



RUPTURED SINUS OF VALSALVA – A RETROSPECTIVE STUDY

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ABSTRACT

Rupture of Sinus of Valsalva (RSOV) is an uncommon pathology with diverse clinical manifestation which ranges from absence of symptoms to cardiogenic shock. [1] We retrospectively reviewed cases admitted with a diagnosis of RSOV in our institution for the past three years and following observations were made.

AIM: The aim of the study was to investigate clinical manifestation, diagnosis, intra operative findings, and management of ruptured sinus of valsalva presented to our institution for past three years (2013-2016)

STUDY DESIGN: Retrospective analysis – case series

METHODOLOGY: A search of documented echocardiogram reports, documented operative findings and data analysis from nominal registry in our institution from 2013-2016. All patients with ruptured sinus of valsalva on echocardiogram were included and patients with associated annular aortic ectasia are excluded.

KEYWORDS : Ruptured Sinus of Valsalva, Ventricular Septal Defect, Sakakibara class

INTRODUCTION

Sinus of valsalva aneurysm may originate in right coronary sinus (65 to 85%), non coronary sinus (10 to 30%) and rarely left coronary sinus (1 to 5%) [2]. Failure of fusion between aortic media and the heart at the level of annulus fibrosis of aortic valve causes congenital form of rupture of sinus of valsalva [3]. Acquired form is seen in association with connective tissue disorders like Marfan's syndrome, Behcets disease, endocarditis [4].

Complications of RSOV aneurysm include aortic regurgitation, compromised coronary artery flow, arrhythmias (heart block), rupture. RSOV found frequently associated with ventricular septal defect (VSD). It ruptures commonly to right ventricle and right atrium, left ventricle, pericardium in descending order. [5]

RESULTS

Clinical presentation

A total of 8 patients (7 males and 1 female), the mean age of 33 years, were studied. The right coronary sinus was the most commonly affected. Associated congenital cardiac defects bicuspid aortic valve was found in 13% (1 out of 8 patients), VSD 25% (2 out of 8 patients)

Complications like aortic regurgitation 25% (2 out of 8 patients), right heart failure 75% (6 out of 8 patients) 50% (4 out of 8 patients) had rapid symptomatic deterioration with 38% (3 out of 8 patients) presented with ascites. 50% (4 out of 8 patients) had bilateral pitting pedal edema.

Right Ventricular dysfunction with a deranged liver functions were seen in 75% (6 out of 8 patients). 88% (7 out of 8 patients) were in New York Heart Association (NYHA) class III symptoms (see Figure 1) during admission with breathlessness as a predominant symptom (see Figure 2).

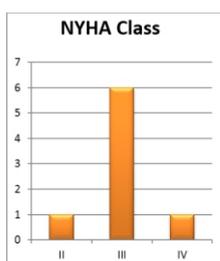


Fig 1: NYHA Class III symptoms predominates

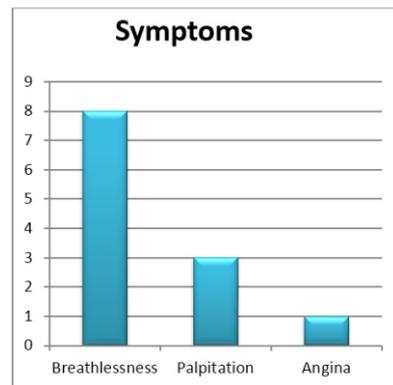


Fig 2: Breathlessness predominates among the NYHA symptoms

All the patients presented with a continuous murmur. All the patients presented with left to right shunt. 63% (5 out of 8 patients) wind sack was opening to Right Ventricular Outflow Tract (RVOT), 38% (3 out of 8 patients) was to right atrium. 38% (3 out of 8 patients) were in Modified Sakakibara class I. 13% (1 out of 8 patients) was in class III A. 25% (2 out of 8 patients) were in class III v. 25% (2 out of 8 patients) were in class IV (see Figure 3).

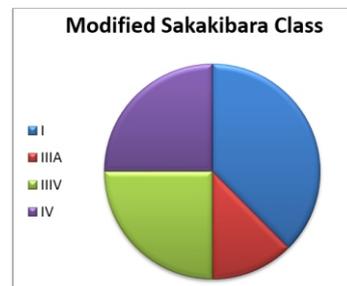


Fig 3: Class I Predominates Sakakibara Classification

One patient was a case of post device closure presented with persistent haemolysis and a high gradient across the device (AMPLATZER). All the patients had a wind sack. And all the findings were accurate with echocardiogram report.

Management

One patient underwent surgical excision of wind sack with goretex (PTFE) patch closure of VSD with aortic valve replacement. One patient underwent patch plasty of RSOV with VSD closure and Trussler's repair of aortic valve. Four patients underwent patch plasty from aortic end. One patient underwent removal of the implanted device and patch plasty. All the patients were followed up for 6 months and found to have good clinical outcome.

DISCUSSION

Sinus of Valsalva aneurysms is rare. First described in 1839 by Hope et al [8], it is found in 0.09% of 8138 autopsy subjects and in 0.15%–3.5% of patients who underwent open heart surgery (ref:6). Those with significant ruptures who most commonly present with symptoms of heart failure from large-volume left to right shunting. The right coronary sinus is most commonly involved, followed by the non-coronary sinus, and this trend was confirmed in our series. Echocardiography plays an important role in diagnosing sinus of Valsalva aneurysms and rupture. According to the published case reports from the past, more than 90% cases were diagnosed by colour Doppler echocardiography (6). Large non-ruptured aneurysms should undergo elective surgical repair even if asymptomatic, also as such surgical repair is documented to be of low risk (7). Asymptomatic patients with smaller non-ruptured sinus of Valsalva aneurysms should have close follow-up and regular imaging, mainly by transthoracic echocardiography, to look for any increase in size of aneurysm and detect any rupture or complications like aortic regurgitation. Patients with certain congenital abnormalities, particularly ventricular septal defects and bicuspid aortic valve, should be screened for sinus of Valsalva aneurysms by Doppler echocardiography.

CONCLUSION

Sinus of Valsalva aneurysms is a rare but important entity that affects younger age groups. They could be a manifestation of a more widespread aortopathy. They are often associated with congenital abnormalities of the aortic wall. Patients diagnosed with such aneurysms should be followed up closely by means of regular echocardiograms. Early intervention is advisable both on large non-ruptured aneurysms to prevent serious and potentially fatal complications and on ruptured aneurysms irrespective of size to avoid clinical deterioration from left-to-right shunting.

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