

Multimodality imaging of a ruptured right coronary sinus of Valsalva aneurysm

A 57-year-old female was admitted to our institution with worsening exertional palpitations and chest tightness for 2 weeks. Two-dimensional transthoracic echocardiography showed an aneurysm originating from the right coronary sinus of Valsalva, measuring 33×32 mm (Fig. 1a). The aneurysmal body oscillated between the right atrium and the right ventricle during the cardiac cycle (Video 1). The defect (5 mm) of the aneurysm wall was found (Fig. 1b). Color Doppler flow imaging revealed the shunt from the aneurysm to the right atrium (Fig. 1c). Severe aortic and tricuspid regurgitation was also noted (Fig. 1d). Thus, the echocardiographic findings were consistent with the ruptured sinus of Valsalva aneurysm. A computed tomography angiography confirmed the echocardiographic findings (Fig. 1e). Surgery was recommended on the basis of the aforementioned

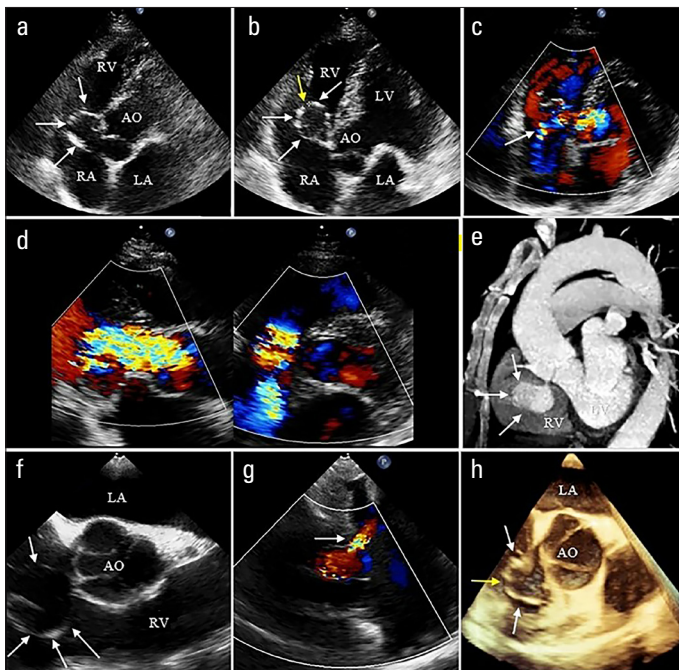


Figure 1. Echocardiographic and CTA images. (a, b) Two-dimensional transthoracic echocardiography revealing a right coronary sinus of Valsalva aneurysm (white arrows) and the defect of the aneurysm wall (yellow arrow). (c) Color Doppler flow imaging disclosing a shunt from the aneurysm to the right atrium (d) Color Doppler flow imaging demonstrating severe aortic and tricuspid regurgitation. (e) CTA showing the aneurysm arising from the right coronary sinus (white arrows). (f, g) Transesophageal echocardiography demonstrating the aneurysm originating from the right coronary sinus (white arrows) and the shunt from the aneurysm to the right atrium (white arrow). (h) Real-time three-dimensional transesophageal echocardiography indicating the aneurysm originating from the right coronary sinus (white arrow) and the defect of the aneurysm wall (yellow arrow)

CTA - computed tomography angiography; RV - right ventricle; RA - right atrium; LV - left ventricle; LA - left atrium; AO - aorta

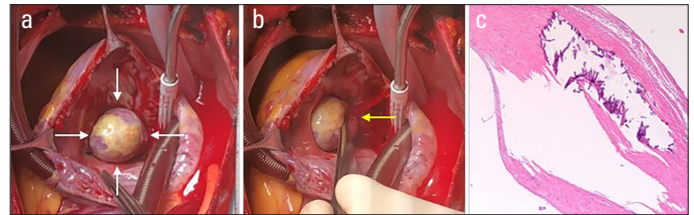


Figure 2. Intraoperative photographs and histopathological image. (a, b) Intraoperative photographs revealing a ruptured right coronary sinus of Valsalva aneurysm. (c) Histopathological examination demonstrating the valvular tissue

imaging results. Pre-bypass transesophageal echocardiography demonstrated a ruptured aneurysm of the right coronary sinus of Valsalva (Fig. 1f and 1g and Videos 2 and 3). Real-time three-dimensional transesophageal echocardiography clearly showed the aneurysm arising from the right sinus of Valsalva (Fig. 1h and Video 4). The patient underwent repair of the right coronary sinus, mechanical aortic valve replacement, and tricuspid valvuloplasty. The surgery and histopathological examination confirmed the presence of the ruptured aneurysm of the right coronary sinus of Valsalva (Fig. 2a-2c). The patient recovered well postoperatively.

Aneurysm of the sinus of Valsalva is a rare cardiac pathology and accounts for approximately 0.09% of the general population and comprises up to 3.5% of all congenital heart diseases (1). Our case highlights the fact that multimodal imaging plays a crucial role in making a definite diagnosis and determining the surgical plan.

Institutional and Financial Support: The study was supported by the National Key R&D Program of China (grant #2018YFC0114600), the National Natural Science Foundation of China (grant #81727805 and #81401432), and the Key Research and Development Program of Hubei (grant #2020DCD015).

Informed consent: Informed consent was obtained from the patient for this study.

Video 1. Two-dimensional transthoracic echocardiography revealing the activity of the aneurysmal body

Video 2. The long axis view of aortic root of transesophageal echocardiography showing a ruptured right coronary sinus of Valsalva aneurysm

Video 3. The short axis view of aortic root of transesophageal echocardiography demonstrating a ruptured right coronary sinus of Valsalva aneurysm

Video 4. Real-time three-dimensional transesophageal echocardiography indicating the aneurysm arising from the right sinus of Valsalva.

Reference

1. Bass D, Tivakaran VS. Sinus of Valsalva Aneurysm. 2020 Aug 26. In: StatPearls [Internet]. Treasure Island (FL): StatPearls Publishing; 2021 Jan-.

**Yixia Lin# , Mingxing Xie# , He Li# , Jing Chang# ,
Mingzhu Qian , Yuman Li **

Department of Ultrasound Medicine, Union Hospital, Tongji Medical College, Huazhong University of Science and Technology; and Clinical Research Center for Medical Imaging in Hubei Province; and Hubei Province Key Laboratory of Molecular Imaging; Wuhan-China

#These authors contributed equally to this work.

Address for Correspondence: Yuman Li, MD,
Department of Ultrasound Medicine, Union Hospital, Tongji Medical College,
Huazhong University of Science and Technology; and Clinical Research Center
for Medical Imaging in Hubei Province; and Hubei Province Key Laboratory of
Molecular Imaging; Wuhan-China

Phone: 18986067682

E-mail: liym@hust.edu.cn

©Copyright 2021 by Turkish Society of Cardiology -

Available online at

www.anatoljcardiol.com

DOI:10.5152/AnatolJCardiol.2021.363

