

Multiple Coronary-Cameral Fistulae Causing Myocardial Ischemia: Case Report

Miyokard İskemisine Yol Açan Çoklu Koroner Kameral Fistüller: Olgusu

Müslüm ŞAHİN,^a
Lütfi ÖCAL,^a
Süleyman Çağan EFE^a

^aClinic of Cardiology,
Kartal Koşuyolu Training and
Research Hospital, İstanbul

Geliş Tarihi/Received: 26.12.2012
Kabul Tarihi/Accepted: 30.04.2013

Yazışma Adresi/Correspondence:
Müslüm ŞAHİN
Kartal Koşuyolu Training and
Research Hospital,
Clinic of Cardiology, İstanbul,
TÜRKİYE/TURKEY
sahinm78@yahoo.com

ABSTRACT Coronary-cameral fistulae are rare and predominantly congenital communication between the coronary arterial circulation and the chambers or great vessels of the heart. Most commonly coronary-cameral fistulae are asymptomatic and usually identified during invasive coronary angiographies. But it may cause myocardial ischemia and heart failure. In this case, we presented that a 73-year-old hypertensive man was admitted to our department due to anginal symptoms and exertional dyspnea. A myocardial perfusion scan showed a reversible lateral-wall perfusion defect. Coronary angiography exhibited extensive multiple coronary cameral fistulae draining into the left ventricle. Symptomatic relief has been achieved with medical therapy in patient.

Key Words: Coronary vessel anomalies; myocardial ischemia; heart failure

ÖZET Koroner-kameral fistüller nadirdir ve sıklıkla koroner arteriyal dolaşım ile kalp boşlukları veya kalbin büyük damarları arasındaki doğuştan olan bağlantılardır. Koroner-kameral fistüller büyük çoğunlukla belirti oluşturmazlar ve genellikle invaziv koroner anjiyografi sırasında tanınırlar. Fakat miyokard iskemisi ve kalp yetersizliğine neden olabilirler. Bu vakada egzersiz ile oluşan nefes darlığı ve göğüs ağrısı nedeni ile bölümümüze başvuran 73 yaşında hipertansiyonu olan erkek hastayı sunduk. Miyokard perfüzyon sintigrafisinde lateral duvarda reversibil perfüzyon defekti mevcuttu. Koroner anjiyografide sol ventrikülüne boşalan birden fazla koroner kameral fistül izlendi. Hastada medikal tedavi ile semptomatik rahatlama sağlandı.

Anahtar Kelimeler: Koroner damar anomalileri; miyokard iskemisi; kalp yetersizliği

Türkiye Klinikleri J Case Rep 2013;21(2):56-8

Coronary-cameral fistulae is a rare communication between a coronary artery and a cardiac chamber.^{1,2} Most fistulae usually arise from one of the major coronary arteries, however, rarely may arise from multiple coronary arteries. Although most patients are asymptomatic, it can lead to symptoms of angina pectoris and heart failure.³ Depending upon the size and location of the fistulae, surgical ligation or percutaneous embolization may be performed in some cases. The medical treatment is more suitable when the fistulae are diffuse. We present a case with multiple fistulae between the three coronary arteries and left ventricle causing angina pectoris and heart failure symptoms.

CASE REPORT

73 years old man came to our hospital with exertional chest pain and dyspnea. The patient was known to have hypertension and to be a smoker. There was no history of diabetes mellitus. On physical examination, the blood pressure was 145/70 mmHg, heart rate was 96 beats/min. Bibasilar crackles were heard. There were no third heart sound (S3) and murmurs in auscultation. Electrocardiography showed sinus rhythm and no specific changes in the ST segment or the T wave. Transthoracic echocardiography demonstrated mild decrease in the left ventricular systolic function with an ejection fraction of 0.45-0.50, grade 1 diastolic dysfunction and hypokinesis of the antero-lateral segments. Myocardial perfusion scintigraphy showed a reversible lateral-wall perfusion defect; therefore diagnostic coronary angiography was made. Coronary angiography showed no atherosclerotic lesions in the coronary arteries. But coronary angiography demonstrated multiple direct communications between the left ventricular cavity and the left anterior descending coronary artery (LAD) and diagonal branch through many small, diffuse fistulae (Figure 1). The

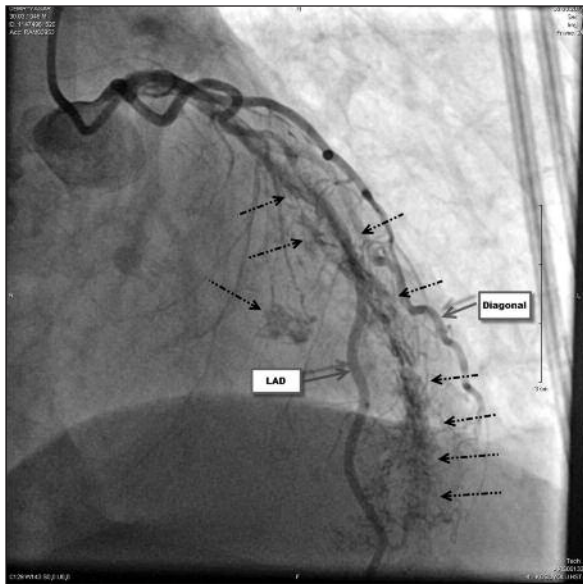


FIGURE 1: Coronary angiography shows fistulae from the left anterior descending coronary artery and diagonal branch to the left ventricle (arrows).

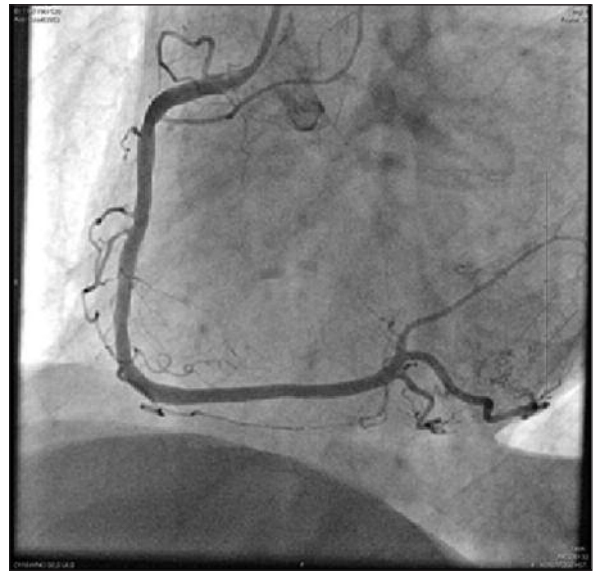


FIGURE 2: Coronary angiography shows fistulae from the right coronary artery to the left ventricle (arrows).

right coronary showed a similar appearance to the left but to a smaller extent (Figure 2). The patient was discharged from the hospital prescribed with low-dose diuretic, ramipril and metoprolol. We did not consider closing the fistulae because the fistulae were small and diffuse. Symptomatic relief has been achieved with medical therapy.

DISCUSSION

Coronary fistulae with the cardiac chambers (Cameral fistulae) are rare congenital vascular anomalies. Although the actual incidence of coronary cameral fistulae is unknown, it was reported that approximately 0.08-0.3% of the randomly selected patients who had undergone diagnostic coronary angiography had it.⁴ Fistulae usually arise predominantly from one of the two major coronary arteries (55% of coronary cameral fistulae originates from the right coronary artery, 35% originates from left coronary artery); however, in a small proportion of cases (5%) communications may arise from both coronary arteries.³ Coronary cameral fistulae terminate in the right ventricle (40%), right atrium (26%), and pulmonary arteries (17%), less frequently in the superior vena cava or coronary sinus. Coronary artery-left ventricular fistulae are extremely rare (1.2%).⁵

Most commonly coronary artery fistulae are asymptomatic and are found incidentally.³ Hemodynamically significant fistula with a left to right shunt may lead to congestive heart failure, myocardial ischemia, pulmonary artery hypertension, endocarditis and arrhythmias.⁶ Inducible ischaemia has been well demonstrated in these patients as a result of coronary steal phenomenon and diastolic overload.⁷

Echocardiography, magnetic resonance imaging (MRI) and multidetector computed tomography (MDCT) and coronary angiography can be used for the diagnosis. Magnetic resonance imaging and MDCT are used to evaluate the anatomy, flow, and function of coronary cameral fistulae. Cardiac catheterization with coronary angiography

remains the gold standard for the diagnosis of coronary artery fistula. It can demonstrate the size, anatomy, number, origin and termination site of the fistulas.⁸

The best way to manage cameral fistulae is largely uncertain. The larger and focal fistulae, when they are hemodynamically significant, should be closed by means of surgical ligation or percutaneous transcatheter embolization.⁹ Intervention is difficult or impossible when the fistulae are small and diffuse, such as in this case.¹⁰ These fistulae are usually treated medically.

In conclusion, multiple fistulae of the sinusoidal type may be treated successfully with beta-blockade and have an excellent long-term prognosis.¹¹

REFERENCES

- Demircin M, Paşaoğlu İ, Yurdakul Y, Bozer YA. [Coronary artery fistulas]. *Türkiye Klinikleri J Cardiol* 1989;2(1):67-9.
- Yaşa H, Arıkan ME, Tetik Ö, Lafçı B, Bademci M, Güneş T, et al. [Coronary artery fistulas; in adult period]. *Türkiye Klinikleri J Med Sci* 2008;28(6):886-91.
- Roberts WC. Major anomalies of coronary arterial origin seen in adulthood. *Am Heart J* 1986;111(5):941-63.
- Yamanaka O, Hobbs RE. Coronary artery anomalies in 126,595 patients undergoing coronary arteriography. *Cathet Cardiovasc Diagn* 1990;21(1):28-40.
- Ho HH, Cheung CW, Jim MH, Lam L. Images in cardiology: coronary-cameral fistula. *Heart* 2005;91(12):1540.
- Liberthson RR, Sagar K, Berkoben JP, Weintraub RM, Levine FH. Congenital coronary arteriovenous fistula. Report of 13 patients, review of the literature and delineation of management. *Circulation* 1979;59(5):849-54.
- Padfield GJ. A case of coronary cameral fistula. *Eur J Echocardiogr* 2009;10(5):718-20.
- Cakar MA, Tattli E. Coronary-cameral fistula with angina pectoris. *Case Rep Med* 2010;2010:362532.
- Özerdem G, Ünal O, Katrancıoğlu N, Bakuy V, Özdemir Ö, Candemir B, et al. Treatment strategies and outcomes of coronary artery fistulas in a Turkish adult population. *Türkiye Klinikleri J Med Sci* 2011;31(3):609-14.
- Yılmaz H, Başarıcı İ, Demir İ. [A rare cause of ischemia: Congenital coronary-cameral fistula]. *Türkiye Klinikleri J Cardiovasc Sci* 2006;18(2):158-61.
- İlhan E, Poyraz E, Güvenç TS, Hasdemir H. [Left anterior descending and right coronary artery-left ventricular multiple micro-fistulas presenting as angina pectoris]. *Türkiye Klinikleri J Cardiovasc Sci* 2012;24(3):302-5.