Right coronary artery aneurysm mimicking a residual shunt in a patient with previous ventricular septal defect repair

Ventriküler septal defekt nedeniyle ameliyat edilen bir hastada rezidüel şantı taklit eden sağ koroner arter anevrizması

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A 20-year-old male was examined because of the suspicion of a residual ventricular septal defect (VSD) shunt following a VSD repair of a 10-year history. On physical examination, there was a grade 2/VI systolic and a mild diastolic murmur over the left lower sternal border. Transthoracic echocardiography showed a dilated left atrium and moderate mitral and mild aortic regurgitation. Color Doppler echocardiography showed a mosaic-colored jet near the aortic valve that appeared to be a residual VSD shunt. The jet was the flow of the right coronary artery (RCA). Coronary angiography and cardiac catheterization revealed an aneurysm of the RCA, 11 mm in size, pseudocoarctation of the aorta, and moderate mitral and mild aortic regurgitation. No residual VSD was detected. It was concluded that the jet was associated with the aneurysmal RCA. Medical treatment with aspirin was scheduled for the patient.

Key words: Aortic coarctation/diagnosis; coronary aneurysm/diagnosis; coronary angiography; echocardiography.

Ventriküler septal defekt (VSD) nedeniyle 10 yıl önce ameliyat edilen 20 yaşında erkek hasta rezidüel VSD şantı şüphesiyle araştırıldı. Fizik muayenede sternumun sol alt kenarında 2/6 sistolik ve hafif diyastolik üfürümler duyuldu. Transtorasik ekokardiyografide sol atriyumda dilatasyon, orta derecede mitral, hafif derecede aort yetersizliği görüldü. Renkli Doppler ekokardiyografide aort kapağı komşuluğunda, rezidüel VSD şantına benzeyen mozaik renkli jet akım izlendi. Ancak, bu akım sağ koroner artere ait idi. Koroner anjiyografi ve kalp kateterizasyonunda, çapı 11 mm olan sağ koroner arter anevrizması, aortta psödokoarktasyon ve orta derecede mitral, hafif derecede aort yetersizliği saptandı. Rezidüel VSD görülmedi. Rezidüel VSD şantına benzeyen mozaik renkli jetin sağ koroner arter anevrizmasıyla ilgili olduğu sonucuna varıldı. Hasta için aspirinle tıbbi tedavi planlandı.

Anahtar sözcükler: Aort koarktasyonu/tanı; koroner anevrizma/tanı; koroner anjiyografi; ekokardiyografi.

Coronary artery aneurysm is observed in up to 5% of patients undergoing coronary angiography, most commonly affecting the right coronary artery (RCA).[1] Ruptured or thrombosed big aneurysms may present as an intracardiac mass.[2] Small aneurysms may mimic cystic cavity in pediatric patients.[3] In a previous case report, we showed that an RCA aneurysm may mimic aortic root dissection.[4] To the best of our knowledge, there has been no report on a coronary artery aneurysm mimicking a ventricular septal defect (VSD).

We present a case of an RCA aneurysm mimicking a residual VSD shunt accompanied by pseudocoarctation in a patient with previous VSD repair.

CASE REPORT

A 20-year-old male who had undergone a VSD repair of a 10-year history was referred to our hospital for catheterization because of the suspicion of a residual VSD shunt. He reported that he had been suffering from exercise-induced chest pain for the past six months. On physical examination, blood pressure was 120/70 mmHg, pulse rate was 80 bpm and regular. There was a grade 2/VI systolic and a mild diastolic murmur over the left lower sternal border. Examination of the other systems was normal. His father had a history of myocardial infarction at the age of 50 years. Electrocardiography revealed a right ven-

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tricular strain pattern (negative T waves in V1-4) and a left atrial dilation. Whole blood count and biochemical markers were normal. Transthoracic echocardiography showed a dilated left atrium (44 mm) and moderate mitral and mild aortic regurgitation. Color Doppler echocardiography showed a mosaic-colored jet near the aortic valve that appeared to be a residual VSD shunt (Fig. 1). However, the origin of the jet was the right coronary sinus and pulsed wave Doppler showed a predominantly systolic low velocity flow in the area where the jet was visualized, indicating that the jet was the flow within the RCA. Since the patient had chest pain and family history of coronary artery disease (CAD) coronary angiography was performed to exclude CAD. Coronary angiography and cardiac catheterization revealed an RCA aneurysm with a diameter of 11 mm (Fig. 2), pseudocoarctation of the aorta, and moderate mitral and mild aortic regurgitation. The pressures measured during catheterization were as follows: pulmonary artery, 35/6 mmHg; right ventricle, 40/5 mmHg, aortic arch, 140/90 mmHg, descending aorta 135/85 mmHg, and left ventricle 140/5 mmHg. No residual VSD was detected. It was concluded that the mosaic-colored jet giving a VSD-like appearance was actually an aneurysmal RCA. We treated the patient with medical therapy. He had no complaints during a three-month follow-up.

DISCUSSION

Coronary artery aneurysm is defined as the dilation of the coronary artery whose diameter is at least 1.5 times greater than that of the adjacent normal coronary segment, and it is observed in up to 5% of patients undergoing coronary angiography.[1]

Most common causes of coronary aneurysms are atherosclerosis, Kawasaki disease, and congenital aneurysms. As there were no other lesions to cause luminal narrowing or a history of Kawasaki disease, the aneurysm in our patient was most probably congenital in origin, which is most commonly the case in the young, generally involving the RCA.[1,5]

Management of coronary artery aneurysms usually consists of medical therapy with antiplatelet and anticoagulant agents to prevent embolization. Surgery is the therapy of choice especially in the presence of congenital large aneurysms which are more likely to rupture,[1] ruptured or thrombosed aneurysms, or in patients having the indication of bypass surgery for CAD with luminal narrowing. We treated the patient medically with aspirin.

Aortic pseudocoarctation is a rare congenital anomaly characterized by elongation and kinking of the aortic arch with buckling distal to the origin of the left subclavian artery. There is no pressure gradient across the buckled segment. Although it is a benign condition, complications may occur, requiring a close follow-up of the patients.[6] Pseudocoarctations may accompany aneurysms of the thoracic aorta. In our previous case report, coarctation of the aorta was accompanied by coronary artery ectasia.[7] Surgery should be the treatment of choice for all symptomatic patients and for those with associated aneurysm formation.[8,9] There was no indication for surgical intervention in our patient neither for coronary aneurysm

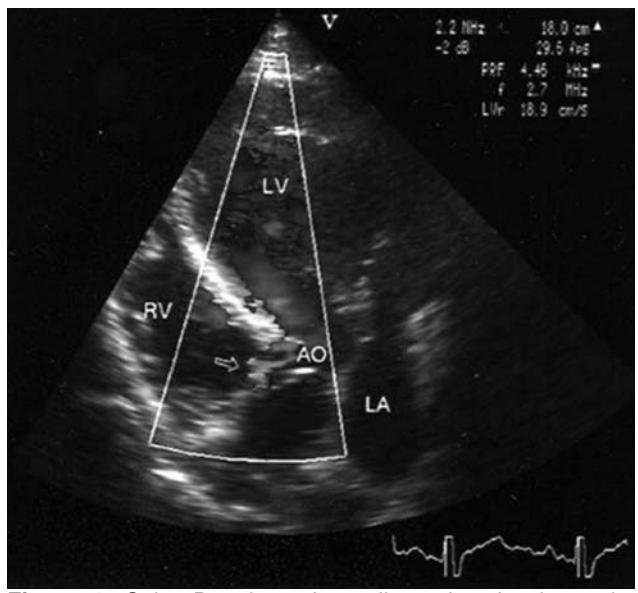

Figure 1. Color Doppler echocardiography showing a jet (arrow) near the right aortic coronary cusp, which looked like a residual ventricular septal defect. LV: left ventricle, LA: left atrium, RV: right ventricle, AO: ascending aorta.

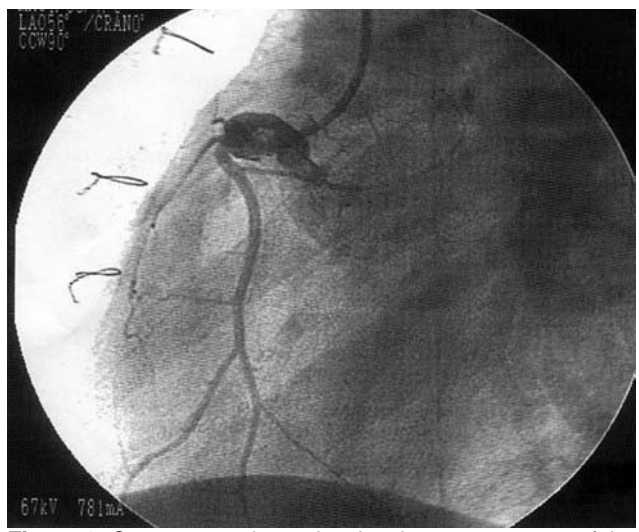

Figure 2. Coronary angiography showing an aneurysm of the right coronary artery.

nor for aortic pseudocoarctation, so we scheduled him for medical follow-up.

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