

## A case of coronary artery fistula detected by multidetector computed tomography

Bir olguda multidedektör bilgisayarlı tomografi ile saptanan koroner arter fistülü

Mehmet Yokuşoğlu, M.D.,<sup>1</sup> Savaş Karakoç, M.D.,<sup>2</sup> Oben Baysan, M.D.,<sup>1</sup> Mehmet Uzun, M.D.<sup>1</sup>

Departments of <sup>1</sup>Cardiology and <sup>2</sup>Radiology, Gülhane Military Medical School, Ankara

A 20-year-old man presented with a complaint of easy fatigability. He had no history of angina, trauma, or previous surgery. A continuous cardiac murmur was heard at the level of the fourth intercostal space on the left parasternal border. A left axis deviation was seen on his electrocardiogram. Transthoracic echocardiography was normal. Multidetector computed tomography revealed a fistulous connection between the circumflex artery and the superior vena cava with a diameter of 2.4 mm. The presence of the coronary artery fistula was confirmed angiographically. Since there was no history of trauma or surgery, the fistula was considered congenital. The patient's symptoms were not directly related to the coronary fistula, and he was discharged for close follow-up.

**Key words:** Arteriovenous fistula/diagnosis/radiography; coronary vessel anomalies/diagnosis/radiography; tomography, X-ray computed/methods.

Coronary artery fistula is a rare entity with an incidence of 0.1% to 0.2%. Angelini<sup>[1]</sup> classified coronary artery fistulas as anomalies of coronary termination. The most commonly observed fistulous connection site is between the right coronary artery and the right ventricle.<sup>[2]</sup> In this report, we present a case of coronary fistula detected between the circumflex artery and the superior vena cava by multidetector computed tomography (MDCT).

### CASE REPORT

A twenty-year-old man was admitted to our clinic for easy fatigability. He had no history of angina, trauma, or a previous surgery. On clinical

Yirmi yaşında bir erkek hasta çabuk yorulma ve bitkinlik şikayetleriyle başvurdu. Angina, travma ya da geçirilmiş cerrahi öyküsü yoktu. Dinlemede, sol parasternal sınırda, dördüncü interkostal boşlukta sürekli bir kardiyak üfürüm duyuldu. Elektrokardiyogramında sol eksen deviyasyonu izlendi. Transtorasik ekokardiyografi bulguları normaldi. Multidedektör bilgisayarlı tomografide sirkümfleks arter ile süperior vena kava arasında, 2.4 milimetre çapında bir koroner fistül bağlantısı saptandı. Koroner fistül anjiyografik olarak da doğrulandı. Travma ya da cerrahi öyküsü olmadığından, koroner fistülün doğumsal olabileceği düşünüldü. Şikayetleri doğrudan fistül ile ilişkili görülmemeye, hasta yakından izlenmek üzere taburcu edildi.

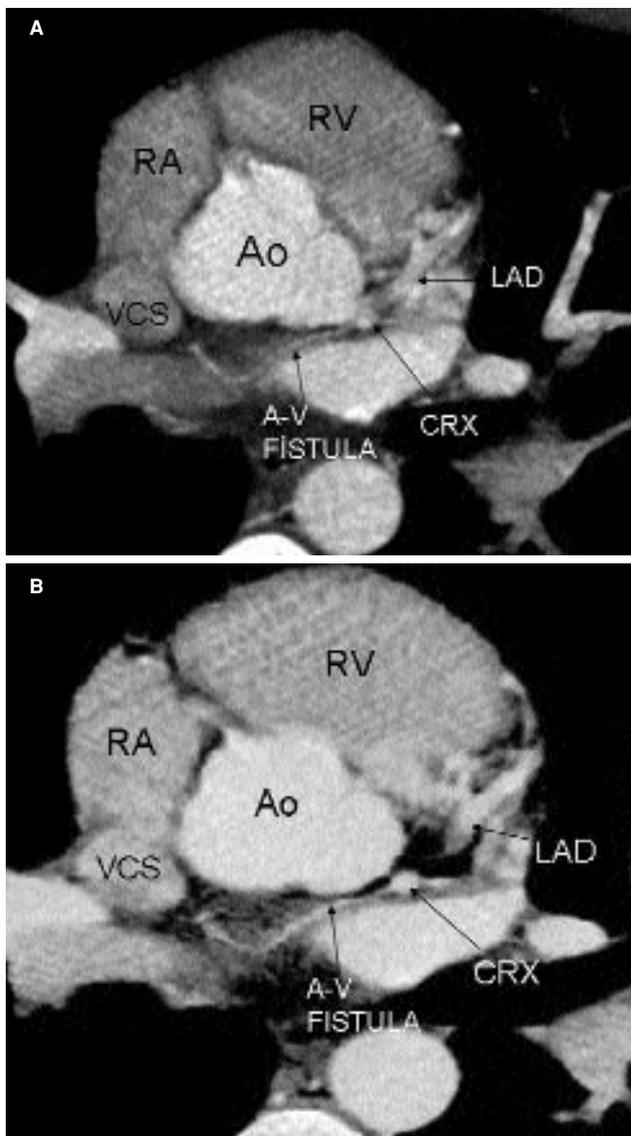
**Anahtar sözcükler:** Arteriyovenöz fistül/tanı/radyografi; koroner damar anomalisi/tanı/radyografi; bilgisayarlı tomografi/yöntem.

examination, his blood pressure was 135/80 mmHg, and heart rate was 72/min. A continuous cardiac murmur was heard at the level of the fourth intercostal space on the left parasternal border. A left axis deviation was seen on his electrocardiogram. Transthoracic echocardiography was normal with preserved systolic and diastolic functions. Coronary angiography was planned for a likely coronary artery fistula suggested by cardiac auscultation; however, the patient refused any invasive diagnostic intervention. He was then evaluated by MDCT with a 16-slice scanner (Philips Medical Systems, Cleveland, OH, USA). Postprocessing reformations were performed on an MxView

Received: August 24, 2005 Accepted: September 2, 2005

Correspondence: Dr. Mehmet Yokuşoğlu. Gülhane Askeri Tıp Akademisi Kardiyoloji Anabilim Dalı, 06018 Etlik, Ankara. Tel: 0312 - 304 42 67 Fax: 0312 - 304 42 50 e-mail: myokusoglu@gata.edu.tr

Workstation (Philips Medical Systems). Slab maximum intensity projection revealed a fistulous connection between the circumflex artery and the superior vena cava with a diameter of 2.4 mm (Fig. 1a, b). This finding helped convince the patient of the need for coronary angiography for further delineation of the coronary anatomy. The presence of the coronary artery fistula between the circumflex artery and the superior vena cava was also verified angiographically (Fig. 2). Myocardial perfusion imaging with Tc99m was normal. We concluded that the fistula was congenital because there was no history of trauma or surgery.



**Fig. 1. A.** A multiplanar reformation image based on multidetector computed tomography showing the coronary artery fistula between the circumflex artery and the superior vena cava. **B.** A volume rendered image of the fistula.

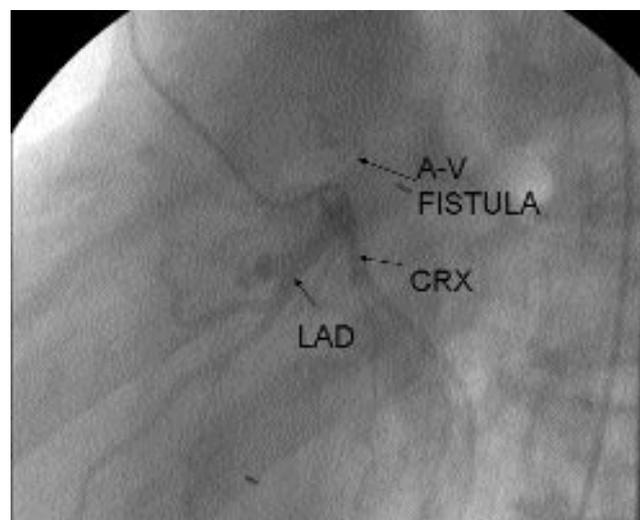
## DISCUSSION

Coronary angiography is the preferred diagnostic modality for coronary artery fistulas as well as coronary artery anomalies. In addition to its inherent invasive nature which may not be acceptable for some patients, coronary angiography may fail to demonstrate the drainage site of coronary artery fistulae,<sup>[3,4]</sup> the identification of which is essential for correct surgical intervention.

According to some recent reports, coronary artery fistulas can be correctly identified by MDCT.<sup>[5,6]</sup> It permits delineation of the whole coronary system and, as in our case, can show the drainage site of the coronary fistula. The major drawbacks of MDCT such as radiation exposure and limited temporal resolution can be mitigated by high spatial resolution. In our patient, we used the two diagnostic modalities in combination for better clarification and verification of the fistula.

Many authors recommend closure of symptomatic coronary fistulas, but controversy exists about asymptomatic ones. In our case, the patient had nonspecific symptoms. Normal findings of echocardiographic examination and myocardial perfusion imaging strongly suggested that the patient's symptoms were not directly related to the coronary fistula, after which he was discharged for close follow-up.

In conclusion, MDCT seems to be an alternative and attractive diagnostic modality for the definitive detection of coronary artery fistula and its drainage site.



**Fig. 2.** An angiographic image of the coronary fistula. LAD: Left anterior descending artery; CRX: Circumflex artery.

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