



Rare coronary artery anomaly: a single coronary artery arising from the right sinus of Valsalva

Nadir görülen koroner arter anomalisi: Sağ sinus Valsalva'dan çıkan tek koroner arter

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A forty-seven years old female patient has applied to our hospital with complaints of chest pain, intensifying with exercise and palpitation. Her electrocardiogram (ECG) was normal. Transthoracic echocardiography detected no abnormalities. Coronary angiography, ventriculography and aortography have been performed. No origin of the coronary ostium arising from the left sinus Valsalva was imaged. However, origins of all coronary arteries arising from the right sinus Valsalva with a single ostium were observed. While right coronary artery (RCA) proceeded in its regular pathway, circumflex artery (Cx) was observed as it reached the posterior region of the heart after passing around the posterior side of the superior vena cava and it gave off

well-developed first diagonal artery. The left anterior descending artery (LAD) was observed to proceed between the pulmonary and aortic trunci and reached the anterior atrioventricular sulcus (Fig. 1, 2, Video 1, 2 - See corresponding video/movie at www.anakarder.com). No significant stenosis was encountered in any of the coronary arteries imaged. The case has been followed with medical therapy since December 2005.

The originating of LAD and Cx coronary arteries from the contralateral aortic sinus Valsalva was included into the group of potentially serious anomalies. Because anyone of the coronary arteries with an abnormal localization, arising from the right sinus Valsalva proceeds along with the tunnel located bet-

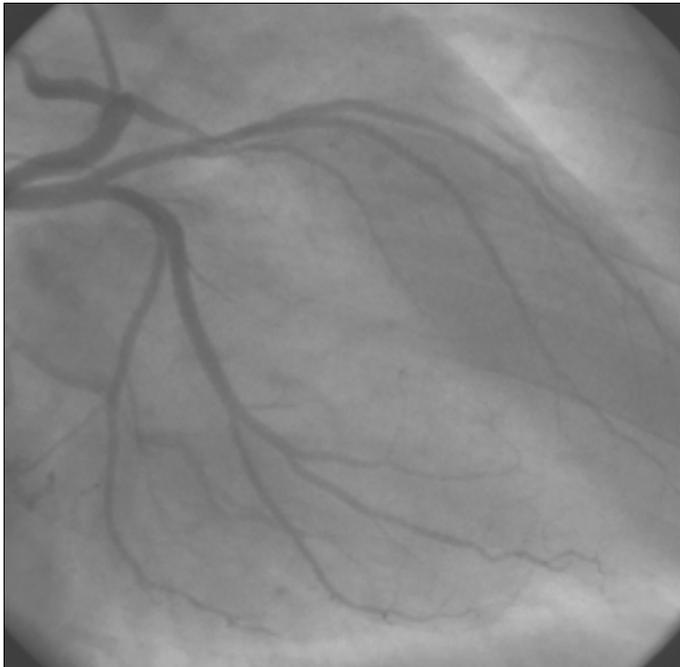


Figure 1. Coronary angiography in right-caudal position demonstrates a single coronary artery arising from right sinus Valsalva



Figure 2. Coronary angiography in right-cranial position demonstrates a single coronary artery arising from right sinus Valsalva

ween the aorta and the pulmonary artery. As there is an increase in blood flow inside the aorta and the pulmonary artery with exercise, there will be a slowing down in blood flow inside the abnormal coronary artery proceeded in this tunnel. This change makes a ground for ischemic processes in the myocardium and even can cause sudden death. The reasons of sudden deaths caused by exercise are explained in general with the opinion that folding due to stretch of coronary arteries followed by abnormal localization. This condition subsequently causes transient myocardial ischemia. Another characteristic of clinical importance is encountered in the mitral and aorta valve replacement operations. During such operations, the arteries at abnormal localization may be ligatured or cut by mistake.

Coronary arteries originating from single ostium in the aorta are rare, occurring in less than 0.03% of general population (1). An ostium originating from the left aortic sinus is defined as type I anomaly and from right aortic sinus - type II. The 40% of single coronary artery anomaly cases are associated with congenital heart diseases such as Fallot tetralogy, transposition of great arteries, persistent truncus arteriosus, and pulmonary atresia (2). It has been suggested that predisposition to arteriosclerosis in single coronary artery diseases is increased in such anomalies (3). In mean time, therapeutic approaches have been reported (4). In our case, no atherosclerotic plaque was encountered in the coronary artery. No concurrent congenital heart disease was diagnosed with transthoracic echocardiography, catheterization of the left heart, and ventriculography. Considering the LAD artery proceeds along side and between the aorta and the trunci of pulmonary artery, the patient was advised to avoid ex-

haustive exercise. A medical intervention with beta-blockers was started. In comparison with coronary artery anomaly, we previously have published (5), in the present case all coronary arteries were revealed to originate from a single ostium - of the right sinus Valsalva instead of a different ostium for each artery.

In conclusion, origination of the coronary arteries from the contralateral aortic sinus is a rare anomaly that may lead to a serious outcome including sudden death, syncope, and heart failure. When performing cardiac surgery in patients with such anomaly, it should be taken into account that arteries with an abnormal localization could be transected by mistake.

References

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