Twin hearts: identical anomalous coronary origin, individual vasculature

Coronary artery anomalies are found in 0.4–1.55% of the general population. Anomalous origin of the circumflex coronary artery from the right sinus of valsalva is one of the most common types of these anomalies. Because it is often clinically silent, it is usually diagnosed incidentally.

Two monozygotic twin (40-year-old male) patients, with risk factors of smoking and hypertension, were admitted to our outpatient clinic with the complaints of atypical chest pain. Both patients underwent coronary multidetector computed tomography (MDCT) angiography, which revealed the same anomalous origin of the circumflex artery arising from the right sinus of valsalva in the brothers (Fig. 1). However, the course of the remainder coronary tree differed in each brother (Videos 1 and 2). In the literature, there has been limited research examining the genetic linkage of the congenital coronary anomalies. Some mutations in genetic coding may lead to these anomalies, affecting both the course and the origin of the coronary arteries. However, as is obviously seen in this case, during the formation of the coronary vasculature, vasculogenesis is not only affected by inheritance but also by the molecular and physiological determinants of the cardiac development.

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Video 1 and 2. Volume-rendered three-dimensional coronary trees of both patients. Note that the remainder coronary tree of each patient has distinct courses. Video 1, Patient 1. Video 2, Patient 2.

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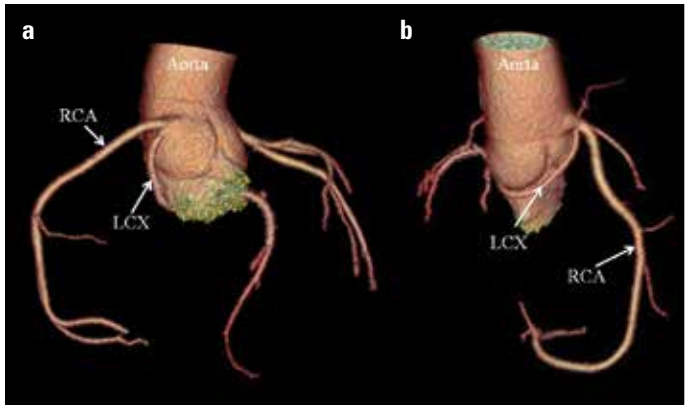

Figure 1. a, b. Volume-rendered MDCT angiograms demonstrate that circumflex coronary arteries of twin brothers are arising from the right sinus of valsalva. (a) Patient 1. (b) Patient 2

Left atrial appendage ostial stenosis associated with rheumatic mitral stenosis

Isolated left atrial appendage (LAA) stenosis is a very rare entity that is almost always detected coincidentally with transesophageal echocardiography (TEE). The clinical consequences of this condition are still unknown, but thrombus formation is likely to occur in the narrowed area.

A 51-year-old female was admitted to an outpatient clinic due to the complaint of dizziness. Physical examination revealed a 2/4 diastolic murmur that was best heard at the apex without any other pathological finding. Transthoracic echocardiographic examination demonstrated mild mitral and tricuspid regurgitation and moderate rheumatic mitral stenosis (planimetric mitral valve area, 1.8 cm^2 and diastolic gradient: maximum 12 mm Hg; mean 6 mm Hg). TEE showed LAA orifice stenosis with a 10-mm Hg gradient (Fig. 1). Color doppler examination at the orifice of the LAA flow were observed, persistent color flow Doppler between the left atrium and LAA was shown (Fig. 2) (Video 1). Thrombus was seen in LAA (Fig. 3). Cardiac magnetic resonance imaging showed LAA dilatation (Fig. 4, 5) (Video 2). The patient received warfarin for 6 weeks, and control TEE revealed no thrombus after anticoagulant treatment.

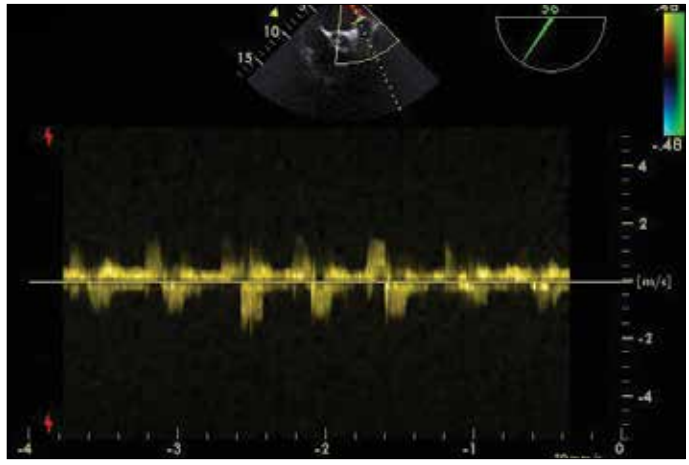

Figure 1. Left atrial appendage orifice stenosis with a 10-mm Hg gradient

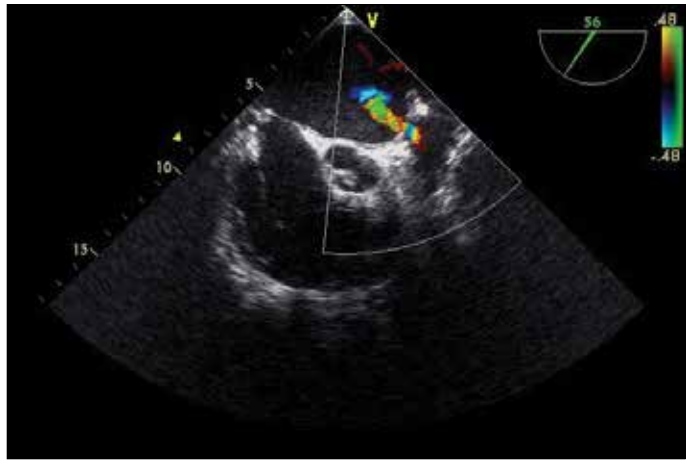

Figure 2. Color flow Doppler between the left atrium and left atrial appendage

Figure 3. Left atrial appendage with thrombosis

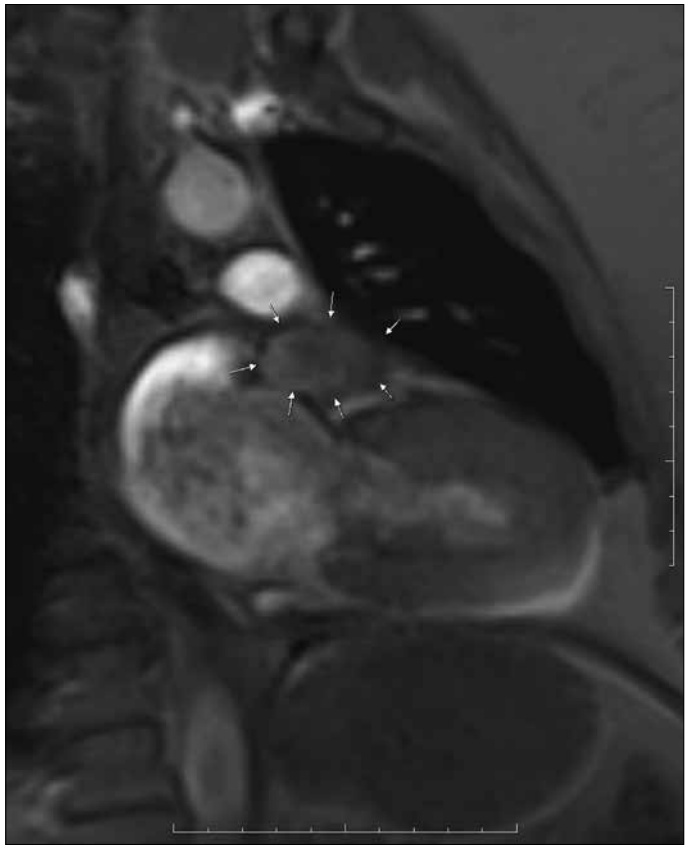

Figure 4. Magnetic resonance image demonstrate left atrial appendage dilatation

LAA stenosis is a complication that occurs after incomplete surgical ligation of the atrial appendage, but our patient received no intervention. LAA color Doppler examination may lead to an increase in similar cases during the TEE examination process due to the rheumatic mitral valve. To the best of our knowledge, this is the first case report showing the LAA ostial stenosis associated with rheumatic mitral stenosis.

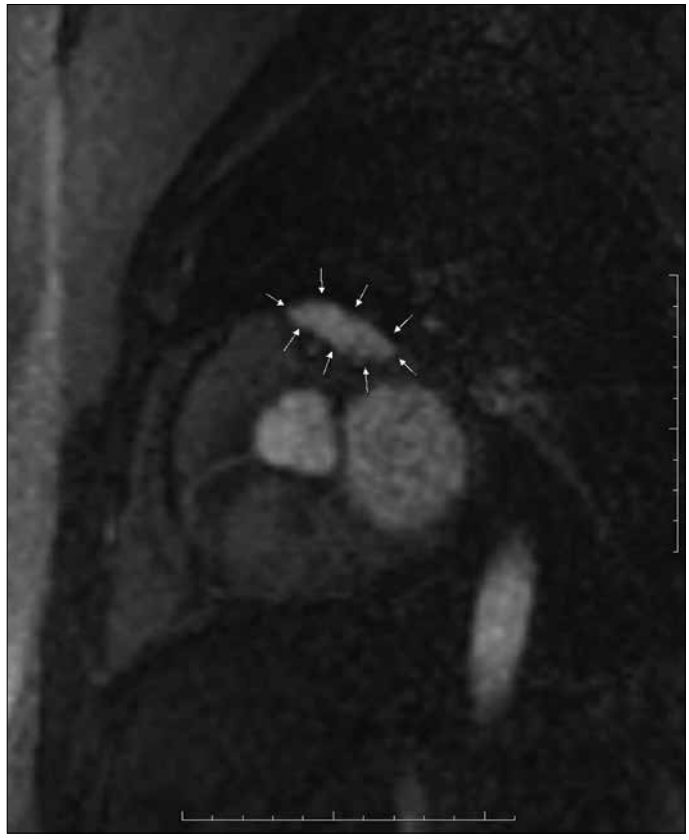

Figure 5. Magnetic resonance image demonstrate opacification of the left atrial appendage

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Video 1. Color flow Doppler between the left atrium and left atrial appendage
Video 2. Magnetic resonance imaging showing left atrium and left atrial appendage opacification

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