Left Atrial Mass: Thrombus Mimicking Myxoma

Sumeesh Dhawan, M.D., and Tahir Tak, M.D., Ph.D.
Departments of Internal Medicine and Cardiology, Marshfield Clinic, Marshfield, Wisconsin

A 31-year-old woman underwent elective transthoracic echocardiography for paroxysmal atrial fibrillation, which showed a large left atrial mass. A two-dimensional echocardiogram showed a large left atrium mass. Subsequent transesophageal echocardiography showed a 3 cm × 3 cm circular mass with smooth contours. The differential diagnosis included myxoma versus thrombus, but because of morphology and mobility of the mass, it was difficult to differentiate one from the other. The patient had been on chronic coumadin therapy for paroxysmal atrial fibrillation. An operation was performed and the intracardiac mass resected. On pathologic examination the mass was diagnosed as an organized thrombus. A brief review of the literature has been presented to discuss the differential diagnosis of the mass in the left atrium. (ECHOCARDIOGRAPHY, Volume 21, October 2004)

Case Report

A 31-year-old woman presented to our clinic for an elective echocardiogram because of her history of congestive heart failure and paroxysmal atrial fibrillation. The patient was in congestive heart failure (New York Heart Association classes II–III/IV). The patient was on warfarin for paroxysmal atrial fibrillation for the past 4 years. The patient also had a history of bipolar disorder and noncompliance with her medications. On examination, her weight was 246 lb, height 64 inches, and body surface area (BSA) 2.14 m². Her blood pressure was 110/70 mmHg and pulse rate 105/min. It was difficult to assess the jugular vein distension because of morbid obesity. Chest auscultation revealed mild basal crepitations. On cardiac auscultation, S₁S₂ were heard with an irregular rhythm. S₃ was faintly audible. There was no evidence of systolic or diastolic murmurs. Mild pitting edema was noted in her lower extremities.

The 12-lead electrocardiogram revealed atrial fibrillation with rapid ventricular response. Two-dimensional transthoracic echocardiogram (TTE) showed normal dimension for the left atrium and moderate reduction in left ventricular function on a global basis. The left-sided cardiac valves seemed to move appropriately. A smooth surfaced spherical mass approximately 2–3 cm in size was seen adjacent to the interatrial septum. It was mobile but did not protrude through the mitral valve to the left ventricle in diastole. It was unclear whether the intracardiac mass had any attachment to the interatrial septum. The mitral inflow velocities by Doppler imaging were within normal limits. To confirm the diagnosis, a transesophageal echocardiography (TEE) was performed a few days after the TTE study. A 3 cm × 3 cm spherical mass with a smooth surface was confirmed in the left atrium (Fig. 1A and B). There was a severe, left atrial spontaneous contrast present in the left atrium. However, as reported on TTE, the attachment of the mass to the interatrial septum could not be confirmed on TEE. There were no identifiable masses in the left atrial appendage. Color Doppler flow showed minimal mitral regurgitation. Empiric treatment with Coumadin had no significant effect on the size and shape of the intracardiac mass. The patient had cardiac surgery performed for the removal of the intracardiac mass. This was performed approximately 4 weeks after TEE was completed. Pathological findings were consistent with an organized thrombus, rather than a myxoma.

Discussion

TTE and TEE are the procedures of choice for the diagnosis of cardiac mass involving the left atrium. TEE has been shown to be a superior method in defining the characteristics of a mass in the left atrium.

Address for correspondence and reprint requests: Dr. Tahir Tak, Department of Cardiology, Marshfield Clinic, 1000 North Oak Avenue, Marshfield, WI 54449. Fax: 715-389-4555; E-mail: ttak@hsc.unt.edu
Figure 1. A. Transthoracic echocardiographic (TTE) image in the apical 4-chamber view showing left atrial mass indicated by arrow. LV = left ventricle, RV = right ventricle. B. Transesophageal echocardiographic (TEE) image showing mass in the left atrium indicated by arrow. Note also the presence of the spontaneous left atrial contrast in the left atrium. LA = left atrium, RA = right atrium, LV = left ventricle.
procedure should be able to characterize the mass by morphologic shape and appearance, site of attachment, types of margin, and presence or absence in the left atrial appendage.\textsuperscript{2}

Potential errors in diagnosis can be made, however, if the characteristics are not well defined, especially if the tumor size is very small or smooth in contour, or attachment site is ill-defined.\textsuperscript{3} Left atrium thrombi are classically found in an atrial appendage, but can also be found in the body of the left atrium.\textsuperscript{4} A mass located in the left atrium can be defined as thrombus if it is associated with the presence of atrial fibrillation, enlarged atrial chamber, prosthetic mitral and tricuspid valves, stenotic mitral and tricuspid valves, low cardiac output state, and spontaneous atrial contrast echoes.\textsuperscript{2,3} Although no formal studies have been published, biplane and multiplane TEE are felt to be superior for the assessment of left atrial appendage thrombi, small and layered thrombi in the left atrial cavity, and masses in the superior vena cava, right heart, and thoracic aorta.\textsuperscript{1}

Left atrial myxomas are the most common of all primary tumors of the heart among adults. They most commonly originate from the fossa ovalis in the left atrium.\textsuperscript{5} Left atrial myxoma are highly predisposed to embolization because they are fragile and highly mobile in nature. This can result in serious complications like systemic embolization and sudden cardiac death due to severe left ventricular outflow tract obstruction.

If the site of attachment of the left atrial mass is not clearly identified by echocardiography, it becomes difficult to differentiate intracardiac masses, such as myxomas or thrombi. In this case, it was difficult to identify the left atrial mass with certainty because of morphologic similarities between the two entities. The presence of spontaneous contrast in the left atrium together with a history of paroxysmal atrial fibrillation favors the diagnosis of atrial thrombus. However, the smooth contour of the mass, the shape, mobility, and the absence of any additional masses in the left atrial appendage made it difficult to rule out cardiac myxoma with absolute certainty. It was, therefore, felt that the patient was at high risk for embolization and, as such, cardiac surgery was indicated.

Acknowledgments: The authors thank the Marshfield Clinic Research Foundation for its support through the assistance of Linda Weis and Alice Stargardt in the preparation of this manuscript.

References