Pericardial Effusion Mimicking Left Atrial Thrombus after Coronary Bypass Surgery*

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This report describes a patient in whom pericardial effusion, two months after coronary bypass surgery, mimicked the presence of a left atrial mass on both echocardiography and cardiac angiography. (Chest 1989; 95:468-69)

Pericardial effusion is a common finding on echocardiography after cardiac surgery.1 Echodensities are sometimes observed in the evolution of such effusions; most cases have a spontaneous resolution without complications.1,2

CASE REPORT

A 64-year-old man underwent coronary bypass surgery in our Center according to standard techniques, with cardiopulmonary bypass lines in the right atrium and ascending aorta. The left pleural space was opened to isolate the first intercostal branch of the left internal mammary artery. The hospital course was uneventful, and the patient was discharged after two weeks on antiplatelet medication.

At follow-up one month after discharge, a chest x-ray film showed a small left basal pleural effusion, and a minimal posterior pericardial effusion was revealed by an echocardiogram. The patient was symptom-free, and oral diuretics were prescribed.

One month later, the patient was readmitted suffering from slight breathlessness of sudden onset. On examination, the jugular veins were distended in the sitting position, the liver was palpable 3 cm below the right costal border; percussion showed a dullness at the basal third of the left lung, and cardiac auscultation revealed no murmur. The patient was in regular sinus rhythm at 90 b/min.

Chest x-ray examination confirmed a moderate-to-large pleural effusion, with an enlarged cardiac silhouette due to pericardial effusion. Dyspnea improved noticeably after pleural aspiration, which yielded 1,400 ml of blood-stained fluid. An echocardiogram (Fig 1 and 2) showed a moderate accumulation of pericardial echo-free fluid, with echo-dense material behind the posterior cardiac wall at the atroventricular junction, consistent with a loculated or partially organized pericardial effusion. The left atrial cavity was seen to be almost obliterated by a mass of about 1.5 by 2.0 cm, with irregular contours, attached to the posterolateral wall of the chamber and projecting into it, moving synchronously with the atrial structures, all of which was strongly suggestive of an intraatrial thrombus.

A computed tomographic scan provided no conclusive evidence as to the localization of the mass. Catheterization of the right heart was performed, and showed right atrial pressure of 17 mm Hg with no evidence of tamponade. Cineangiography was performed with selective contrast injection into the right pulmonary artery, and the levophase showed a gross filling defect in the left atrium. Pleural aspiration was repeated, and yielded 1,900 ml of clear fluid. Pericardial aspiration was also performed, and yielded 700 ml of blood-stained fluid. One day later pericardial friction rubs were audible on auscultation; a control echocardiogram (Fig 3) showed only minimal posterior pericardial effusion, and no evidence of left atrial mass was found. Cardiac catheterization was also repeated:

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**FIGURE 1. Long-axis parasternal cross-sectional echocardiogram at admission, two months after surgery (A, upper) and an artist's drawing of the same (B, lower), a moderate accumulation of echo-free fluid (F) is visible behind the posterior cardiac wall, with echo-dense material behind the posterior atrioventricular junction (AV). The left atrial cavity appears to be nearly obliterated by an irregular mass (M); LV = left ventricular cavity; MV = mitral valve; Ao = aortic root.**

mean right atrial pressure was 6 mm Hg, and angiography showed no filling defect of the left atrium. The patient was then discharged on therapy with prednisone, diuretics, and anti-platelet medication.

The patient's follow-up at three months showed no evidence of either pleural effusion on chest x-ray film, or pericardial effusion on two-dimensional echocardiogram.

DISCUSSION

One month after coronary bypass surgery, our patient was found to have a small left basal pleural effusion, as is often observed when pleural spaces have been opened at surgery. A small, echo-free pericardial effusion was also detected at that time.

Pericardial effusion is also common after cardiac surgery,
Two months after surgery our patient had dyspnea and signs of increased central venous pressure, sustained by a large pleural effusion together with moderate pericardial fluid accumulation, and was under no anticoagulant treatment. Echocardiographic findings were consistent with a loculated or partially organized pericardial effusion, and were strongly suggestive of a newly formed left atrial mass—by all appearances, a thrombus. However, it is most unusual to find such a complication as atrial thrombosis at so late a date after isolated coronary artery bypass in patients with sinus rhythm.

At echocardiography, the presence of an abnormal intraatrial mass may sometimes be suggested due to encroachment on the left atrium by enlarged posterior structures, resulting in left atrial changes in both size and shape, and/or the lateral wall of the left atrium can sometimes impinge on the cavity itself. Diaphragmatic hernias should also be considered in the differential diagnosis of cardiac masses, as they have sometimes been observed to project into the pericardial space at echocardiography. Although computed tomography is reported to be helpful in the diagnosis of intracardiac vs pericardial masses, this technique was unable to help in identifying the position of the mass in our patient. Cardiac cineangiography with contrast injection into the right heart is sometimes used for visualization of atrial septal defects and left atrial morphology. In our patient, although it did in fact confirm a filling defect in the left atrium, it could not provide information as to the localization of the space-occupying mass. The mass image disappeared after percutaneous pericardial aspiration, conceivably due to the fact that the intrapericardial pressure was lowered, thus altering the geometry of the pericardial space and relieving external left atrial compression previously caused by the loculated fluid.

To the best of our knowledge, this patient is the first reported case of loculated pericardial effusion after cardiac surgery.
surgery mimicking a left atrial mass at both echocardiography and cardiac angiography. A pericardial defect presenting as a left atrial mass at echocardiography has been reported in a patient, prompting surgical exploration of the left atrium.\(^*\)

This case suggests that the findings, though impressive, from echocardiography and cardiac angiography may, at times, be misleading in the diagnosis of intra-atrial masses, in the presence of a loculated pericardial effusion.

ACKNOWLEDGMENTS: We are indebted to Mrs. Barbara Steeles for her help in writing this manuscript.

REFERENCES


Subaortic Stenosis by Solitary Rhabdomyoma*

Successful Excision in an Infant Following 2D Echocardiogram and Doppler Diagnosis

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A seven-month-old girl had subaortic stenosis caused by a single intracavitary rhabdomyoma unassociated with tuberous sclerosis. Diagnosis was formulated on the basis of two-dimensional echocardiography and Doppler technique findings alone, and surgery was successful.

**Chest 1989; 95:470-71**

Subaortic stenosis in infancy is usually due to a fibromuscular tunnel, septal hypertrophy, or a posteriorly deviated infundibular septum with ventricular septal defect;\(^*\) tumors, such as cardiac fibroma and intracavitary rhabdomyoma, are a rare substrate. Theoretically, noninvasive diagnosis by two-dimensional echocardiography should be precise enough to program surgery directly without further angiocardiographic studies. We report the case of a seven-month-old girl in whom an obstructive subaortic rhabdomyoma was detected by two-dimensional echocardiography and the Doppler technique and was successfully excised.

**CASE REPORT**

A seven-month-old girl was referred for evaluation of a systolic murmur, which had been previously heard at birth. The child was the product of an uneventful, full-term pregnancy and normal delivery and weighed 3,730 g at birth.

A grade 4/6 pansystolic murmur with a crescendo-decrescendo pattern was audible in the second right intercostal space, and ECG showed tall R waves in the left precordial leads. A chest x-ray film showed a normal cardiac shadow. The child was otherwise completely asymptomatic; extracardiac malformations and tuberous sclerosis were absent.

Two-dimensional echocardiography revealed the presence of a round mass, 8 mm in diameter, along the left ventricular outflow tract just below the aortic valve, but well distinct from the aortic

**FIGURE 1.** Preoperative echocardiogram. Parasternal long axis view (upper) shows mass obstructing left ventricular outflow tract located just beneath the aortic valve. Subcostal view (lower) shows left ventricular outflow tract and mass, which is attached to basal portion of anterolateral wall. LA, left atrium; LV, left ventricle; RV, right ventricle; AO, aorta.

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