

Acute rupture of a congenital sinus of Valsalva aneurysm after severe exercise

Doğuştan Valsalva sinüsü anevrizmasının aşırı egzersiz sonrası ani yırtılması

Mustafa Tuncer, M.D., Beyhan Eryonucu, M.D., Ünal Güntekin, M.D., Hasan Ali Gümrükçüoğlu, M.D.

Department of Cardiology, Medicine Faculty of Yüzüncü Yıl University, Van

Ruptured aneurysms of the sinus of Valsalva may cause manifestations of prompt onset. A 22-year-old man with no previous cardiac complaints presented with dyspnea, palpitation, fatigue, and shortness of breath, all of which occurred after a football match. Transthoracic echocardiography showed an aneurysmal dilatation of the right sinus of Valsalva to the direction of the right ventricle. Color Doppler imaging showed a marked left-to-right turbulent flow from the aortic root to the right ventricle. Continuous Doppler imaging also revealed a continuous left-to-right systolodiastolic shunting. The patient was submitted to cardiovascular surgery for surgical repair.

Key words: Aortic aneurysm/diagnosis; aortic rupture/ultrasonography; echocardiography; sinus of Valsalva.

Valsalva sinüsü anevrizmasının yırtılması ani başlangıçlı semptomlara yol açabilir. Daha önce herhangi bir kardiyak sorunu olmayan 22 yaşında bir erkek hasta, bir futbol maçından sonra ortaya çıkan nefes darlığı, bitkinlik, solunum güclüğü yakınmalarıyla başvurdu. Transtorasik ekokardiyografide, sağ Valsalva sinüsünde sağ ventrikül yönüne doğru anevrizmal genişleme izlendi. Renkli Doppler görüntüleme, aort kökünden sağ ventriküle doğru, soldan sağa belirgin bir türbülant akım görüldü. Sürekli Doppler görüntüleme de soldan sağa kesintisiz sistolodiyastolik şant saptandı. Hasta, cerrahi onarım için kardiyovasküler cerrahi bölümüne sevk edildi.

Anahtar sözcükler: Aort anevrizması/tanı; aort yırtığı/ultrasonografi; ekokardiyografi; Valsalva sinüsü.

Congenital sinus of Valsalva aneurysm is a rare lesion (with an incidence of 0.1%) that usually originates from the right or noncoronary aortic sinus and communicates with a cardiac chamber, more commonly with a right-sided one, producing an aorta-cardiac fistula.^[1] Aneurysms of the left sinus are rare.

Although an unruptured aneurysm of the sinus of Valsalva is usually asymptomatic, it may become symptomatic when it ruptures into one of the cardiac chambers.^[2,3] Symptoms can range from angina to acute pulmonary edema and cardiac collapse. If left untreated, it may cause severe heart failure, and even mortality. The conventional treatment of this aneurysm is surgical repair.^[1,4]

CASE REPORT

A 22-year-old man with no previous cardiac complaints presented to our emergency department imme-

diately after a football match. His major complaints were dyspnea, palpitation, fatigue, and shortness of breath, all of which occurred after the football match.

On physical examination, there were bounding pulses, a palpable thrill, and a continuous heart murmur that became accentuated in diastole at the left sternal edge. His blood pressure was 110/50 mmHg. An increase in pulmonary vascularity was obvious, but cardiac chambers appeared normal on the chest radiogram. Transthoracic echocardiography showed an aneurysmal dilatation of the right sinus of Valsalva to the direction of the right ventricle (Fig. 1). Enlargement of the right ventricle was minimal and the left ventricle was normal. Color Doppler imaging showed a marked left-to-right turbulent flow from the aortic root to the right ventricle (Fig. 2). Continuous Doppler imaging also revealed

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Correspondence: Dr. Hasan Ali Gümrükçüoğlu, Yüzüncü Yıl Üniversitesi Araştırma Hastanesi, Kardiyoloji Kliniği, 65100 Van, Turkey. Tel: +90 432 - 216 47 56 e-mail: hasanalig80@yahoo.com

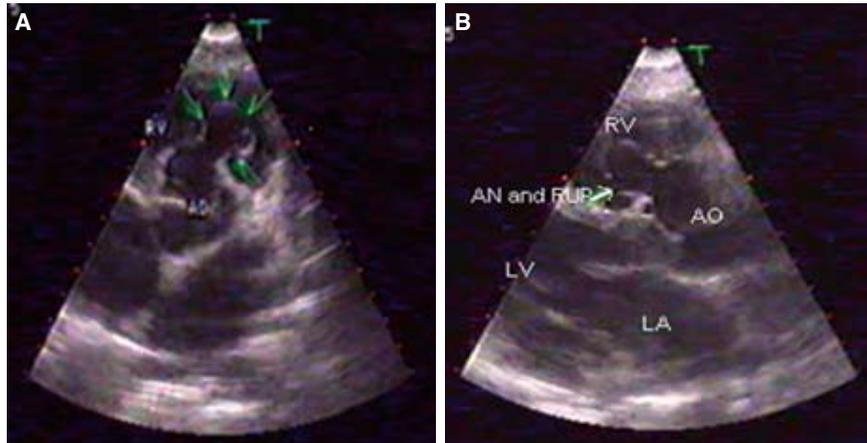


Figure 1. (A) Parasternal short-axis echocardiographic view of Valsalva sinus aneurysm (arrows). (B) Parasternal long-axis view showing the site of aneurysmal rupture (arrow). Ao: Aorta; RV: Right ventricle; LA: Left atrium; LV: Left ventricle.

a continuous left-to-right systolodiastolic shunting. The patient was referred to cardiovascular surgery for surgical repair.

DISCUSSION

Aneurysms of the sinus of Valsalva are rare cardiac anomalies. They may be either acquired or congenital. A congenital lack of continuity between the aortic media and annulus fibrosus may initiate aneurysm formation^[2] or less frequently, infections or degenerative processes may affect the aortic wall. Acquired aneurysms may result from trauma, endocarditis, syphilis, Behçet's syndrome, Marfan's syndrome, and senile type dilatation.

Approximately 65% to 85% of aneurysms originate from the right sinus of Valsalva, whereas those originating from the noncoronary (10%-30%) and left sinuses (5%) are exceedingly rare.^[5] Sinus of Valsalva aneurysm usually ruptures into the right (or rarely left) heart chambers from an aorta-cameral fistula and is frequently associated with a supracristal ventricular septal defect (25%-55%).^[6]

Ruptures of sinus of Valsalva aneurysms rarely remain asymptomatic. The presentations of ruptured cases range from asymptomatic to frank heart failure due to a hyperdynamic cardiac state. Because most ruptures are initially small, the majority of patients present with less severe symptoms at the time of rupture.^[5] Development of complaints is of gradual onset in more than 50% of patients, including shortness of breath, fatigability, palpitation, and tachycardia.^[7-9] Usually, a continuous to-and-fro murmur is present, which is best heard on the left side of the sternum. Radiological signs of pulmonary hypertension are fre-

quently evident. Although ruptures are usually associated with pathological changes, electrocardiographic findings are highly inconsistent.

Although ruptured sinus of Valsalva aneurysms are commonly diagnosed preoperatively with the use of various echocardiographic techniques, preoperative catheterization and routine aortic cineangiography may still be necessary to confirm the diagnosis and identify associated conditions.^[10]

Transesophageal echocardiography in addition to transthoracic echocardiography can provide all necessary diagnostic data for a safe surgical treatment. Urgent surgical repair is recommended in all patients with

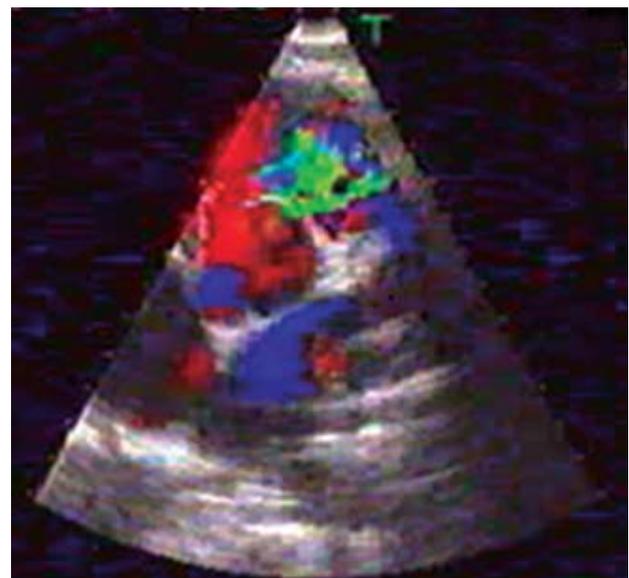


Figure 2. Parasternal short-axis color Doppler image showing shunt flow from the aorta into the right ventricle.

ruptured sinus of Valsalva aneurysms because clinical deterioration can be rapid with increased morbidity and mortality. Surgery is the definitive treatment with a low operative risk and good long-term survival.^[6]

In conclusion, surgical treatment of ruptured sinus of Valsalva aneurysms can be performed with acceptably low operative risk, ensuring good long-term event-free and symptom-free survival. Early surgical intervention helps prevent the development of worsening symptoms and progression of the disease, which may otherwise result in a more complicated and less satisfying repair.

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