Case Reports

Pseudoaneurysm of the Left Ventricle

A Rare Sequela to Mitral Valve Endocarditis

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Pseudoaneurysms of the left ventricle are a very unusual sequela to mitral valve endocarditis. We report the case of a 62-year-old woman who developed postendocarditis submitral left-ventricular pseudoaneurysm, which was diagnosed by means of transesophageal echocardiography. The mitral valve was replaced with a prosthesis, and the mouth of the pseudoaneurysm was closed with a patch.

We discuss the possible mechanism of development of this unusual sequela to mitral valve endocarditis and emphasize the diagnostic value of transesophageal echocardiography. ***(Tex Heart Inst J 1999;26:309-11)***

Most of the reported cases of perivalvular cavities involve the aortic annulus and its neighboring structures and develop as a complication of either native aortic or prosthetic valve endocarditis.[1,2] Such complications of endocarditis carry high rates of morbidity and mortality and therefore require early recognition and prompt surgical correction.[1]

This report describes the successful surgical repair of an unusual pseudoaneurysm of the left ventricular posterior wall, which developed as a sequela to infective mitral valve endocarditis. Our case illustrates the usefulness of transesophageal echocardiography in establishing a diagnosis.

Case Report

In March 1996, a 62-year-old woman was referred to our service for evaluation of progressive exertional dyspnea. Three months previously, she had been hospitalized for bronchopneumonia. Physical examination revealed a loud holosystolic murmur at the apex. Standard chest radiography showed a prominence of the left heart border and mild pulmonary congestion. Electrocardiography disclosed normal sinus rhythm and signs of left ventricular hypertrophy. Routine laboratory tests were unremarkable. Transthoracic color-flow Doppler echocardiography revealed a hyperdynamic left ventricle and severe mitral regurgitation with no apparent morphologic abnormality of the mitral valve. Transesophageal echocardiography showed a wide, turbulent, high-velocity systolic jet across the posterior mitral leaflet and a large echo-free cavity behind the left ventricular posterior wall (Fig. 1).

Moreover, color-flow Doppler interrogation demonstrated a continuous flow signal, which extended, via a narrow neck, from the left ventricle into the perivalvular cavity. Left ventricular angiography confirmed these findings (Fig. 2). At surgery, a ragged circular perforation, approximately 10 mm in diameter and surrounded by multiple vegetations, was found in the midportion of the posterior mitral leaflet. Immediately subjacent to this lesion was an endothelialized opening in the myocardium that communicated with a fibrous sac protruding externally from the posterior left ventricular wall. The mitral annulus was intact. We excised the mitral valve, closed the mouth of the perivalvular cavity from within the left ventricle (using a Dacron® patch), and implanted a mechanical prosthesis. The postoperative course was uneventful. At follow-up 6 months postoperatively, the patient was asymptomatic and transesophageal echocardiography revealed that the perivalvular cavity was almost completely obliterated by thrombus, with no discernible blood flow within it.

Key words: *Aneurysm, false, left ventricle; aneurysm/surgery; echocardiography, transesophageal; endocarditis, mitral valve*

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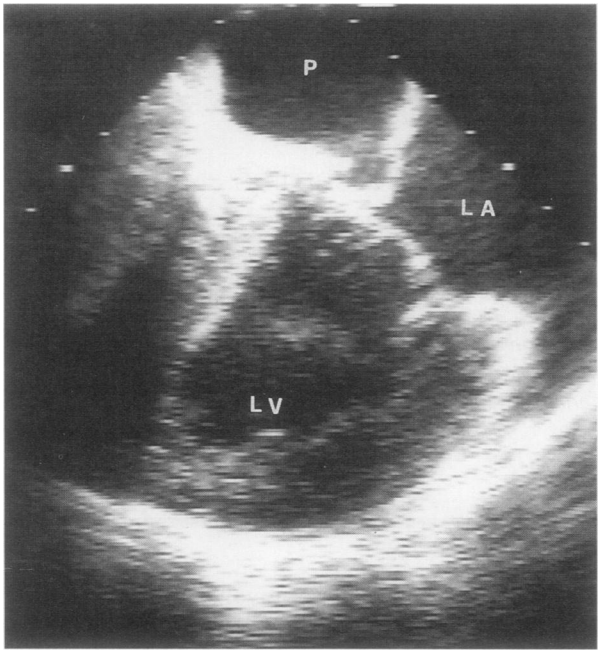

Fig. 1 *Transesophageal echocardiogram in the longitudinal axis view. Still frame taken in systole shows a high-velocity jet across the posterior mitral leaflet and a large posterior pseudoaneurysm (p).*

LV =left ventricle; LA = left atrium

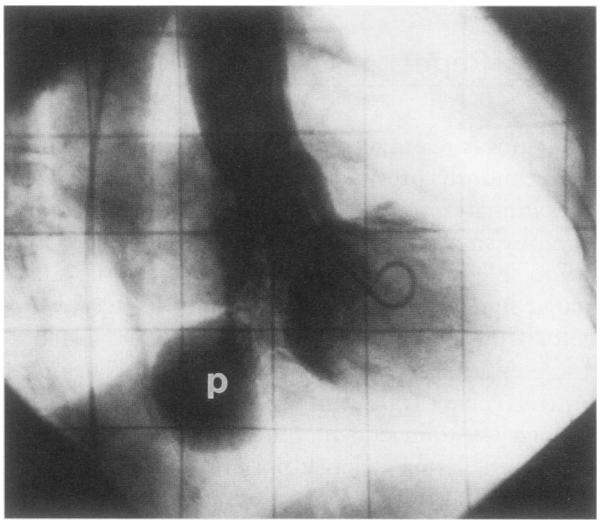

Fig. 2 *Left ventriculogram shows the angiographic appearance of the pseudoaneurysm (p) in the right anterior oblique view.*

Discussion

Aneurysm or pseudoaneurysm localized in the posterior wall of the left ventricle is an infrequent finding that usually develops after a myocardial infarction.[3] More rarely, such lesions are caused by a congenital weakness of the posterior ventricular wall at its attachment to the mitral valve, as found in young African patients;[4] occasionally, they occur because of a disruption of the posterior mitral annulus in mitral valve replacement.[5] Rarely does a perivalvular cavity, such as the one herein described, result as a sequela to infective endocarditis of the mitral valve.[6]

Two distinct mechanisms have been proposed to explain the development of a postinfective perivalvular cavity[7]:

1) The spontaneous drainage of an abscess, which is the most accepted theory.
2) The progressive expansion of an eroded endocardial area caused by high left ventricular pressure.

In the present case, the finding of an intact annulus combined with a posterior mitral leaflet perforation adjacent to the mouth of the cavity suggests that the mitral vegetations' friction on the endocardial wall could have caused an initial endocardial ulceration, which progressively expanded within the myocardial wall.

Because of the possibility of a spontaneous rupture, a pseudoaneurysm of the left ventricular wall is a serious condition that requires prompt diagnosis and treatment. In the present case, transesophageal echocardiography revealed a perivalvular cavity that was not suspected clinically and was not identified by transthoracic echocardiography. Because transesophageal echocardiography provides an unobstructed view of the posterior aspect of the heart, it is a valuable tool for detection and assessment of a submitral valve pseudoaneurysm.

Different techniques for the surgical repair of submitral left ventricular aneurysm have been described.[4,8-10] We performed an intracavitary patch repair because, as emphasized by Cooley,[11] this is the treatment of choice to preserve the contour and geometry of the heart.

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