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CASE REPORT / OLGU SUNUMU

Left ventricular microfistulization: A rare cause of ischemia in a patient with normal coronary arteries

Sol ventriküler mikrofistülizasyon: koroner arterleri normal olan bir hastada iskeminin nadir bir nedeni

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ABSTRACT

A 71-year-old woman with chest pain occurring on physical exercise was admitted to cardiology department. Myocardial perfusion scintigraphy revealed inferior and anteroapical segment hypoperfusion. Selective coronary angiography revealed multiple coronary-cameral fistulas originating from the left anterior descending artery and the right coronary artery and emptying into the left ventricle without any significant coronary artery stenosis. Coronary artery fistulas are defined as abnormal communications between a coronary artery and a cardiac chamber or major vessel. Coronary-cameral fistulas terminating in the left ventricle are uncommon. Small fistulas usually do not cause any hemodynamic compromise. However, the larger and multiple fistulas may cause myocardial ischemia ascribed to a coronary steal phenomenon. The best way to manage cameral fistulae is uncertain largely due to the rarity of the condition. In the present case, anti-ischemic medications with metoprolol 50 mg/day provided an uneventful follow-up of six months without any intervention.

Key words: Angiography, ischemia, fistulae

ÖZET

Fizik egzersiz esnasında göğüs ağrısı oluşan 71 yaşında bayan hasta kardiyoloji bölümüne başvurdu. Miyokard perfüzyon sintigrafisinde inferior ve anteroapikal segmentlerde hipoperüzyon saptandı. Selektif koroner anjiyografide sol ön inen arter ve sağ koroner arterden köken alan ve önemli koroner arter darlığı yapmadan sol ventriküle boşalan çoklu korono-kameral fistüller saptandı. Koroner arter fistülleri bir koroner arter ile bir kalp odacığı veya büyük damar arasındaki anormal bağlantılar olarak tanımlanır. Sol ventrikülde sonlanan korono-kameral fistüller nadirdir. Küçük fistüller genellikle hemodinamik açıdan tehlike yaratmaz. Fakat daha büyük ve çoklu fistüller koroner çalma fenomenine atfedilen miyokard iskemisine neden olabilirler. Kameral fistüller çok nadir görüldüğü için nasıl en iyi şekilde tedavi edilecekleri belirsizdir. Bu olguda 50 mg/gün metoprolol ile anti-iskemik tedavi yapıldı ve hiçbir girişim yapılmaksızın hasta altı ay olaysız takip edildi.

Anahtar sözcükler: Anjiyografi, iskemi, fistül

INTRODUCTION

Coronary-cameral fistulas (CCFs) are defined as abnormal communications between a coronary artery and a cardiac chamber or major vessel, such as the vena cava, right or left ventricle, pulmonary vein, or pulmonary artery. Most patients with coronary artery fistula are asymptomatic thus they are discovered incidentally during angiographic evaluation for coronary vascular diseases. They may present with symptoms of angina caused by coronary steal.

CASE REPORT

A 71-year-old woman with chest pain was admitted to our department. There was no cardiac murmur. ECG showed minimal ST segment depression in leads V2-V6. Transthoracic echocardiography was normal. Due to poor exercise capacity, dipyridamole-thallium-201 scintigraphy was planned. Myocardial perfusion scan revealed inferior and anteroapical segment hypoperfusion suggestive of ischemia. Selective coronary angiography revealed diffuse and multiple CCFs originating from the left

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anterior descending coronary artery and the right coronary artery and emptying into the left ventricle without evidence of coronary stenosis (Figure 1, Figure 2). Anti-ischemic medications (metoprolol 50 mg/day) provided an uneventful follow-up of six months.

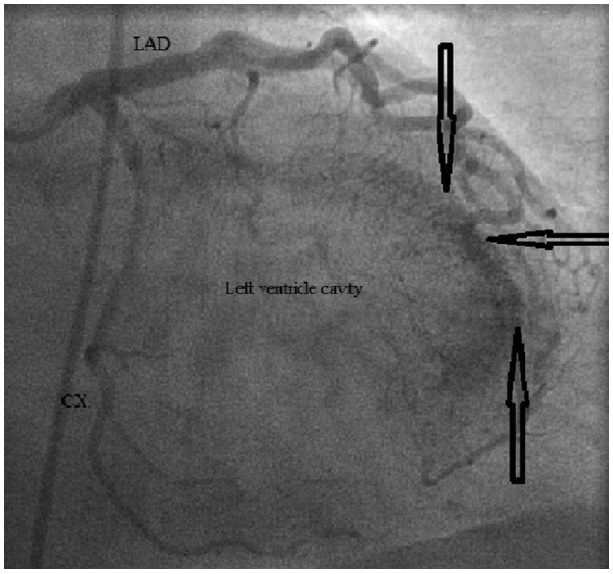

Figure 1. Right anterior oblique view showing the multiple microfistulas draining into the left ventricle. Arrows show opacification of the left ventricle by fistulas

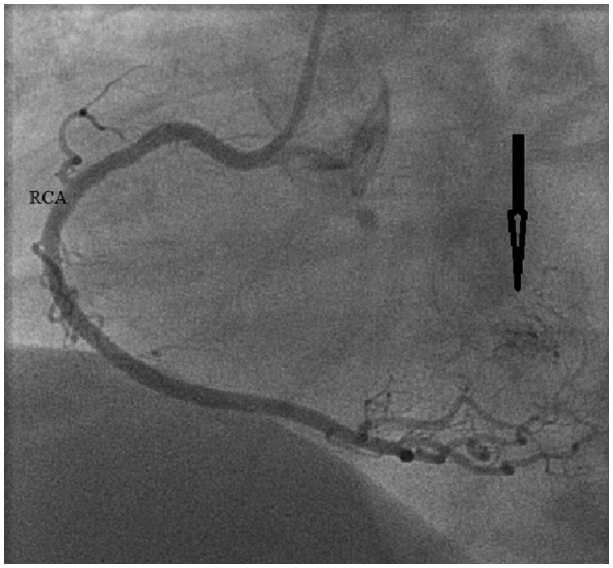

Figure 2. Left anterior oblique view showing microfistulae originating from the right coronary artery (RCA). Arrow shows opacification of the left ventricle

DISCUSSION

Coronary-cameral fistulas are thought to arise as a persistence of sinusoidal connections between the lumens of the primitive tubular heart that supply myocardial blood flow in the early embryologic period. Another explanation may be faulty development of the distal branches of the coronary artery rectiform vascular network.[1] The routine angiographic detection of a CCF is rare, occurring in an estimated 0.2% of patients who undergo catheterization.[2] In children, the diagnosis of coronary artery fistula can often be made with transthoracic 2-dimensional and color-flow Doppler echocardiography. However, in adults cardiac catheterization with coronary angiography which shows the size, anatomy, number, origination, and termination site of the fistulas remains the gold standard for the diagnosis of CCFs.[3] Although asymptomatic in most cases, CCFs may produce symptoms such as angina pectoris, myocardial infarction, congestive heart failure, rhythm disturbances, subacute bacterial endocarditis, thromboembolism, and sudden death.[3,4] Magnetic resonance imaging, and multidetector computed tomography can also be used to evaluate the CCFs. Small fistulae usually do not cause any hemodynamic compromise.[4] However, the larger and multiple fistulae may cause ischemia by coronary steal phenomenon leading to myocardial ischemia.[5] The best way to manage cameral fistulae is not well-known largely due to the rarity of the condition. Once a CCF is detected, the management should be established including antibiotic prophylaxis and in case of aneurysmal dilatation of fistula-related coronary artery or fistulous vessel antiplatelet regimen is recommended. Permanent occlusion of fistulas by surgical ligation is addressed when CCFs are presented with multiple connections, tortuous course, acute angulations, complex anatomy, distal localization, large fistula with high fistulous flow, side branch at risk, and complicated with aneurysmal dilatation. Percutanous therapeutic transcatheter embolisation or graft stent implantatios may be another option for the selected cases. Factors favoring percutanous intervention are: proximal location, older patients, and absence of concomitant cardiac disorders necessitating surgery.[6] Small caliber and multiple fistulas like in the present case are unlikely to be amenable to surgical or percutanous intervention and can be treated successfully with beta-blockers.[7]

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