989]. Of considerable interest is the fact that interleukin 6 can promote the growth of plasmacytomas,



Figure 1. Intraoperative image of a primary cardiac B-cell lymphoma of the left and right atrium.

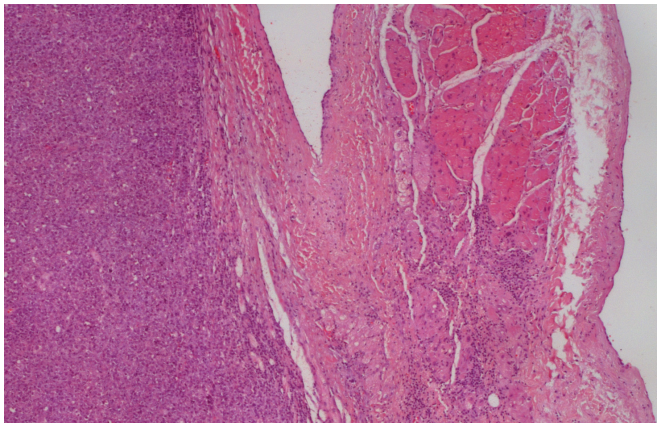


Figure 2. Histologic finding showing normal cardiomyocytes on the right side and lymphoma cells on the left (hematoxylin-eosin, original magnification $\times 4$).

myelomas, and T- and B-cell lymphomas, sometimes in an autocrine manner [Nacinovic-Duletic 2008].

Removal of cardiac myxomas reduces the concentration of circulating interleukin 6, confirming its tumoral origin and its implication in myxoma symptoms (fever, fatigue, asthenia). This case demonstrated a similar pattern of a reduction of fatigue and normalization of body temperature by 2 days following surgery. Further studies will be necessary to confirm the relationship of cardiac lymphoma and cytokines.

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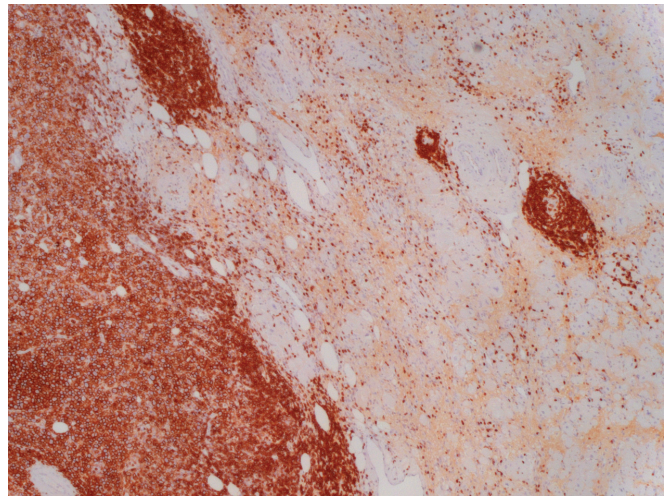


Figure 3. Immunohistochemistry of a cardiac specimen showing neoplastic cells staining positively for leukocyte common antigen (original magnification $\times 4$).

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