Case Reports

Left Atrial Wall Dissection:

A Rare Sequela of Native-Valve Endocarditis

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Left atrial wall dissection is a rare condition; most cases are iatrogenic after mitral valve surgery. A few have been reported as sequelae of blunt chest trauma, acute myocardial infarction, and invasive cardiac procedures. On occasion, infective endocarditis causes left atrial wall dissection.

We report a highly unusual case in which a 41-year-old man presented with native mitral valve infective endocarditis that had caused left atrial free-wall dissection. Although our patient died within an hour of presentation, we obtained what we consider to be a definitive diagnosis of a rare sequela, documented by transthoracic and transesophageal echocardiography. ***(Tex Heart Inst J 2015;42(2):178-80)***

Left atrial (LA) wall dissection is a rare condition. Most of the reported instances have followed mitral valve surgery, but a few other causes exist. We present an exceptionally unusual case of LA wall dissection as a sequela of native mitral valve endocarditis.

Key words: *Aneurysm, dissecting/etiology; dissection, vascular/etiology; echocardiography, transesophageal; echocardiography, transthoracic; endocarditis, infective/complications/sequelae; heart atria/ultrasonography; heart valve, native*

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Case Report

In January 2013, a 41-year-old man, a heavy smoker who had little medical or surgical history, presented with New York Heart Association functional class III–IV dyspnea, which had worsened progressively over the preceding week and had been associated with subjective fevers, chills, and infrequent episodes of chest pain. On physical examination, the patient had a blood pressure of 96/45 mmHg, a pulse rate of 124 beats/min, a respiratory rate of 24 breaths/min, and a temperature of 102.5 °F. Cardiac examination revealed the point of maximum impulse to be in the left 5th intercostal space at the mid-clavicular line; auscultation revealed an S_3 gallop at the mitral area, with a grade 4/6 holosystolic murmur best heard over the apex. The electrocardiogram showed sinus tachycardia without evidence of ischemic ST-T changes. The chest radiograph showed a normal cardiac silhouette with signs of pulmonary venous congestion.

A 2-dimensional (2D) transthoracic echocardiogram (TTE) showed a membrane-like structure extending from the superior LA wall to the base of the posterior mitral leaflet, creating a false lumen that partly occluded the true LA chamber—a picture consistent with LA free-wall dissection. Attached to the lower end of this membrane was a large mass with multiple finger-like projections (Fig. 1). Color-flow Doppler mode revealed a central jet of moderate mitral regurgitation caused by lack of coaptation of the mitral valve leaflets. Additional moderate-to-severe systolic flow was detected—this from the left ventricle into the false lumen, through a perforated posterior mitral leaflet (Fig. 2). Mild pericardial effusion was also noted. These findings were confirmed by a transesophageal echocardiogram (TEE) (Fig. 3). The dissection membrane caused no pulmonary vein obstruction.

On the basis of the patient's clinical presentation, we obtained blood cultures and began broad-spectrum antibiotic therapy; however, within one hour of his presentation (and before surgical intervention), the patient died of cardiogenic shock refractory to medical treatment. Three blood cultures grew methicillin-sensitive *Staphylococcus aureus*.

Although no definitive pathologic diagnosis by autopsy was available, the positive blood cultures, together with the 2D TTE and TEE findings in a patient with such a clinical presentation, are highly consistent with the diagnosis of infective endocarditis of the mitral valve. The formation of a large mitral valve vegetation appears to have

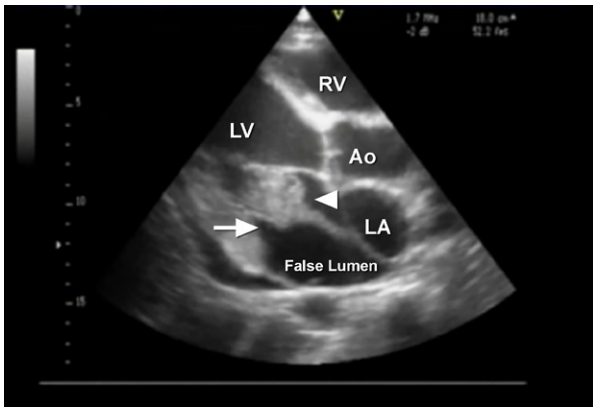

Fig. 1 *This transthoracic echocardiogram (parasternal long-axis view) shows a sizable vegetation (arrowhead) attached to the posterior mitral leaflet, which was perforated (arrow) by the infection. Through this perforation, the regurgitant jet dissected the left atrial free wall, thereby dividing the left atrial chamber into true and false lumina.*

Ao = aorta; LA = left atrium; LV = left ventricle; RV = right ventricle

Supplemental motion image is available for Figure 1.

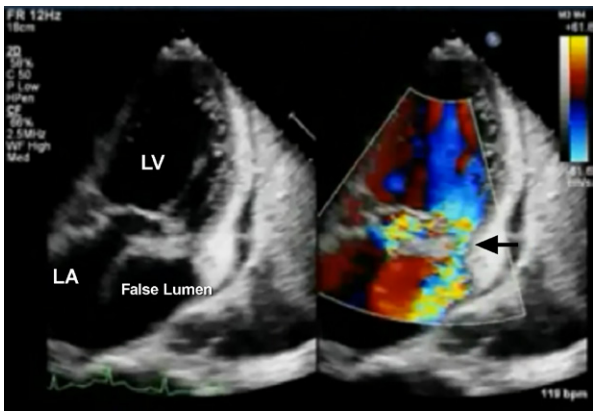

Fig. 2 *Transthoracic echocardiogram (apical 4-chamber view) shows, at left, the LA dissection dividing the LA cavity into an LA proper and a false lumen; at right, color-flow Doppler mode reveals a jet regurgitant through the perforated base of the posterior mitral leaflet (arrow), with flow forcing its way into the dissected left atrial wall.*

LA = left atrium; LV = left ventricle

Supplemental motion image is available for Figure 2.

led to perforation of a valve leaflet, which in turn was followed by LA free-wall dissection.

Discussion

Mitral valve surgeries, especially of heavily calcified valves that undergo extensive débridement, have been found to be the most frequent cause of LA wall dissection, in documented cases.[1] The 2nd most frequent

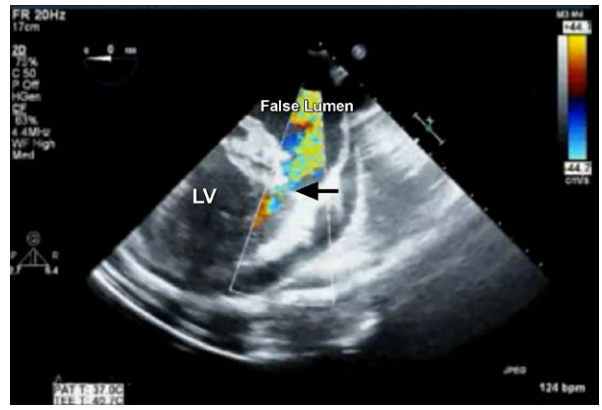

Fig. 3 *Transesophageal echocardiogram with color-flow mapping shows the site of entry into the dissected left atrial free wall through the perforated base of the posterior mitral leaflet (arrow).*

LV = left ventricle

Supplemental motion image is available for Figure 3.

cause of LA wall dissection is blunt chest trauma as a sequela of external cardiac massage or a motor vehicle accident.[2,3]

Other causes of LA wall dissection reported in the medical literature include acute myocardial infarction followed by ventricular free-wall rupture, percutaneous coronary stenting, radiofrequency ablation of atrial tachycardia, and repair of left ventricular aneurysm.[3-6]

Very rarely, LA wall dissection occurs as a sequela of infective endocarditis; to the best of our knowledge, only 2 such cases have been reported before this one. In the first case, infective endocarditis involved both mitral and aortic valve metallic prostheses, and this was complicated by a mycotic aneurysm of the aortic root and by dissection of the interatrial septum.[3] In the 2nd case, LA wall dissection occurred as a sequela of intramyocardial abscess secondary to native mitral and aortic valve endocarditis.[7]

Ours is a rare case of LA wall dissection as a sequela of native mitral valve endocarditis. We assume that the extension of infection up into the LA free wall created a weak point that was exposed to the severe jet of mitral regurgitation arising from the perforated posterior mitral valve leaflet. This led to the formation of a dissection plane, which progressed because of substantial systolic flow from the left ventricle into the false left atrial lumen.

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