

Rapidly progressive cardiac failure due to lymphomatous infiltration of the myocardium

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Summary: A case of myocardial infiltration by lymphoma causing rapidly progressive cardiac failure is described. The clinical and pathological features are detailed and the rarity of this mode of presentation of cardiac involvement by lymphoma is emphasized.

Introduction

Cardiac involvement occurs in 20–25% of patients with malignant lymphoma.^{1,2} This is usually in the context of widespread disease although rare primary lymphomas of the myocardium have been reported.^{3,4} The pattern of infiltration of the heart varies but the presence of lymphoma is usually asymptomatic in life and only diagnosed at autopsy.² We report a case of rapidly progressive cardiac failure due to lymphomatous infiltration of the left ventricular myocardium.

Case report

A 49 year old male was admitted as an emergency with a one week history of progressive dyspnoea, initially on exertion and then at rest. Associated with this was a cough productive of frothy sputum, abdominal distension and ankle swelling.

His past medical history was of follicular lymphoma of the spleen and adjacent lymph nodes diagnosed in 1981 with transformation to a high grade diffuse centroblastic lymphoma in 1987. The latter was demonstrated in bone marrow, testis and cerebrospinal fluid and he was treated with several pulses of chemotherapy. He was a non-insulin dependent diabetic.

On examination he was dyspnoeic with peripheral and pulmonary oedema, hepatomegaly and ascites noted. Investigations revealed anaemia and thrombocytopenia which were treated with red cell and platelet transfusions.

Despite the clinically severe cardiac failure with a very poorly functioning left ventricle, no specific

electrocardiographic changes were noted. His condition was complicated by gastrointestinal bleeding. Inotropic support was given for the left ventricular malfunction and transfusions of whole blood and platelets were continued. The patient did not respond to these measures and he died in severe cardiac failure two days after admission.

Pathology

The splenectomy in 1981 yielded an enlarged spleen substantially replaced by a follicular lymphoma. Bone marrow biopsy and unilateral orchidectomy during 1987 showed transformation to a high grade diffuse centroblastic lymphoma. The latter is illustrated in Figure 1. A cerebrospinal fluid sample taken after an episode of ataxia contained abnormal lymphoid cells showing kappa light chain restriction consistent with central nervous system involvement with lymphoma.

At autopsy the significant findings were in the heart, lungs, bone marrow and small bowel. The heart weighed 368 g. Both atria were normal and the right ventricle was mildly dilated. Approximately 40% of the circumference of the left ventricular myocardium was replaced by firm, pale tissue. This extended from the pericardium where it was most pronounced, into the myocardium and focally to the endocardial surface. Histology showed infiltration of the myocardium and pericardium by a large celled non-Hodgkin's lymphoma of centroblastic type (Figure 2). The coronary arteries were only minimally atheromatous and no ischaemic damage to the myocardium was detected. No myocardial or endocardial changes indicating long standing heart failure were found and there was no outflow tract obstruction.

Both lungs were congested and severely

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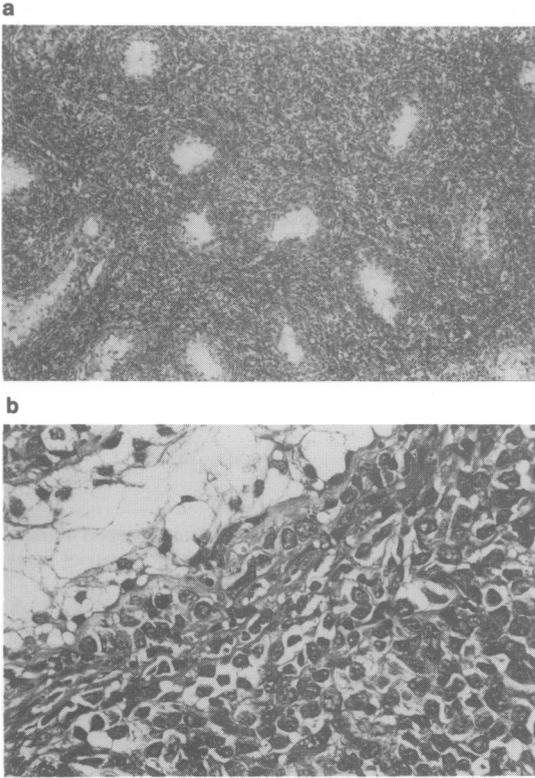


Figure 1 (a) Low power view of infiltration of the testis by lymphoma. Residual seminiferous tubules are seen (H & E \times 25). (b) A high power view to illustrate the high grade, large celled nature of the lymphoma (H & E \times 250).

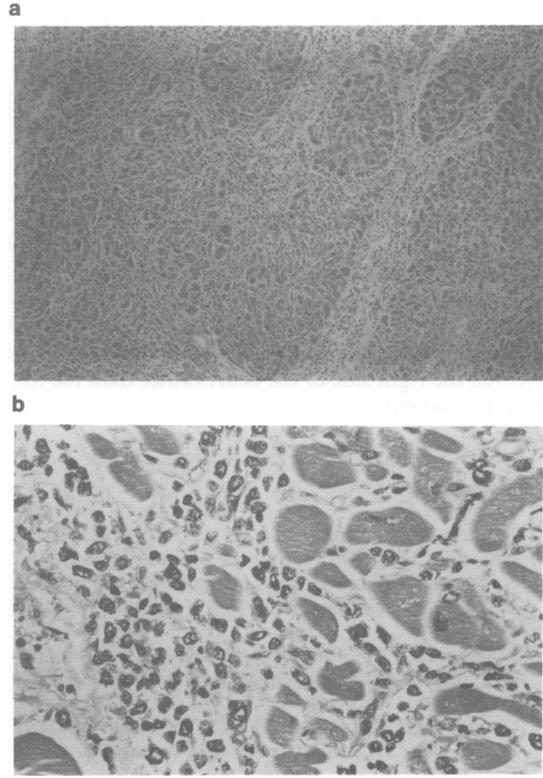


Figure 2 (a) Infiltration of the myocardium by lymphoma (H & E \times 25). (b) A high power view to demonstrate the pleomorphism and large size of the infiltrating cells (H & E \times 250).

oedematous. Lymphomatous infiltration was present bilaterally in a characteristic interstitial distribution with peribronchial and perivascular accentuation. No evidence of pulmonary hypertension was found.

Extensive bone marrow infiltration was demonstrated and many discrete ulcerated nodules of lymphoma were present within the wall of the small bowel. Bleeding had occurred from the latter and from several acute gastric and duodenal erosions.

Discussion

Cardiac involvement in systemic lymphoma is a relatively common occurrence accounting for 9% of cases of metastatic malignancy to the heart in autopsy studies.² The reported frequency of infiltration of the heart in patients with systemic lymphoma varies from 9% to 24%.^{1,2} Despite this, symptoms and signs

reflecting cardiac involvement are distinctly unusual. McDonnell and co-workers² found only 2 patients in their series of 150 cases of lymphoma who died a cardiac death, with the diagnosis of lymphomatous infiltration of the heart apparent prior to death in only one. Six of the 196 patients reported by Roberts and co-workers¹ had evidence of cardiac dysfunction but the underlying cause was inapparent until autopsy examination.

The pattern of cardiac involvement varies from nodular intracavitary growths causing outflow tract obstruction^{5,6} to a more infiltrative spread in usually the right but also the left side of the heart.⁴ A predominantly pericardial distribution has also been reported. To explain these different patterns of infiltration three modes of spread to the heart have been suggested: retrograde lymphatic, haematogenous and direct extension.² The last of these has been found most destructive with the highest frequency of cardiac dysfunction. The majority of lym-

phomas involving the heart are non-Hodgkin's in type.

The case we describe is unusual in three respects. Firstly the rapidity of progression of the cardiac failure is rare. Similar intractable cardiac failure has been reported with primary and metastatic lymphoma^{3,4,7,8} in the heart but it is distinctly uncommon. Secondly, the pattern of infiltration of the heart suggests a retrograde lymphatic mode of spread.² McDonnell *et al.*² found this pattern did not produce clinical signs but rather direct extension from mediastinal disease was most destructive. We found no evidence of such spread in our case. Thirdly, the majority of reported cases giving rise to symptoms involved the right side of the heart rather than the left as in our patient.

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We describe a very uncommon cause of rapidly progressive, intractable cardiac failure. Chemotherapy for lymphomatous infiltration of the heart is at least potentially curative although cardiotoxicity may be a problem with, especially, doxorubicin.⁹ Scott and Garvin,¹⁰ writing in 1938, pointed out that the most important sign of cardiac invasion by malignant tumour is congestive cardiac failure without other apparent cause. This case serves to emphasize this point and illustrates a need for a high index of suspicion of cardiac infiltration in patients with a known lymphoma who develop rapid congestive heart failure.