Impressive Echocardiographic Images of a Mitral Valve Aneurysm

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A 77-year-old woman with a fractured femur was referred to our hospital because preoperative echocardiography raised suspicion of a mitral valve tumor. She had no history of unknown fever or heart murmur. Transthoracic and transesophageal echocardiography showed severe mitral regurgitation and aortic regurgitation. A mobile lesion that appeared to be a cystic tumor (14×15 mm) was on the posterior mitral leaflet (Figure 1 and Movie in the online-only Data Supplement). The lesion had no color Doppler signal inside. Computed tomography showed a cystic mass with homogeneously enhanced contents (Figure 2). During the period of recovery from her hip surgery, the patient developed a sporadic febrile illness, and Enterococcus faecium was cultured from a blood sample. Antibiotics were administered for 3 weeks, after which the aortic and mitral valves were replaced. The size of mass on the mitral valve and the severity of mitral regurgitation or aortic regurgitation did not change. At operation, a large valve aneurysm (16×19 mm) was found on the posterior leaflet of the mitral valve (Figure 3). The mitral valve leaflets were redundant and prolapsed. Histopathological examination of the valve aneurysm showed destruction of the valve layers, neovascularization, and widespread perivascular infiltration of inflammatory cells such as lymphocytes (Figure 4), suggestive of latent infective endocarditis. Myxomatous degenerative change was also found in both the aneurysmal and nonaneurysmal portions of the mitral valve. Cultures of the native valves were negative for bacteria.

Mitral valve aneurysm is frequently found in the anterior leaflet and associated with infective endocarditis. The probable mechanism of aneurysm formation is mycotic destruction of the leaflet structure or myxomatous degeneration. In addition, the existence of aortic regurgitation jet or eccentric mitral regurgitation jet striking the leaflet of the mitral valve could lead to infective endocarditis. However, in this patient, the mitral aneurysm was in the posterior leaflet, which was not struck by a jet. We think that weakness of the mitral valve secondary to myxomatous degeneration and latent infective endocarditis caused the aneurysm.

Figure 1. Preoperative echocardiography showing the cystic tumor of the posterior mitral valve leaflet (yellow arrow) bulging toward the left ventricle in diastole (A) and toward the left atrium in systole (B). Color Doppler echocardiogram showing 2 mitral regurgitant jets; one (open arrowhead) was caused by prolapse of the lateral segment of the posterior leaflet, and the other (closed white arrowhead) was caused by prolapse of the medial segment of the posterior leaflet (D).
Disclosures
None.

References

Figure 2. Axial images from a 320-multislice computed tomography of the heart. Precontrast (A) and postcontrast (B) images showing a well-demarcated, homogeneously enhanced tumor with a diameter of 15 mm in the left atrium (LA). LV indicates left ventricle. Arrowheads indicate the edge of the tumor.

Figure 3. Surgically excised mitral valve. A large aneurysm (16 × 19 mm; arrowhead) was found on the posterior mitral valve.
Figure 4. Histology of the mitral valve aneurysm. Staining of the resected mitral valve aneurysm with hematoxylin and eosin (A) and elastic van Gieson (B) showed destruction of the valvular structure. Scale bar, 10 mm. The thickened mitral valve is denoted by asterisks, and the area above the asterisks corresponds to the valve aneurysm. A and B show a cross-sectional view of the mitral valve along the dotted line in C. D. High-magnification view of the boxed area A reveals infiltration of lymphocytes and neovascularization. Scale bar, 10 μm.
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