Cardiac Imaging

Aneurysm of the Basal Interventricular Septum Secondary to Turbulent Flow Jet From A Mitral Prosthetic Valve

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Aneurysms of the muscular interventricular septum, most of which are congenital, have been rarely reported.[1,2] Usually, the affected site is the mid-portion of the trabecular interventricular septum, whereas aneurysms of the basal interventricular septum are rare. A 24-year-old man who underwent mitral valve replacement with a tilting disc prosthesis in 2003 applied for medical examination for a job application and transthoracic echocardiography (TTE) was ordered by his physician. His electrocardiogram revealed atrial fibrillation with a normal ventricular rate response. On TTE, both atria were enlarged, with a normal left ventricular ejection fraction. A mechanical monoleaflet valve with an eccentric flow jet was present in the mitral position. The mitral annulus was calcified. On continuous wave Doppler the peak and the mean transmitral diastolic gradients were 22 mmHg and 12 mmHg, respectively. Peak systolic pulmonary artery pressure estimated by the modified Bernoulli equation was 42 mmHg. The basal portion of the interventricular septum was aneurysmatic at the site of mitral inflow jet impingement (Figure 1). Mitral disc motion was normal in range, but the prosthetic orifice was directed towards the interventricular septum. There was an outward bulge of the basal and midinterventricular septum during diastole with preserved wall thickness. Color flow examination showed a transprosthetic forward flow jet impinging upon the basal interventricular septum before being directed apically (Figure 2).

In the differential diagnosis of pseudoaneurysm and true aneurysms, our case can be considered as a true aneurysm because of the preserved wall thickness and lack of a history of previous myocardial infarction or transaortic septal myotomy, which are the most common causes of interventricular septal pseudoaneurysms. Moreover, pseudoaneurysms are likely to occur in the muscular part of the interventricular septum. Aneurysms in the membranous portion of the interventricular septum are likely to arise in the course of partial or total closure of ventricular septal defects. In our patient, a transprosthetic forward flow jet impinging upon the basal interventricular septum resulted in an aneurysm. However, a previous history of a closure defect may also have contributed to this process. The patient remained asymptomatic on medical follow up. In this case, a turbulent and eccentric antegrade transprosthetic flow jet constantly hammered the interventricular septum, resulting in a permanent deformity, which is a rare clinical condition.

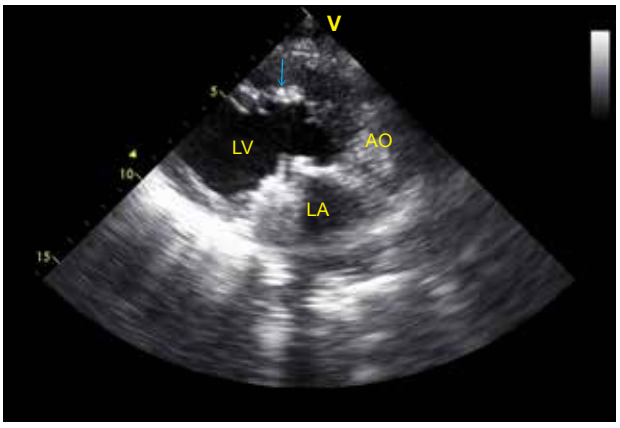

Figure 1. Aneurysmatic basal portion of the interventricular septum at the site of mitral inflow jet impingement. AO – aorta; LA – left atrium; LV – left ventricle.

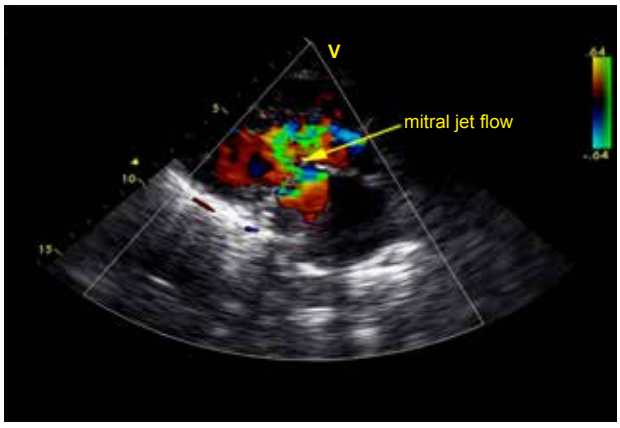

Figure 2. Transprosthetic flow jet impinging upon the basal interventricular septum.

References

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