Dyspnea in a Woman Infected with the Human Immunodeficiency Virus

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Shortness of breath is a common complaint encountered in both the ambulatory and acute care setting. In patients infected with the human immunodeficiency virus, dyspnea often heralds the onset of a potentially life-threatening opportunistic infection. We present a case of a rare cause of dyspnea in the general population and to our knowledge the first such case reported in the setting of human immunodeficiency virus infection in the United States.

CASE PRESENTATION

A 28-year-old woman presented to an outlying facility complaining of progressively worsening shortness of breath over a period of approximately 5 months. She also complained of intermittent chest pain and palpitations over the same period. The chest pain was described as sharp and substernal with radiation to her back. She denied any associated nausea or diaphoresis. Her symptoms worsened with exertion and were somewhat relieved with rest. She was evaluated for possible coronary artery disease with an exercise treadmill stress test and was referred to our facility after being unable to perform that test secondary to fatigue.

Her past medical history was significant only for human immunodeficiency virus (HIV) infection diagnosed 2 years earlier. Her last CD4 cell count, 3 months prior to presentation, was 473 cells/cc. She had no prior history of any opportunistic infection. Her medications included lamivudine/zidovudine (combined preparation), nevirapine, trimeth-oprim/sulfamethoxazole (double strength), and aspirin. She reported

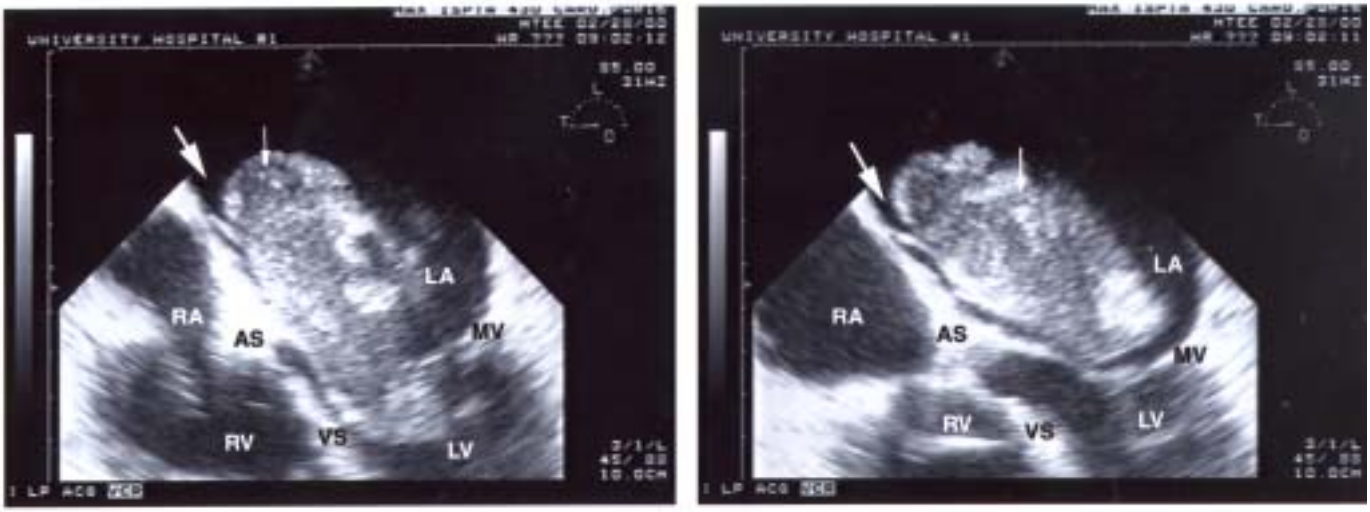

Figure 1. Still figure from transesophageal echocardiogram in diastole (left), showing prolapse of the mass (small arrow) into the mitral valvular orifice (MV), and in systole (right). (RA) right atrium, (AS) atrial septum, (LA) left atrium, (RV) right ventricle, (VS) ventricular septum, (LV) left ventricle. Tumor stalk (large arrow).

compliance with her antiretroviral regimen and experienced no adverse reactions to her medications. She denied any food or drug allergies. There was no family history of cancer or cardiovascular or pulmonary disease. She denied any history of alcohol, tobacco, or illicit drug use.

On physical examination, she appeared well nourished and was resting comfortably. Her vital signs were: temperature 36.9ºC, pulse 76 beats per minute, blood pressure 105/52 mm Hg, respiration 18 breaths per minute, and oxygen saturation by pulse oximetry of 99% on air. Auscultation of the lungs revealed clear lung fields. Cardiovascular examination was significant for a loud, split first heart sound and an additional heart sound in early diastole. There was a grade 2/6, blowing, holosystolic murmur at the apex as well as a diastolic rumble. The apical impulse was neither displaced nor diffuse. No distention of the jugular veins was noted. The remainder of the examination, including a complete neurological evaluation, was normal. A blood chemistry and complete blood count were obtained, revealing a normocytic anemia. Hemoglobin was 10.9 g/dL (normal 12.0–16.0) with a mean cell volume of 79.3 fL (normal 76-96). A chest radiograph and twelve-lead electrocardiogram were unremarkable.

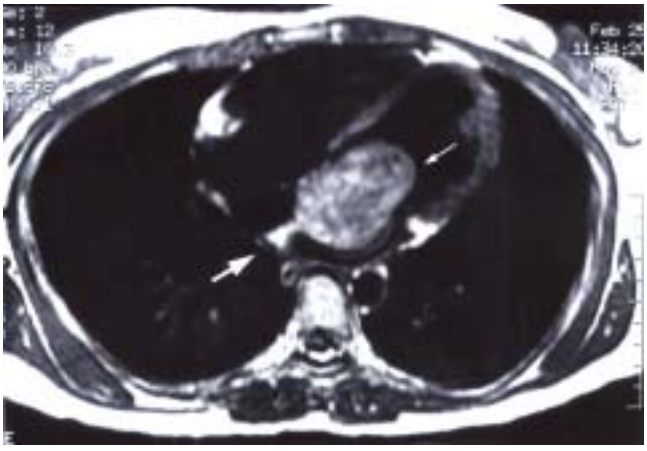

Figure 2. Transverse section of T1-weighted image from nuclear MRI scan showing myxoma in the left atrium (small arrow) attached by stalk (large arrow).

A transthoracic echocardiogram demonstrated a large, mobile mass in the left atrium measuring 5 cm by 4 cm by 8.5 cm. The mass appeared to be attached to the atrial septum at the fossa ovalis and prolapsed into the mitral valvular orifice during diastole, producing a mean diastolic pressure gradient across the mitral valve of 18 mm Hg. Moderate mitral regurgitation was noted. Left and right ventricular systolic function were normal.

Transesophageal echocardiogram and cardiac magnetic resonance imaging were employed to evaluate the mass further (Figures 1 and 2).

The patient underwent operation on the ninth hospital day. At operation, the tumor was found to be attached to the fossa ovalis as well as to the posterior free wall of the left atrium. Intraoperative measurements of the mass corresponded to those obtained by echocardiography. The tumor was excised and sent to pathology for analysis. Gross and microscopic pathology revealed a smooth-surfaced mass with abundant myxoid tissue and scattered foci of hemorrhage consistent with a myxoma.

The patient recovered from surgery without complications. She was subsequently discharged on hospital day thirteen. Fifteen months after removal of the tumor, the patient was doing well, and a repeat transthoracic echocardiogram was normal with no evidence of recurrence of the tumor.

DISCUSSION

The cardiac manifestations of the acquired immunodeficiency syndrome have been reviewed recently in the literature.[1,2] Pericardial effusion is the most common cardiac complication, the presence of which is associated with lower CD4 counts and decreased survival.[3] Kaposi's sarcoma and malignant lymphoma (most often high-grade non-Hodgkin's B-cell lymphoma) are two neoplasms involving the cardiac structures that are well described in HIV-infected patients. To our knowledge, our patient is the first case of atrial myxoma in the setting of HIV infection reported in the United States. The single other case of atrial myxoma and HIV infection reported in the literature was from the United Kingdom.[4]

Cardiac myxomas are uncommon tumors in the population at large. Seventy-five percent of all primary cardiac neoplasms are histologically benign, and approximately half of these are myxomas. The exact incidence of cardiac myxomas is unknown, but extrapolation from data on primary cardiac tumors in general would yield an estimate of 0.6 to 60 per 100,000 unselected patients at autopsy.[5,6] Myxomas occur most frequently between the third and sixth decade of life, and most case series show a predilection for women.[7] While the majority of cardiac myxomas arise sporadically, as many as 10% may be familial. The "Carney complex" of myxoma, spotty pigmentation (lentigenes), and endocrine overactivity is inherited in an autosomal dominant fashion.[8] Similarly, two other syndromes, NAME (*n*evi, *a*trial myxomas, *m*yxoid neurofibromata, and early-onset *e*phelides) and LAMB (*l*entigines, *a*trial myxoma, *m*ucocutaneous myxoma, and *b*lue nevi), have also been described.[9,10]

As in our patient, most myxomas arise from the intra-atrial septum (commonly from the fossa ovalis) and are attached by a stalk which may be highly vascular. In 90% to 95% of cases, myxomas originate in the atria, and three quarters of these are left-sided. Rarely, the tumor may originate from within the ventricles. Bi-atrial and even bi-ventricular involvement also have been observed.[11,12] Histologically, myxomas are believed to arise from multipotential mesenchymal cells and are composed primarily of a hyaluronan matrix strewn with polygonal cells.[13] The tumors are usually polypoid and smooth surfaced. Areas of focal hemorrhage and ectopic hematopoesis are prevalent. The less common villous or papillary tumors are more friable and have a greater tendency to embolize.

Atrial myxomas may present with constitutional, embolic, or obstructive manifestations and often represent a diagnostic challenge for even the experienced clinician. The neoplasm may mimic a variety of systemic inflammatory or infectious disease states such as bacterial endocarditis, vasculitis, or rheumatoid arthritis, resulting in a delay of diagnosis with potentially serious sequelae.[14] The clinical signs and symptoms of atrial myxoma are myriad. Our patient presented with evidence of left-sided intracardiac obstruction manifesting as dyspnea. Fever, weight loss, and erythematous rashes are a few of the constitutional symptoms that these pa-

tients may develop. Thirty percent to forty percent of left-sided lesions embolize, usually to the cerebral vasculature. Embolization to the coronary arteries resulting in myocardial infarction has also been reported.[15] Obstruction of the mitral or tricuspid valvular orifice may result in symptoms of cardiac failure or syncope.

Cardiac auscultation may reveal a systolic or diastolic murmur. Left atrial myxomas may generate a loud and widely split first heart sound. The early diastolic "tumor plop" is attributed to the abrupt diastolic displacement of the tumor into the right or left atrio-ventricular orifice. This sound may be confused with the opening snap of mitral stenosis, the pericardial knock of constrictive pericarditis, or a third heart sound. The auscultatory findings may change subtly with the patient's position.[16] Pericardial friction rubs are more common with right-sided masses. With left-atrial myxomas, chest radiograph and electrocardiogram may show evidence of left-atrial enlargement but are often unremarkable.

Laboratory abnormalities include elevations in serum C-reactive protein and the erythrocyte sedimentation rate. Some investigators have speculated that this is due to the release of interleukin-6 from the mass itself.[17] Anemias, either hypochromic or normochromic, may also be present. Hemolytic anemia is more common in the setting of right-sided calcified tumors. Although less prevalent, leukocytosis and thrombocytopenia may also be seen.

The first case of a patient with atrial myxoma was reported by King in 1845 based on postmortem examination.[18] The development of angiography nearly 100 years later facilitated making a diagnosis prior to autopsy. The evolution of noninvasive diagnostic tools, such as transthoracic echocardiography, allows for earlier diagnosis thus reducing the risk of complications, particularly embolization. Transesophageal echocardiography, while more invasive, permits more detailed examination of the tumor, its stalk, and its anatomic relation to surrounding structures. In addition, echocardiography of either modality provides real time, dynamic imaging of the tumor and the hemodynamic alterations it manifests. CT and MRI scanning may provide the clinician with better resolution of cysts and hemorrhages.

The treatment of cardiac myxoma is prompt operative removal. The overall prognosis for these patients is excellent and the risk of recurrence is generally low. It should be noted however that the familial variants of this disease have a markedly increased risk of recurrence compared with the sporadic tumor. Longitudinal studies have recommended that all patients be followed with serial echocardiograms for at least 4 years following excision.[11]

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