INTERMITTENT OBSTRUCTION OF A STENOTIC MITRAL VALVE BY A FREE FLOATING BALL THROMBUS

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A 38 year old woman was admitted to hospital because of recurrent syncope episodes. Auscultation revealed a diastolic murmur. Echocardiography demonstrated mitral stenosis and a free-floating left atrial ball thrombus. Left ventricular inflow was being intermittently obstructed by this ball during diastole. Patient underwent open heart surgery and the ball thrombus was removed.

Key Words: Mitral stenosis, ball thrombus, syncope.

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In patients with mitral stenosis, total obstruction of the narrowed mitral valve orifice by a mobile left atrial ball thrombus is a rare but a potentially dangerous complication. This paper describes a patient with mitral stenosis in whom syncope was the prominent symptom due to intermittent total obstruction of the mitral orifice. This situation has been shown echocardiographically.

Case Report

A 38 year old woman was admitted to the cardiology clinic because of chest pain, near syncope and paroxysmal dyspnea which started 2 weeks preceeding admission. Her medical history was noncontributory.

On physical examination arterial blood pressure was 140/100 mmHg and pulse rate was 140 bpm and irregular. There were bilateral basal crepitations on lung auscultation. Venous pressure was high and a prominant right ventricular activity was recorded. Physical findings on admission included an accentuated first heart sound and a diastolic murmur of varying intensity.

The patient's urinary output was within oliguric range during hospitalization. The WBC count was 20800/mm^3 and other hematologic parameters were within normal limits. Biochemical

analysis was normal except for uric acid (9.6 mg/dl), creatinin (7.9 mg/dl) and BUN (55 mg/dl).
ECG demonstrated artial fibrillation with a rapid ventricular rate response of 140 to 150 beats/min and right ventricular hypertrophy.
Two dimensional echocardiography revealed mitral stenosis and an enlarged left atrium. A large, round, free floating mass with well demarcated borders was seen in the left atrium. The left atrial mass was 3 cm long 2.5 cm wide and was freely mobile within left atrial cavity (Fig 1). A random spinning motion was visualized and frequently the mass would lodge in the mitral orifice for 1-2 seconds and was ejected back. Left ventricle was normal echocardiographically.
Because of concomitant mitral stenosis, the left atrial mass was thought to be a ball thrombus. These findings, in combination with the clinical course, allowed the recommendation of urgent heart surgery without the need for cardiac catheterization.
Subsequently, the patient underwent open heart surgery. A large left atrial ball thrombus measuring 2x3x4 cm was removed from the large left atrium. There were additional trombi in the left atrial appendage and they were removed also. Mitral orifice area was about 1 cm^2. Mitral comissurotomy was performed.
Histopathologic examination of the mass confirmed the presence of organized thrombus. The outer face of the thrombus was red and shiny (Fig 2). Microscopic evaluation showed complete endotelization of the thrombus .
The patient died on the second day of operation because of progressive renal impairment and pulmonary congestion.

Comments

Left atrial ball thrombus intermittently obstructing the mitral orifice is an infrequent clinical syndrome[1]. It is usually a complication of long-standing rheumatic mitral stenosis. Symptoms are usually caused by intermittent, partial or total occlusion of the mitral valves[2]. This obstruction may cause syncope and occasionally sudden death in some patients[3]. Therefore, differential diagnosis of syncope in patients with mitral stenosis includes exclusion of left atrial ball thrombus.
Two dimensional echocardiograhy is the most reliable method for demonstration of left atrial ball thrombus, and in most instances concomitant mitral stenosis. This report documents the use of two dimensional echocardiography not only to detect free floating left atrial ball thrombus, but also to

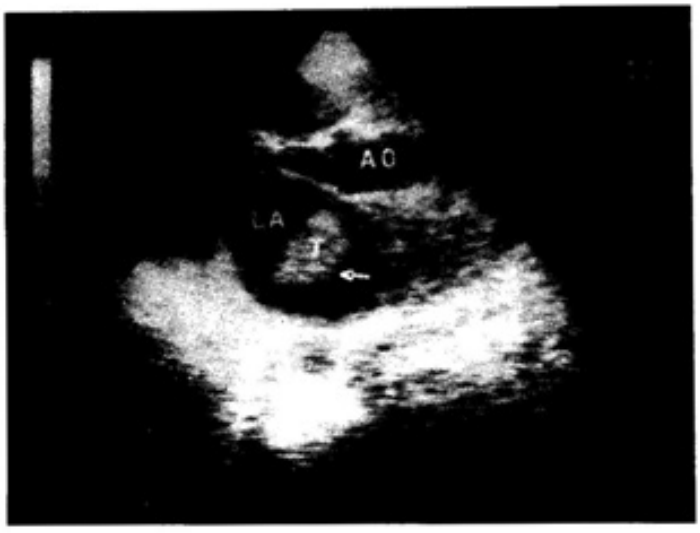

Fig. 1. Left atrial thrombus in parasternal long axis view.

Fig. 2. Left atrial ball thrombus.

visualize recurrent, transient but total occlusion of the mitral valve orifice. One group suggested that two dimensional echocardiographic findings are impressive enough and further diagnostic procedures are not required[4].

Given the unpredictability of other modalities such as thrombolysis for treating free-floating left atrial ball thrombus and inevitability of complications, urgent surgical intervention is the therapy of choice. Mitral commissurotomy or replacement can be done concomitantly with surgical removal of ball thrombus. Eleven cases of left ball thrombus have been published in English since 1976[5]. In 10 of the 11 previous cases open heart surgery was done to remove the ball thrombus and in most of these to either replace mitral valves or perform commissurotomy. The results of anticoagulation and thrombolysis are unpredictable and potentially as harmful as no treatment at all. Current evidence suggests that prompt surgical removal of free floating thrombus often in conjunction with mitral valve repair or replacement after echocardiographic identification is the appropriate mode of treatment in most patients.

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