Relapse of lymphoma in the heart after a 10-year remission

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Summary

A 71-year-old woman presented with intractable cardiac failure 10 years after receiving treatment for lymphoma.

Extensive investigations failed to demonstrate a recurrence of her disease, but resolution of her cardiac failure following a trial of chemotherapy and subsequently a cross-sectional echocardiogram suggested intracardiac relapse. This was later confirmed at autopsy. Cardiac metastases should be suspected in patients with malignant disease who develop signs or symptoms related to the heart.

KEY WORDS: lymphoma, follicular centre cell, centroblastic, diffuse.

Introduction

Ante-mortem diagnosis of secondary cardiac tumours is made only infrequently and for cardiac involvement to be the sole clinical feature of the disease is extremely rare. Pericardial infiltration is now recognized more frequently, but myocardial or endocardial involvement is usually an autopsy diagnosis. Carcinoma of the breast, carcinoma of the bronchus, malignant melanoma, lymphoma and leukaemia produce cardiac infiltration most commonly and this should be suspected if patients with any of these malignancies develop sudden onset of tachycardias, arrhythmias or congestive cardiac failure, particularly if the latter is resistant to treatment with digoxin and diuretics (Malaret and Aliaga, 1968). A patient in whom late relapse of lymphoma manifested itself as cardiac failure is described.

Case report

A 71-year-old woman was admitted to hospital in October 1981 with a one-year history of general ill health, increasing shortness of breath, a dry cough, anorexia and weight loss of approximately 10 kg. Ten years previously she had had an excision biopsy of an

enlarged lymph node in the left groin and the histology was interpreted as reticulum cell sarcoma. She had been treated with local radiotherapy and was subsequently well, with no evidence of recurrence.

On examination she looked unwell and had a temperature of 37.5°C. There was no palpable lymphadenopathy or hepatosplenomegaly. The pulse rate was 110/min, regular and the blood pressure was 130/80 mmHg. The jugular venous pressure was not elevated and no cardiac murmurs or added sounds were audible, although the apex beat was displaced slightly laterally. The remainder of the examination was unremarkable.

The haemoglobin was 10.8 g/dl with a MCV of 86 fl and the white cell count was 8.4×10^9 /litre with a normal differential count. The erythrocyte sedimentation rate was 80 mm in the 1st hr. Urea and electrolytes, serum thyroxine, serum protein electrophoresis and liver function tests were all normal and blood and urine cultures were sterile. The chest roentgenogram showed a moderately enlarged heart and clear lung fields and an electrocardiogram showed a sinus tachycardia with very low voltage complexes and a normal axis. An initial diagnosis of idiopathic cardiomyopathy was made.

Two weeks after admission she developed signs of rapidly worsening biventricular failure. The pulse rate rose to 130/min and the blood pressure fell to 90/60 mmHg, with poor peripheral perfusion and oliguria. The liver enlarged to 4 cm below the costal margin and was non-pulsatile and non-tender. The central venous pressure, which was originally +4.5 cm water rose rapidly to +13 cm water and treatment with digoxin and frusemide produced little improvement. In view of her rapid deterioration and past history of lymphoma, she was treated with COP chemotherapy (cyclophosphamide 1 g i.v.; vincristine 2 mg i.v.; prednisolone 40 mg daily for 5 days). A rapid and dramatic improvement in her clinical state

ensued, the central venous pressure falling to normal and the blood pressure rising to 140/80 mmHg.

In November 1981 she was well and clinical and radiographic examination, including a lymphangiogram, was normal. A liver biopsy showed dilatation of centrilobular sinusoids compatible with congestive cardiac failure, but no evidence of lymphoma. A bone marrow trephine biopsy was normal and surface marker studies on peripheral blood and marrow lymphocytes failed to reveal a monoclonal population. In December 1981 she was readmitted as an emergency with a 2-day history of palpitations, shortness of breath and a dry cough. On examination she was cachectic and there were signs of bilateral pleural effusions. The jugular venous pressure was elevated to 4 cm above the sternal angle and there was a sinus tachycardia of 140/min. On this occasion a faint tricuspid diastolic murmur was audible. A chest roentgenogram confirmed the presence of bilateral pleural effusions and again showed cardiomegaly. Microscopy of the pleural effusions and again showed cardiomegaly. Microscopy of the pleural fluid showed normal macrophages and scanty lymphocytes only and cultures were sterile. Cross-sectional echocardiography was performed and showed a moderately large tumour mass arising from the free right atrial wall and also a hypokinetic right ventricle (Fig. 1). A second course of COP chemotherapy again produced prompt clinical improvement, but a month later signs of cardiac decompensation reappeared and the patient died.

Autopsy examination revealed a massively enlarged heart (weight 0.65 kg) in which the right atrium and right ventricle were extensively replaced with tumour. A tumour mass was protruding into the cavity of the right atrium. Tumour deposits were also present on the parietal pleura and retrosternally but none was found below the diaphragm.

The histological appearances were interpreted as those of follicular centre cell lymphoma, centroblastic, diffuse, (Kiel classification) (Gerard-Marchant *et al.*, 1974). Comparison of the sections with those obtained 10 years earlier showed identical appearances.

Discussion

Lymphoma is one of the commonest tumours to metastasize to the heart and Roberts, Glancy and DeVita (1968) in a series of 196 patients with lymphoma, found evidence of cardiac metastases at autopsy in 24%. Tumour deposits were observed on gross examination of the heart in slightly more than half of the cases; in the remainder lymphoma was detected only after study of histological sections. The incidence of dyspnoea, chest pain, effusions into

body cavities, precordial murmurs, ventricular gallops, oedema and electrocardiographic disturbances was similar in patients with and without cardiac lymphoma and in only 10% of cases could clinical features of cardiac dysfunction during life be attributed to lymphomatous involvement of the heart.

Symptoms and signs resulting from cardiac infiltration are, of course, related to the layer of the heart involved. Pericardial infiltration is recognized most frequently and produces chest pain, pericardial effusions with or without tamponade, constrictive pericarditis and arrhythmias. Myocardial and endocardial deposits tend to be more occult but may produce dysrhythmias, including heart block, embolism or obstruction (Roberts *et al.*, 1968). Lymphoma in the right atrium causing tricuspid valve obstruction and right heart failure has been reported occasionally, but is rare (Olsen, Bach-Nielsen and Piper, 1962; Garfein, 1976). In the patient described the diagnosis was made particularly difficult by the absence of detectable disease elsewhere and by the long disease-free interval. A striking response to chemotherapy supported the presumptive diagnosis and further evidence was provided by cross-sectional echocardiography. Angiography and endomyocardial biopsy are also useful diagnostic techniques, the latter being especially valuable in excluding atrial myxoma which demands surgical treatment (Johnson and Popple, 1980).

Diagnosis of cardiac metastases in patients with lymphoma is important because radiation therapy may produce useful palliation. In one series, over half of the patients so treated responded and some lived free of cardiac symptoms, for more than a year (Cham *et al.*, 1975). Terry and Kligerman (1970) reported 7 patients with cardiac involvement from lymphomas and leukaemias who were treated with radiotherapy. Two patients (both with Hodgkin's disease involving the pericardium) were alive and apparently disease-free at 2 years and year, respectively, and 3 of the remaining patients achieved excellent palliation. Response of cardiac lymphoma to chemotherapy has also been documented (Garfein, 1976; Conde *et al.*, 1975). This was clearly the case in our patient, and the mechanism was probably relief of tricuspid valve obstruction.

However, although the clinical response to chemotherapy was gratifyingly prompt and dramatic, the patient died 1 month after her second course of treatment. The outcome of this case is similar to that of two previously reported patients with non-Hodgkin's lymphoma involving the heart; both had short survivals despite well-documented initial responses to chemotherapy (Garfein, 1976; Conde *et al.*, 1975).

FIG. 1. Cross-sectional echocardiogram showing tumour mass (arrowed) in right atrium (RA). RVOT=right ventricular outflow tract; Ao=aorta; LA=left atrium.

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