An atypical coronary artery fistula originated from right coronary sinus of Valsalva with anomalous Left circumflex artery origin

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A 14-year-old male was referred to our institution because of a continuous heart murmur diagnosed at another hospital. Physical examination revealed stable vital signs and a continuous murmur at the mid-left sternal border. The remainder of the examination was unremarkable. The electrocardiogram was normal with no ischemic changes. Cardiac markers were insignificant. Transthoracic echocardiography showed normal left ventricular motion and no valvular disease. Cardiac doppler showed a continuous turbulent flow into the right atrium(Panel A). Multidetector computed tomography(MDCT) revealed an abnormal marked dilation vessel originating from the right coronary sinus of Valsalva. The abnormal vessel developed into a 35 $\times$29 mm tortuosity aneurysm and eventually flowed into the posterior aspect of the right atrium(Panels B and D). The origin and diameter of the entire RCA were normal(Panel C). In addition, an anomalous origin of left circumflex artery(LCx) from the right coronary sinus of Valsalva was noted(Panels B and C). Because of the presence of a large fistulous tract and rupture risk, the patient was considered a surgical candidate. The fistula is identified from within the right atrium. The aneurysm wall was resected, and the stump was closed with direct sutures. The postoperative morphology of the sinus of Valsalva was excellent, and aortic regurgitation was not observed.

Coronary artery fistula(CAF) is defined as a rare congenital or acquired abnormal communication between the coronary arteries and a cardiac chamber or a thoracic great vessel [1]. The most common clinical presentation of CAF in children is a persistent heart murmur. Because CAF in children tends to increase with age, early surgical correction is required [2]. Coronary artery fistulas can originate from any coronary artery branch [3]. However, for this patient, the CAF originated from the right coronary sinus of Valsalva, which mimicking a Sinus of Valsalva aneurysm, there was no remarkable enlargement of right coronary sinus.

Conflict of interest

The authors declare no conflict of interest.

Ethics statement

The patient's mother provided informed consent for the publication of the case report and its accompanying images.

References

1. Goo HW. Imaging Findings of Coronary Artery Fistula in Children: A Pictorial Review. Korean J Radiol. 2021;22(12):2062-2072.

2. Mangukia CV. Coronary artery fistula. Ann Thorac Surg. 2012;93(6):2084-2092.

3. Vaidya YP, Green GR. Coronary artery fistula. J Card Surg. 2019;34(12):1608-1616.

Figure legends

Figure1 Panel A: Transthoracic echocardiography shows abnormal blood flow into the right atrium. Panels B-D: Multidetector computed tomography(MDCT) shows 1) an abnormally dilated vessel originating from the right coronary sinus of Valsalva, which develops into an aneurysm and eventually flows into the right atrium.2) an abnormal origin of the left circumflex artery from the right coronary sinus. 3) a right coronary artery with normal origin and diameter.