

CASE REPORT

Sinus of Valsalva aneurysm rupture into the right atrium. Presentation of a case

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Rupture of a Sinus of Valsalva aneurysm in adults is extremely rare. We present the case of a 25-year-old patient with rupture of the noncoronary Sinus of Valsalva into the right atrium and endocarditis in the tricuspid valve. The treatment was surgical, performing repair with a pericardial patch on the aneurysm, resection of vegetation and tricuspid plasty. We emphasize the importance of timely diagnosis and treatment due to the high associated mortality.

Key words: Endocarditis; Right Atrium; Sinus of Valsalva; Tricuspid valve

La ruptura del aneurisma del Seno de Valsalva en adultos es extremadamente rara. Presentamos aquí el caso de un paciente de 25 años de edad con ruptura de aneurisma del Seno de Valsalva a la aurícula derecha y endocarditis tricuspídea. El tratamiento fue quirúrgico, realizando la reparación mediante un parche de pericardio sobre el aneurisma, resección de la vegetación, y reparación tricuspídea. Se enfatiza la importancia de un diagnóstico y tratamiento oportunos debido a la alta mortalidad asociada a esta complicación.

Palabras clave: Endocarditis; Aurícula derecha; Seno de Valsalva; Válvula tricúspide.

Cir Card Mex 2023; 8(4): 111-113.

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Sinus of Valsalva aneurysm is a relatively infrequent pathology with an incidence of 0.14% to 3.5%, which is usually asymptomatic until its rupture. This complication is infrequent (0.5% to 1.5%), but when it occurs it is associated with high mortality [1]. A generally congenital etiology has been described, where the histological finding shows a discontinuity between the aortic middle layer and the annulus fibrosus; however, an acquired etiology or secondary to trauma, infection, or degenerative disease has also been reported [2]. Other theories report that sinus of Valsalva aneurysm is characterized by saccular or tubular dilatation due to a congenital or acquired deficiency of the aortic sinuses [3]. This condition frequently affects the right coronary sinus, which naturally evolves into a rupture towards low pressure cardiac chambers, such as the right ventricle [1]. In most cases, this condition is usually asymptomatic for long periods, and can evolve into progressive heart failure, thromboembolic complications and sudden death [4].

Due to its silent clinical nature and associated high mortality, early diagnosis with timely surgical treatment would reduce the risk of associated complications, morbidity and mortality. We report the case of an adult diagnosed with a non-coronary rupture aneurysm of the sinus of Valsalva into

the right atrium complicated by vegetation of the septal leaflet of the tricuspid valve.

CLINICAL CASE

A 25-year-old female with symptoms of fever of unknown origin was admitted at our institution. During the diagnostic approach, an echocardiogram was requested, finding infective endocarditis with vegetation in the cull de sac and tricuspid septal valve, non-coronary sinus of Valsalva aneurysm, and bicuspid aortic valve.

It was decided to undergo surgical treatment. During the surgical procedure, a Type I bicuspid aortic valve was found, with a rupture non-coronary aneurysm in the sinus of Valsalva of 8 mm diameter and connected to the right atrium (Fig. 1), establishing an aorto-atrial fistula, in addition to vegetation attached to the septal valve of the tricuspid causing perforation of 4mm by 10mm (Fig. 2). Teflon patch repair was performed to the sinus of Valsalva fistulous orifice with separate stitches (Fig. 3), in addition to pericardium plasty to the perforated septal valve of the tricuspid and removal of endocarditis; the aortic valve is preserved since there was no significant gradient or added lesion. The cardiopulmonary bypass time was of 138 min, and the aortic cross-clamping time was of 113 min. During the postoperative period, the patient had

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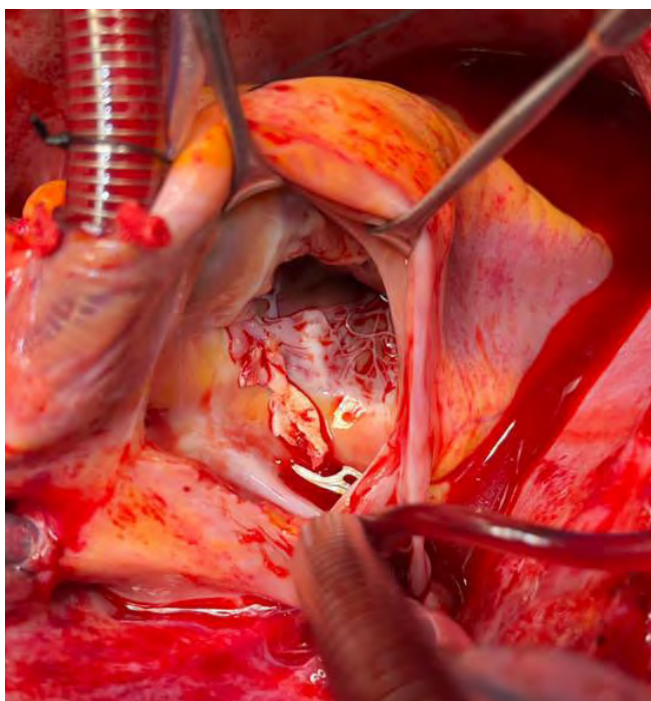


Figure 1. Tricuspid endocarditis in the septal valve and aneurysmal sac.

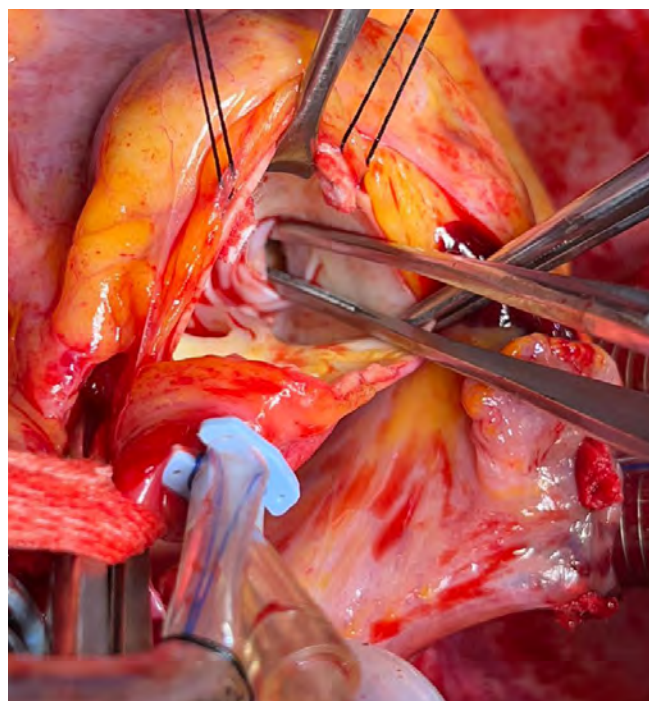


Figure 2. Aortotomy demonstrating Ruptured non-coronary Sinus of Valsalva.

a favorable clinical course, with an ICU stay of 48 hours and was discharged from the hospital 4 days after surgery.

COMMENT

Sinus of Valsalva aneurysm is a rare pathology with a higher prevalence in males. This condition usually occurs asymptotically for long periods of time and may evolve into rupture associated with progressive heart failure (60-80%) as occurred in this patient. The formal classification for sinus of Valsalva aneurysms is the one proposed by Sakakibara and Konno in 1962, consisting of four types according to the affected coronary sinus and the area in which they bulge or rupture [5]. Type IV connects the non-coronary sinus is the most affected, followed by the right-coronary and finally the left-coronary sinus. The rupture is usually spontaneous, after trauma, extreme exercise or endocarditis [6], as in our case. In 60% of cases, the rupture is towards the right ventricle and 29% to the right atrium.

Sinus of Valsalva aneurysms are rare congenital or acquired malformations, which are caused by progressive dilation of a weak area at the junction of the aorta with the heart. Factors that contribute to the formation and rupture of sinus of Valsalva aneurysms are abnormally low implantation of the valve annulus, defective development of the septum or endocardial cushions, aortic and pulmonary valves, and aortic pressure. These represent 1.2% to 3.5% of all congenital heart disease and 0.4% among indications for cardiac surgery [7]. It is frequently associated with other congenital heart anomalies, including ventricular septal defects, bicuspid aortic valve, coarctation of the aorta, pulmonary stenosis, atrial septal defect, and anomaly at the birth of the coronary arteries [7,8].

Rupture of sinus of Valsalva aneurysms presents with acute symptoms in 35% of patients, and chronic symptoms in 45%. They can also rupture spontaneously or secondary to bacterial endocarditis. In the case presented here, the patient presented a non-coronary sinus aneurysm with rupture into the right atrium. It was not possible to clarify whether it was of congenital origin or secondary to endocarditis. Surgical management was

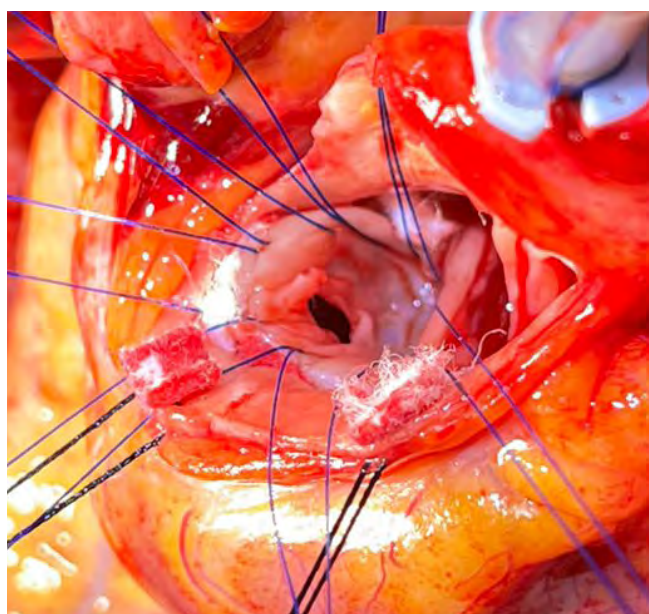


Figure 3. Repair with individual sutures of polypropylene 4-0 in the Sinus of Valsalva.

successful, performing a closure with an autologous pericardium patch on the inner side of the aorta. Three surgical techniques have been described; however, given the unusual nature of the pathology, there are no studies that compare the results with the different techniques [7].

In summary, the presentation of an aneurysm of the sinus of Valsalva is generally a congenital condition and rare presenta-

tion in adulthood, being associated with other cardiac lesions. Surgical treatment continues to be the treatment of choice, presenting low mortality.

FUNDING: None

DISCLOSURE: The authors have no conflicts of interest to disclose.

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