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Aorta: Case Report

Repair of Giant Sinus of Valsalva Aneurysms

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Sinus of Valsalva aneurysm (SVA) is a rare, abnormal dilation of the aortic root. Although often asymptomatic, SVAs can be manifested with a variety of symptoms, including rupture, which is a highly lethal condition. Most SVAs are small, and most patients present with aneurysm in a single coronary sinus. We describe the case of a 69-year-old man presenting with ventricular tachycardia cardiac arrest and 2 SVAs, a giant one arising from the right coronary sinus and a smaller one coming from the left coronary sinus. Included in the case presentation is our operative repair video.

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Sinus of Valsalva aneurysm (SVA) is a rare, abnormal dilation of the aortic root with an incidence rate of approximately 0.09%.[1] Unruptured SVAs are usually asymptomatic; however, they can in some cases cause a mass effect on coronary arteries, valves, or outflow tract, leading to hemodynamic complications. Furthermore, aneurysm rupture is highly lethal. Because of this, all SVAs should be promptly referred to a cardiothoracic surgeon for evaluation. The current literature lacks specific guidelines for the management of unruptured SVAs, but surgical correction has been reported as the preferred treatment modality with favorable outcomes.[2] Most SVAs involve a single cusp, originating from the right coronary sinus in 65% to 85% of cases, with only a few reported cases involving multiple sinuses.[1,3] We present a rare case of multiple giant unruptured SVAs involving both the right and left coronary sinuses and successful surgical management (Video).

A 69-year-old male patient presented to an outside hospital with ventricular tachycardia cardiac arrest. He was successfully cardioverted and transferred to our institution for immediate workup. Cardiac catheterization revealed a larger aneurysm originating from the right coronary sinus and a second smaller aneurysm originating from the left coronary sinus. Subsequent cardiac computed tomography angiography confirmed 2 SVAs, with right and left aneurysms measuring 7.7 cm and 2.3 cm, respectively. The right SVA was revealed to extend anteriorly and to severely compress the right ventricular outflow tract and to cause moderate narrowing of the left ventricular outflow tract. He was taken to the operating room urgently for repair. Given the size of the aneurysm as well as multiple fenestrations in the aortic valve leaflets, a valve-sparing surgical approach was not chosen. He underwent surgical resection of the aneurysms with a complete aortic root replacement with reimplantation of coronary arteries and aortic valve replacement. His intraoperative and postoperative courses were uneventful.

COMMENT

SVAs are rare cardiac defects that are often detected as incidental findings. Most small SVAs are clinically silent on presentation, but larger aneurysms have been associated with other cardiac manifestations because of their size and anatomic location and are at risk for possible rupture and death.[2] The lethality of complications arising from SVAs necessitates early diagnosis and prompt management. Whereas improvements in cardiac imaging and the application of less invasive studies have allowed early recognition and diagnosis, specific guidelines for the management of unruptured SVAs are still lacking and remain controversial.

Most commonly, SVAs originate from a single sinus of Valsalva, involving predominantly the right coronary sinus. The presence of multiple SVAs as observed in this case is not well reported.[2] Furthermore, the aneurysm originating from the right coronary sinus in our patient was significantly larger than SVAs reported in previous literature,

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which ranged from 5 to 6 cm in size.[4,5] Although unruptured SVAs may be conservatively managed, a review by Nguyen and colleagues[2] suggested surgical repair as the preferred treatment modality for large aneurysms and in the presence of other associated cardiac lesions (4% in-hospital mortality in 53 reported cases). Indications for a surgical approach to manage this case were multifactorial, including the presence of multiple aneurysms, their size, mass effect, and the patient's symptomatic clinical presentation. Whereas a valve-sparing approach should be considered and may be a feasible option, the surrounding aortic tissue is often so abnormal that a valve-sparing approach is not possible.

The Video can be viewed in the online version of this article [https://doi.org/10.1016/j.atssr.2022.11.017] on http://www.annalsthoracicsurgery.org.

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