

A Case of Ruptured Sinus of Valsalva Aneurysm Mimicking Ventricular Septal Defect

Yahya Islamoglu^{1*}, Sahinoglu B² and Karapinar H³

¹Department of Cardiology, School of Medicine, Dicle University, Diyarbakir, Turkey

²School of Medicine, Dokuz Eylul University, Izmir, Turkey

³Department of Cardiology, School of Medicine, Sifa University, Izmir, Turkey

*Corresponding author: Yahya Islamoglu, Department of Cardiology, Dicle University School of Medicine, Diyarbakir, Turkey, E-mail: yahyaislamoglu53@gmail.com

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Abstract

The aneurysm of Sinus of Valsalva is a comparatively rare disease. Although it would be congenital or acquired, congenital type is more common. It can stay undiagnosed for decades unless a medical imaging performed. Rupture of these type aneurysms can cause progressive heart failure. So, prompt and accurate diagnosis of a ruptured Sinus of Valsalva aneurysm is crucial.

In this study, we present a 38-year-old male patient with sinus of Valsalva aneurysm which ruptured throughout to right atrium and transthoracic echocardiographic views mimics perimembranous ventricular septal defect. Accurate diagnosis was done by careful transthoracic echocardiography.

Keywords Sinus of Valsalva Aneurysm; Rupture; Right Atrium; Echocardiography

Introduction

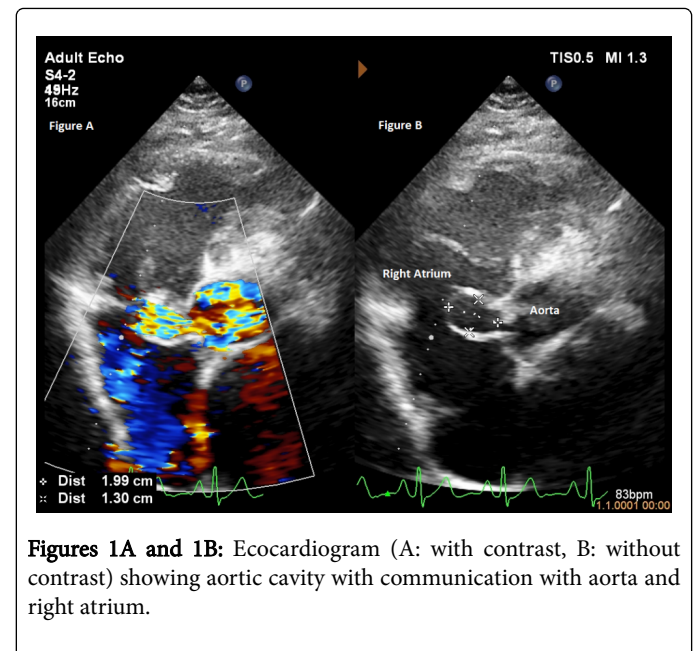
The Sinus of Valsalva aneurysm (SVA) is a comparatively rare disease that is present in 0.09% of general population. According to last studies, it could be both congenital and acquired [1]. SVAs are unstable pathologies and if rupture can cause heart failure or cardiovascular collapse associated with defect sizes and ruptured chamber. So, differential diagnosis is crucial of SVA from other stable pathologies such as congenital fistulas, arterio-venous malformations and ventricular septal defects. We report an example of ruptured SVA which mimics perimembranous ventricular septal defect (VSD).

Case Presentation

A 38-year-old male patient presented to outpatient clinic of another hospital with sudden fainting, sweating and chest pain before coming to our clinic. The patient was hand-worker. He had no history of chronic disease and habitual drug use other than smoking. Transthoracic echocardiography (TTE) was performed at that hospital and he was diagnosed with asymmetrical septal hypertrophy and VSD. Patient was referral to tertiary hospital for further investigation of VSD by transesophageal echocardiography. Four weeks later, he came to our outpatient clinic with the same complaints. On physical examination, heart rate was 86 per minute, blood pressure was 120/70 mmHg and continuous murmur was heard on mid left sternal border. Other physical examination was normal and no stigmata of systemic disease. ECG was showed normal sinus rhythm. Blood chemistry and blood count values were in normal range. No significant abnormality on Chest X-ray. Doppler TTE was performed. A ruptured, thin-walled, bottleneck aneurysm of sinus of Valsalva was throughout to right atrium close to tricuspid valve. Color Doppler echocardiography showed continuous flow throughout to right atrium via ruptured

aneurysm (Figures 1A and 1B) TTE also revealed mild left ventricular hypertrophy and normal systolic functions.

Patient was referred to surgery and recommended to avoid from lifting and hard working. Unfortunately he denied the operation.



Figures 1A and 1B: Ecocardiogram (A: with contrast, B: without contrast) showing aortic cavity with communication with aorta and right atrium.

Discussion

We reported a case of ruptured SVA throughout to right atrium it was misdiagnosed as a VSD, correct diagnosis done by cautious TTE.

SVAs may occur all of three sinuses and the most common one is right [2]. Ten years of survival was 94% and 20 years of survival was

88% according to a long-term study. Before rupture these aneurysms can be asymptomatic and go undiagnosed for decades but huge aneurysms lead to compression of adjacent tissues such as coronary arteries or right ventricular outflow tract. So, it causes dyspnea, fatigue or angina pectoris. Sometimes SVA is diagnosed incidentally by medical imaging which is performed for other reasons [3]. If rupture occurs, it is driven by ruptured chamber properties and rupture sizes. When it ruptures throughout the pericardium, sudden death might be occurring due to tamponade. If it ruptures into the left ventricle, it mimics aortic regurgitation [4]. When it ruptures into the right heart chambers, as in this case, it leads to progressive heart failure. SVA is a certain indication of surgical intervention due to its unstable structure; their sizes could be quickly increased or rupture may occur suddenly. This progress might mostly be mortal.

In this case, SVA of the non-coronary sinus of Valsalva was seen, which is second less common of them. It was misdiagnosed as VSD by echocardiography due to the opening of SVA being too close to the tricuspid valve. Color Doppler failed to demonstrate the origin of the pathology due to interference of aliasing. But, TTE could discriminate the pathology via cautious and gentle manipulations of the probe as seen in the case. Discrimination of SVA from VSD is crucial because of the instability of SVA's, unlike the VSD's. Else, differential diagnosis should also be made from Gerbode defect, which is a left ventricle-right atrium shunt [5].

Conclusion

In conclusion, ruptured SVA is a mortal disease, should be diagnosed as early as possible and differential diagnosis from other stable diseases is essential. Cautious application of TTE can help us with accurate and differential diagnosis of SVA.

References

1. Weinreich M, Pj Y, Trost B (2015) Sinus of Valsalva Aneurysms: Review of The Literature And an Update on Management. *Clin Cardiol.* 38: 185-189.
2. Goldberg N, Krasnow N(1990) Sinus of Valsalva Aneurysms. *Clin Cardiol.* 13: 831-836.
3. Yuan SM (2014) Left Ventricular to Right Atrial Shunt (Gerbode Defect): Congenital Versus Acquired. *Postepy Kardiol Interwencyjne* 10: 185-194.
4. Karapinar H, Kaya Z, Aung SM, Karavelioglu Y, Kaya H, et al. (2011) Dynamic circle image in left ventricle outflow tract. *Echocardiography* 28: E9-E11.
5. Yan F, Abudurehman M, Huo Q, Shabiti A, Zhu T, et al. (2014) Surgery For Sinus of Valsalva Aneurysm: 33-Year of A Single Center Experience. *Chin Med J (Engl).* 127: 4066-4070.