Echocardiographic Features of Flail Aortic Porcine Valve

To the Editor:

M-mode echocardiography has been reported to be of value in identifying various forms of dysfunctioning aortic porcine valves including infective endocarditis, stenosis, and insufficiency due to cusp regurgitation, and thrombus formation on the valve. A patient with a flail and regurgitant porcine aortic valve diagnosed preoperatively by M-mode echocardiography is the subject of this communication. The echocardiographic features of a flail aortic porcine valve have not been previously reported.

CASE REPORT

A 78-year-old white woman with severe aortic stenosis and insufficiency underwent aortic valve replacement with a modified orifice porcine xenograft valve (Hancock). One week after operation, a loud diastolic murmur of aortic insufficiency was heard along the lower left sternal border. The patient was afebrile and serial blood cultures were negative.

An M-mode echocardiogram was performed by the usual technique (Smith-Kline Ekolins 20-A) and revealed diastolic fluttering of the porcine cusps (Fig. 1). The fluttering echoes were not visualized in the left ventricular outflow tract when the transducer was angled toward the mitral valve. The native mitral valve revealed fine diastolic flutter compatible with aortic insufficiency.

The postoperative course was subsequently complicated by congestive heart failure refractory to conventional therapy. Replacement of the dysfunctional porcine valve was performed and at the time of operation one of the cusps was found to be redundant and flail. There was no evidence of paravalvular leak or valvular vegetations. The postoperative course was uneventful.

DISCUSSION

The presence of rapid diastolic fluttering of the native aortic valve on M-mode echocardiography has been reported to be suggestive of a flail aortic valve. The flail aortic valve could result from loss of support of the aortic cusps secondary to tissue destruction as in bacterial endocarditis or due to redundant valve cusps resulting from myxomatous degeneration of the valve. In severe cases of flail native aortic valve, the fluttering cusp echoes have been reported to prolapse into the left ventricular outflow tract during diastole. The diastolic fluttering of the porcine cusps of our patient is identical to the echocardiogram reported with a flail native aortic valve; however, the flail cusp in our patient did not prolapse into the left ventricular outflow tract.

The etiology of the flail porcine valve within one week after operation remains speculative. We believe that one of the porcine cusps which was large and redundant was defective and accounted for valve insufficiency. The mechanism of valve insufficiency is probably similar to that reported with myxomatous degeneration of the native aortic valve. Flail aortic valve due to valvular vegetation could produce similar echocardiographic findings; however, bacterial endocarditis was unlikely in view of clinical findings, negative results of blood cultures and the absence of vegetations on gross examination of the valve. Porcine valve degeneration can produce valvular insufficiency and stenosis, although it is usually a late complication. Prosthetic valve insufficiency in the immediate postoperative period is usually due to paravalvular leak. The M-mode echocardiographic study in our patient, however, indicated that the etiology of aortic insufficiency was a result of flail porcine cusps and not paravalvular, which was confirmed at surgery.

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REFERENCES

Detection of a Subvalvular Vegetation in Endocarditis by Two-Dimensional Echocardiography

Therapeutic Implications

To the Editor:

This report demonstrates the presence of a large, highly mobile vegetation in the mitral valve substructure, detected by two-dimensional echocardiography, which led to consideration of prophylactic surgical extirpation in the absence of hemodynamic compromise.

CASE REPORT

A 48-year-old white man with known mitral stenosis was transferred for treatment of staphylococcal endocarditis. Physical examination revealed signs of multiple emboli to the skin, extremities and central nervous system and findings of non-critical mitral stenosis. M-mode echocardiography revealed mild-to-moderate mitral stenosis with increased echo density in the mitral substructure. A two-dimensional sector scan was obtained using a Toshiba phased array SSH-10A Sonolayergraph. Figure 1 is an apical long axis view of the left heart and shows a large vegetation in the chordo-papillary region of the mitral substructure with two rabbit ear-like protuberances on its cardiac apical border. In real time the vegetation appeared to be forcefully thrust to and fro by cardiac systole and diastole. The protuberances oscillated very rapidly during diastolic filling of the ventricle. A cardio-thoracic surgical consultant felt that the patient’s clinical condition precluded consideration of surgical extirpation of the vegetation to prevent further emboli. He died 24 hours later despite standard antibiotic and supportive care.

DISCUSSION

Two-dimensional echocardiographic technique in this case enabled visualization of the vegetation as a large, highly mobile, intracardiac mass with portions of it rapidly oscillating in response to blood flow. Dimensional and motion characteristics are not as apparent without the multiple perspectives afforded by two-dimensional imaging as compared to M-mode techniques. Seen in this way, the size and mobility of the vegetation in this case raised the possibility of prophylactic surgical extirpation to prevent further embolization. This was despite the absence of hemodynamic compromise which is a more generally accepted indication for operative intervention in such cases.

Debridement of vegetations without valve replacement is a part of the surgical approach to treatment of endocarditis described by Parrott et al. At least two cases have been reported of debridement of tricuspid vegetations in patients with antibiotic resistance and pulmonary emboli which led to cure of the disease. Unfortunately, by the time our patient arrived at this hospital, he had had numerous emboli and was felt to be too poor a risk to make surgery a tenable approach. Additional prospective study will clarify the potential applicability of surgery in this regard.

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REFERENCES


Mitral Stenosis and COPD

To the Editor:

In the recent article of Beeson et al in Chest 75:716-719, 1979, the authors’ position on mitral stenosis and associated chronic obstructive pulmonary disease is quite pessimistic. To illustrate that, please allow me, just as they did, to present one of our patients with such a problem.

CASE REPORT

Twenty-eight years ago, we reported the case of an 18-year-old girl suffering from mitral stenosis and severe pulmonary hypertension thought to be due to far advanced, irreversible changes in her pulmonary vasculature. Some of her attending physicians believed that probably she would not...