Gargantuan Pseudoaneurysm of the Left Ventricle

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Three months after combined mitral and aortic valve replacement, a 74-year-old woman presented with New York Heart Association grade II to III dyspnea. She had regular sinus tachycardia (109 bpm), and her blood pressure was 90/55 mm Hg.

Routine echocardiography showed normal left ventricular ejection fraction and normal functional status of mitral and aortic valve prosthesis. However, late systolic impression of the inferior/inferolateral wall and a large paracardiac cavity displaying an intense systolic and diastolic color and pulsed Doppler flow signal were noted (see Figure 1 and Movie I in the online-only Data Supplement). The cavity seemingly had a tortuous course, and membranous intersections were partially visible.

The patient was referred for cardiovascular magnetic resonance (CMR) imaging. On cine imaging, an extremely tortuous, multiloculated aneurysmal cavity confined to the pericardial sac communicating via a narrow neck (maximum, 16 mm; ratio of orifice to cavity diameter, 0.40) with the left ventricular cavity was seen. The neck of the pseudoaneurysm was identified directly below the posterior leaflet of the mitral valve prosthesis, and pulse synchronous flow disturbances could be seen (see Figure 2 and Movie II in the online-only Data Supplement). Contrast-enhanced first-pass perfusion imaging further confirmed direct left ventricular arterial supply of the pseudoaneurysm. To visualize the full extent of the aneurysm, contrast-enhanced 3-dimensional CMR left ventriculography was subsequently performed (see Figure 3 and Movie III in the online-only Data Supplement). The segmented volume of the pseudoaneurysm was 185 mL. Finally, delayed-enhancement imaging ruled out left ventricular myocardial infarction or aneurysmal thrombus formation (Figure 4). Surgery confirmed the diagnosis (Figure 5), and patch repair was successfully done. The postoperative course was uneventful.

Ventricular pseudoaneurysms may occur after transmural myocardial infarction, chest trauma, or cardiac surgery and are prone to rupture. Thus, early and accurate diagnosis of this condition is crucial. In the present case, the dedicated combination of CMR imaging techniques (ie, cine, first-pass perfusion, scar imaging, and 3-dimensional angiography) proved ideal to accurately diagnose and fully visualize left ventricular pseudoaneurysm formation.

Disclosures

None.
**Figure 1.** Systolic echocardiographic still frames (2-chamber view). A, B mode; B, corresponding color Doppler image. White arrows indicate the large perfused cavity.

**Figure 2.** Cine CMR imaging in the short-axis (A) and 2-chamber/oblique sagittal (B through D) orientation at end systole. Note the extensive, multiloculated cavity neighboring the inferior wall. White arrow indicates left ventricular rupture site (orifice of the pseudoaneurysm).

**Figure 3.** Surface-rendered (A) and endoluminal surface (B) views of the contrast-enhanced 3-dimensional CMR left ventriculography. The left ventricular rupture site and its close proximity to the mitral valve prosthesis are demonstrated. LA indicates left atrium; LV, left ventricle; and MVP, mitral valve prosthesis.
Figure 4. Delayed-enhancement CMR imaging in the short-axis (A) and 2-chamber (B) orientation defined the pseudoaneurysm by the absence of left ventricular myocardial infarction (ie, no hyperenhancement of the left ventricular wall).

Figure 5. Intraoperative finding. Surgical probes indicate the open pseudoaneurysmal cavity and left ventricular rupture site (arrow).
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