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 $33 \times 32$ 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 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.

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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
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
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