

Sinus of Valsalva aneurysm: An uncommon presentation

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Abstract

BACKGROUND: Sinus of Valsalva aneurysm (SVA) may be congenital or acquired. They could mimic ventricular tumor symptoms and cause signs and symptoms of ventricular outflow tract obstruction. They may also involve the conduction system and cause palpitations or syncopal episodes. Both transthoracic echocardiography (TTE) and transesophageal echocardiography (TEE) serve as quick, noninvasive methods to provide information on size and location of aneurysmal dilatation and cardiac chamber involvement. These methods can identify any associated anomalies or complications. This study presents a patient with unruptured SVA.

CASE REPORT: A 46-year-old man, who had been suffering from nonspecific symptoms such as exercise intolerance and weakness for a few months, referred to our clinic in Isfahan (Iran). In TTE, a large mass was observed in the right ventricle. SVA was suspected after meticulous probing. This diagnosis was confirmed by TEE and computed tomography angiography. At open heart surgery, an SVA with a lot of clots it was removed.

CONCLUSION: SVA must be kept in mind when a tumor-like mass is observed in the right ventricle. Detailed evaluation would thus be necessary to rule out SVA and to prevent wrong diagnosis and treatment that can sometimes be catastrophic.

Keywords: Sinus Valsalva, Aneurysm, Cardiac Tumor

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Introduction

The sinuses of Valsalva are three focal expansions that form the walls of the aortic root. They function as a support structure for the aortic valve and provide space behind the valve leaflets when the leaflets are open to prevent the occlusion of the coronary ostia.¹ Sinus of Valsalva aneurysm (SVA) may be congenital or acquired. Congenital aneurysms are thought to result from fundamental localized weakness of the elastic lamina at the junction of the aortic media and the annulus fibrosus.^{2,3}

Acquired SVA is often associated with conditions that compromise the elastic connective tissue at the junction of the aortic media and the annulus. These conditions include infectious diseases, degenerative complications, and injury from deceleration trauma.⁴ While 65-85% of SVAs originate from the right sinus of Valsalva, SVAs that originate from noncoronary (10-30%) and left sinuses (< 5%) are exceedingly rare.⁵

The SVA may function as a space-occupying lesion and may thus obstruct the left or right ventricular outflow tracts, interfere with aortic valve function, distort the coronary ostia with ischemic consequences, or compress the conducting system

and cause conduction disturbances.⁶ Due to these effects, SVA could mimic ventricular tumor symptoms and cause signs and symptoms of ventricular outflow tract obstruction. In addition, involvement of the conduction system might cause palpitations or syncopal episodes.⁷

Both transthoracic echocardiography (TTE) and transesophageal echocardiography (TEE) serve as quick, noninvasive methods to provide information on size and location of aneurysmal dilatation and fistulous tracts, cardiac chamber involvement, degree of aortic insufficiency and other valvular dysfunctions. They are also helpful in identification of any associated anomalies or complications. On the other hand, color Doppler echocardiography helps delineate the fistulous connection which is a sign of rupture.⁸

Surgical treatment is the recommended strategy in the majority of patients with SVA and medical treatment is reserved for hemodynamic stabilization, prophylaxis or treatment of endocarditis, and management of arrhythmias and/or cardiac ischemia.^{9,10} Since the rates of morbidity and mortality due to unruptured SVA are high, it is often treated through aggressive surgical procedures. Transcatheter

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closure of ruptured SVA has also been successfully performed using Amplatzer septal occluder devices.¹¹ Aortic root reconstruction or replacement, aortic valve repair or replacement, and primary suture closures (pledget) and patch closures (if ruptured) are surgical cares in management of SVA.¹²⁻¹⁴

This study presents a patient with unruptured aneurysm. Although some unruptured SVAs have been observed in serial monitoring up to several years after the initial diagnosis, most unruptured SVAs have been found to progress to rupture.¹⁵

Case Report

In November 2011, a 46-year-old man was referred to our heart clinic in Isfahan (Iran) for more evaluations. He had been suffering from nonspecific symptoms such as exercise intolerance and weakness for a few months. The performed physical and psychiatric evaluations had not shown a specific pathology. His physical activities were not reduced significantly and he was not under medical therapy.

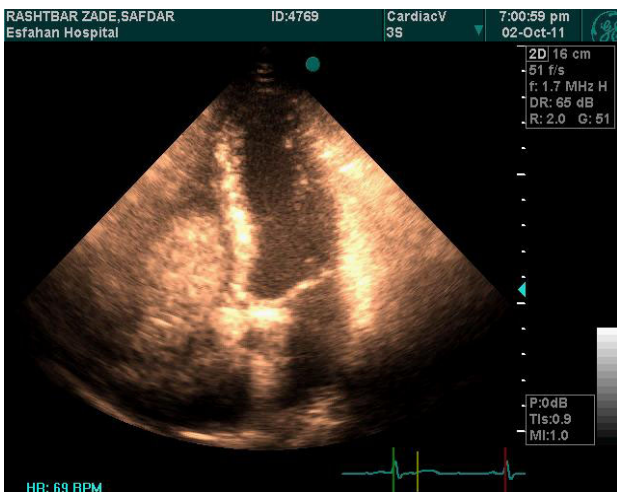


Figure 1. Preoperative TTE

On admission, the patient had a regular pulse with an apical pulse of 80 beats per minute (bpm). The heart sounds were normal. His electrocardiogram was also normal with an approximate rate of 80-90 bpm and nonspecific ST-T changes. TTE was performed for further evaluation. Ejection fraction was 60%. There was no valve stenosis or regurgitation. Echocardiography did not reveal atrial or ventricular enlargement. A large tumor-like mass was observed in the right ventricle (Figure 1). More meticulous assessment showed the mass to be related to sinus Valsalva. This diagnosis was confirmed by TEE (Figure 2). Computed tomography angiography (CTA) was used for detailed evaluation of the mass (Figure 3).

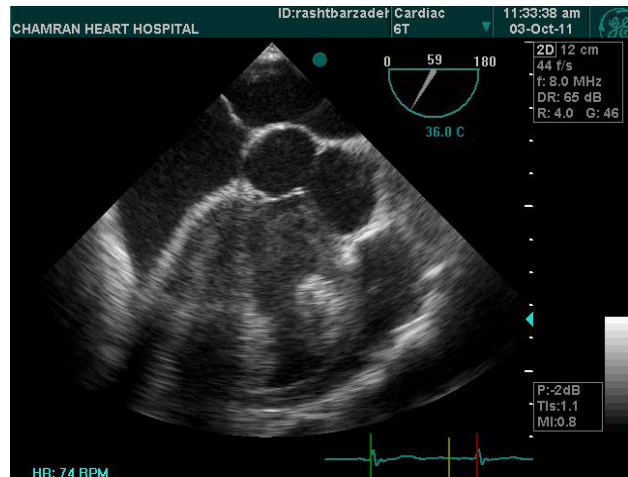


Figure 2. Preoperative TEE

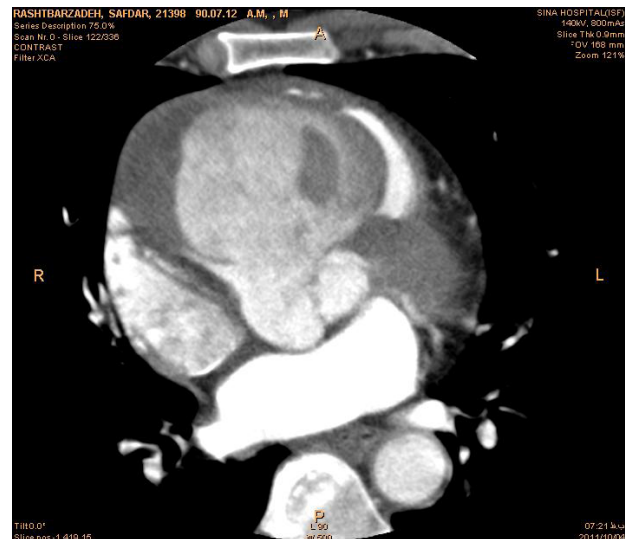


Figure 3. Computed tomography angiography

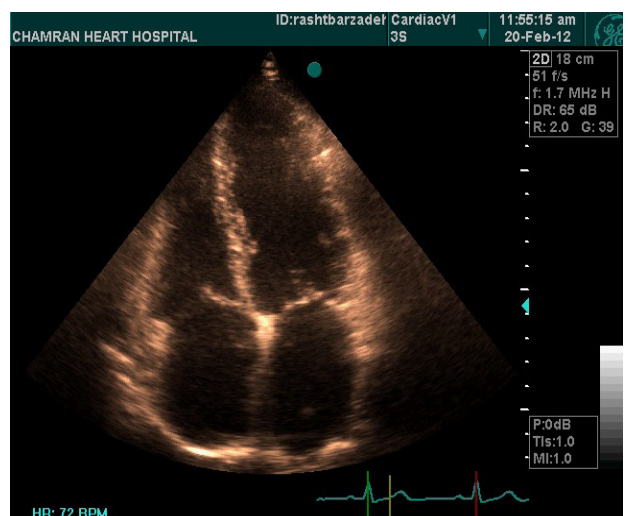


Figure 4. postoperative TTE

Open heart surgery with intraoperative TEE was performed and an SVA with lots of clots was

removed. The postoperative course was uneventful and the patient was discharged without any symptoms or residual mass (Figure 4).

Conclusion

SVA must be kept in mind when a tumor-like mass is observed in the right ventricle. Detailed evaluation would thus be necessary to rule out SVA and to prevent wrong diagnosis and treatment that can sometimes be catastrophic.

Conflict of Interests

Authors have no conflict of interests.

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