Short Communications

Echocardiographic Detection of Kaposi's Sarcoma Causing Cardiac Tamponade in a Patient with Acquired Immunodeficiency Syndrome

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Summary: Pericardial effusions are common in patients with acquired immunodeficiency syndrome (AIDS). The differential diagnosis is diverse, and in most cases the etiology cannot be established. A cardiac tamponade was diagnosed in a 32-year-old male with AIDS and systemic Kaposi's sarcoma. Transthoracic echocardiography revealed a large pericardial effusion with right atrial collapse and a mobile multilobular mass at the apex protruding into pericardial space. Autopsy showed that this mass was Kaposi's sarcoma confined to the epicardial fat. This is the first case of cardiac Kaposi's sarcoma detected premortem by echocardiography.

Key words: acquired immunodeficiency syndrome, cardiac tamponade, echocardiography, pericardial effusion, Kaposi's sarcoma

Introduction

Pericardial effusion is frequently detected by echocardiography in patients with acquired immunodeficiency syndrome (AIDS).^{1,2} Patients may be asymptomatic or present with features of acute pericarditis or cardiac tamponade.^{1,2} The underlying etiology is not always apparent. In addition to heart failure and neoplastic effusions, a wide variety of infectious agents (viral, bacterial, mycobacterial, mycotic, and proto-

zoal) may cause pericardial effusion. Autoimmune or non-specific inflammation has also been implicated. While the echocardiogram is sensitive in detecting the presence of pericardial effusion, the etiology usually is not suggested by the echocardiogram. A pericardial mass detected by an imaging technique has not been reported in patients with AIDS and pericardial effusion.

We report a patient with advanced AIDS in whom a large pericardial effusion, with signs of cardiac tamponade and an apical epicardial mass, was detected by two-dimensional (2-D) echocardiography. The echocardiographic findings were suggestive of a neoplasm. Autopsy confirmed the diagnosis of disseminated Kaposi's sarcoma involving the pericardium. This is the third report in which Kaposi's sarcoma of the pericardium was diagnosed premortem.^{3,4} To our knowledge, this is the first case report in which the tumor was detected by echocardiography.

Case Presentation

A 32-year-old man with advanced AIDS and systemic Kaposi's sarcoma was admitted to the hospital for evaluation of progressive dyspnea and development of bilateral pleural effusions, ascites, and bilateral lower extremity edema. He had been treated with chemotherapy, which failed to control the progression of Kaposi's sarcoma.

On physical examination, his heart rate was 118 beats/min. Blood pressure was 100/72 mmHg with a 20 mmHg pulsus paradoxus. Respiratory rate was 24/min and he was afebrile. He appeared chronically ill with pallor, muscle wasting, and hair loss. Physical examination showed elevated jugular venous pressure, bilateral decreased breath sounds and basilar rales, diminished heart sounds, tense ascites, a palpable liver, and lower extremity pitting edema.

Chest roentgenogram revealed an enlarged cardiac silhouette and bilateral pleural effusions. Transthoracic 2-D echocardiogram revealed a large pericardial effusion with right atrial collapse and a mobile multilobular mass at the apex protruding into pericardial space (Fig. 1, A, B). Pulsed-wave Doppler examination showed respiratory variation of mitral inflow consistent with cardiac tamponade.

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FIG. 1 (A, B) Two-dimensional transthoracic echocardiography in the apical four-chamber view. There is a large pericardial effusion. A multinodular mass (arrowheads) is seen on the visceral pericardium. (C) Low magnification of epicardial fat (F) with a nodule of Kaposi's sarcoma (K) characterized by large and small vascular channels with fibrosis and proliferation of spindle cells between vascular spaces (H&E staining, original magnification $\times 18$). (D) Higher magnification better demonstrated the vascular channels and spindle cells (H&E staining, original magnification $\times 70$).

The patient died a week after echocardiographic examination. The heart was carefully examined and sectioned, and microscopic examination confirmed that the apical multilobular mass was Kaposi's sarcoma (Fig. 1, C, D). The Kaposi's sarcoma involved the epicardial fat, parietal pericardium, lungs, liver, mesenteric lymph nodes and skin, but not the myocardium.

Discussion

Pericardial effusion is a frequent echocardiographic finding in human immunodeficiency virus (HIV)-infected patients. It has been detected in 10–40% of patients with AIDS.^{1,2} Most of these do not have cardiac tamponade. The cause of pericardial effusion was identified in only a small portion of patients. Heidenreich *et al.* reported that the cause was suggested in only 4 of 15 patients with AIDS and pericardial effusion.⁵ Kwan *et al.* observed that only 4 of 13 patients with pericardial effusion had an identifiable etiology.⁶ Eisenberg *et al.* also reported that of 14 patients with pericardial effusion the etiology could be established in only 4.⁷

Kaposi's sarcoma is a well-known cause of pericardial effusion in patients with AIDS.^{3, 4, 8–11} Most patients were asymptomatic during life, and the diagnosis was made at au-

topsy. In all previous reported cases with pericardial effusion and Kaposi's sarcoma, there was no evidence of pericardial mass either with echocardiography or computed tomography (CT) scan of the heart. Only in two previously reported cases had antemortem diagnosis of cardiac Kaposi's sarcoma been made by pericardial biopsy.^{3,4} In all other cases diagnosis was made at autopsy.

Silver *et al.* described five patients with AIDS and cardiac Kaposi's sarcoma confirmed by autopsy.⁹ No patient had cardiac symptoms during life. At necropsy, all five patients had small focal hemorrhagic areas involving subepicardial adipose tissue adjacent to one or more major coronary arteries. The myocardium and endocardium were free of Kaposi's sarcoma. Stotka *et al.* reported a 29-year-old patient with AIDS and pericardial effusion and tamponade. A large pericardial effusion without evidence of a mass was seen on echocardiogram. Cytologic study of pericardial fluid was negative. Autopsy revealed Kaposi's sarcoma of the epicardium and epicardial fat.¹¹ Steigman *et al.* reported a 35-year-old patient with AIDS who died of acute pericardial tamponade.¹⁰ No etiology of the patient's pericardial effusion was identified before death. Computed tomography scan of the chest depicted no pericardial mass. Autopsy revealed nodular, coalescent, dark red lesions in the epicardial fat, most prominent at the root of the great vessels. Microscopic examination confirmed

the diagnosis of Kaposi's sarcoma, which also involved the myocardium and endocardium.

Remick *et al.* reported a 42-year-old patient with AIDS with physical findings of cardiac tamponade.⁴ Echocardiogram only showed a large pericardial effusion with right atrial and right ventricular diastolic compression. Cytologic evaluation of pericardial fluid was negative. Pericardial biopsy revealed evidence of Kaposi's sarcoma within the pericardium. Just *et al.* reported a 31-year-old patient with AIDS and recurrent cardiac tamponade.³ Computed tomographic scan and echocardiography only showed the presence of pericardial effusion, without evidence of a mass. Cytologic examination of pericardial fluid was negative. The diagnosis of Kaposi's sarcoma was made by pericardial biopsy.

Our patient presented with physical findings consistent with cardiac tamponade, and his echocardiogram showed a large pericardial effusion and an apical mobile multilobular mass, suggestive of a neoplasm. Pathologic examination confirmed that the pericardial multinodular mass was indeed Kaposi's sarcoma. There is no prior echocardiographic report of detection of metastatic cardiac Kaposi's sarcoma presenting as an apical multilobular mass.

With the increasing incidence of AIDS and improvement in treatment modalities and in prolonging patients' life span, pericardial effusion in patients with AIDS may be encountered more frequently. It has been reported that 22% of surviving patients with AIDS had developed an effusion by 2 years.⁵ Therefore, it is important to include cardiac Kaposi's sarcoma in the differential diagnosis of pericardial effusion in patients with AIDS.

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