Left sinus of Valsalva aneurysm presenting as myocardial ischemia

Malini Sarkar,^a Brody Wehman, MD,^a Ratnakar Mukherjee, MD,^b and Bradley S. Taylor, MD, MPH,^a Baltimore, Md

From the Divisions of ^aCardiac Surgery and ^bCardiology, University of Maryland School of Medicine, Baltimore, Md.

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Address for reprints: Bradley S. Taylor, MD, MPH, 110 S Paca St, 7th Floor, Baltimore, MD 21201 (E-mail: btaylor@som.umaryland.edu).

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SVA stretching left main and LAD with attenuated flow.

Central Message

A left sinus of Valsalva aneurysm can present with acute coronary ischemia secondary to distension and stretching of left main and LAD arteries.

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Sinus aneurysms originating from the left sinus is exceedingly rare and seen in <0.5% of all sinus of Valsalva aneurysms (SVAs).¹ Symptomatic SVA usually presents with acute aortic insufficiency, chest pain, or congestive heart failure symptoms secondary to acute ischemia. We present a case of acute coronary ischemia secondary to a left SVA with elongation and attenuation of the coronary arteries.

CASE PRESENTATION

A healthy 64-year-old man presented with exertional chest pain for 1 month. Myocardial perfusion scan showed anteroseptal infarction with peri-infarct ischemia. Echocardiography showed trace aortic regurgitation and cardiac catheterization showed an aortic root aneurysm with mass effect causing compression and elongation of the left main coronary artery (Figure 1). Computed tomography scan showed a large aneurysm of the left sinus of Valsalva and coarctation of the aorta (Central Image). During surgery, the gradient of the coarctation was assessed by measuring pressures above and below the coarctation and found to be 12 to 14 mm Hg. A 30-mm Valsalva graft was used to replace the aortic root with coronary reimplantation. The aortic valve was replaced with a 27-mm bioprosthetic valve in a 30-mm graft using a bio-Bentall procedure. The native aortic valve was not spared because of large fenestrations in all 3 leaflets and thinning of the left sinus annulus. The left internal mammary artery was used to bypass the left anterior descending and saphenous vein was used to bypass the first obtuse marginal coronary artery. Intraoperative transesophageal echocardiogram showed an ejection fraction of 55%. The

postoperative course was notable for re-exploration for cardiac tamponade, atrial fibrillation, and temporary renal insufficiency. The patient made a full recovery and was asymptomatic at follow-up 4 months later and is alive 2 years postoperatively (Figure 2).

DISCUSSION

Most SVAs arise from the right sinus (98%) and are clinically silent lesions. This unusual left SVA elongated and attenuated the left main coronary artery, causing coronary ischemia and exertional chest pain.

The patient was being followed for a history of coarctation. At presentation, the coarctation was asymptomatic and the patient had no clinical sequelae seen in patients with significant coarctation of the aorta. We also assessed the coarctation using computed tomography angiography and in the operating room. The diameter reduction was not considered to be significant and the gradient was only 12 to 14 mm Hg across the coarctation.

Coronary artery bypass grafting was performed because of the uncertain response of the left main coronary artery and proximal left anterior descending to relief of the extrinsic distortion. The vessel was significantly stretched, narrow, and attenuated. Because of the chronic nature of this process, we could not predict that relief of the stretch on the vessel would restore normal flow in this

FIGURE 1. Computed tomography scan (*left*) of large left sinus of Valsalva aneurysm with distortion of the left anterior descending artery (*arrow*). Ventriculogram (*right*) showing delayed filling of the sinus of Valsalva aneurysm (*arrow*).

critical vessel (Central Image). Treatment of left SVA has included aortic root repair, aortic valve replacement, coronary artery bypass, and aortic valve repair.¹ An alternate

mechanism for myocardial ischemia from SVA has been described, in which aortic regurgitation causes myocardial ischemia and infarction.¹ Most left SVAs are asymptomatic and might present as sudden cardiac death, or they present with severe aortic insufficiency.² Takahara and colleagues describe the case of an isolated aneurysm of the left sinus of Valsalva presenting as aortic valve regurgitation³ whereas others describe rare cases of left SVA causing myocardial ischemia.^{4,5} We are the first, to our knowledge, to report distortion of the coronary as the cause for ischemia.

FIGURE 2. Postoperative computed tomography scan showing repair of sinus of Valsalva aneurysm and left internal thoracic artery to the left anterior descending artery graft.

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