

Coronary artery fistula in a 70 year-old woman with myocardial infarction

Przetoka tętnicy wieńcowej u 70-letniej kobiety z zawałem serca

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Abstract

Coronary artery fistulas are infrequent congenital malformations. We present the case of a patient with acute coronary syndrome and fistula between the proximal left anterior descending artery (LAD) and the pulmonary artery. The fistula was diagnosed during coronary angiography. Its presence and morphology was confirmed by a 64-slice computer tomography scan. The patient underwent a successful coronary artery bypass grafting procedure with surgical closure of the fistula.

Key words: coronary artery, fistula, acute coronary syndrome

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CASE REPORT

A 70 year-old woman with hypertension, diabetes mellitus, hyperlipidaemia and a history of angina on exertion was admitted to our hospital due to acute coronary syndrome (ACS) with ST segment elevation in I and aVL leads on ECG. Selective coronary artery angiography revealed 80% proximal stenosis in the right coronary artery (RCA) and long 80% stenosis in the left anterior descending artery (LAD) spreading into the second diagonal branch. The first diagonal branch was totally occluded. Angiography also showed a fistula between the proximal LAD and the pulmonary artery. A transthoracic, two-dimensional echocardiogram revealed normal diameters of cardiac chambers without abnormalities in ventricular contractility. The pulmonary trunk was engorged. Colour flow suggested the presence of a coronary artery fistula. Right ventricular systolic pressure was moderately increased to the value of 37 mm Hg. The cardiac 64-slice computer tomography scan (MSCT) showed the presence of a coronary artery fistula originating from the proximal part of the LAD and leading in a winding fashion to the pulmonary trunk (Fig. 1).

The patient was qualified to coronary artery bypass grafting (CABG) and surgical closure of the fistula. On a beating heart, a triple vessel revascularisation was performed by sequential venous anastomosis to the RCA and circumflex artery, and left internal mammary artery to LAD. The fistulous tract (Fig. 2) was secured with three hemoclips and with Teflon-pledgeted 4-0 polypropylene suture. In addition, during the operation, a small aneurysm at the lateral wall was found and secured with Gore-Tex patch fixed with cyanoacrylic glue. The patient was discharged from hospital in good clinical condition.

DISCUSSION

Congenital coronary artery anomalies occur in 1.2% of the population and are defined as inappropriate congenital communication of a coronary vessel with a great vessel or heart chamber without first passing through the myocardial capillary bed [1]. Yamanaka and Hobbs [2] found small coronary artery fistulas in 0.18% of 126,595 patients who underwent cardiac catheterisation. Usually, fistulas of this

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Figure 1. 64-slice computer tomography scan. Arrow shows fistula

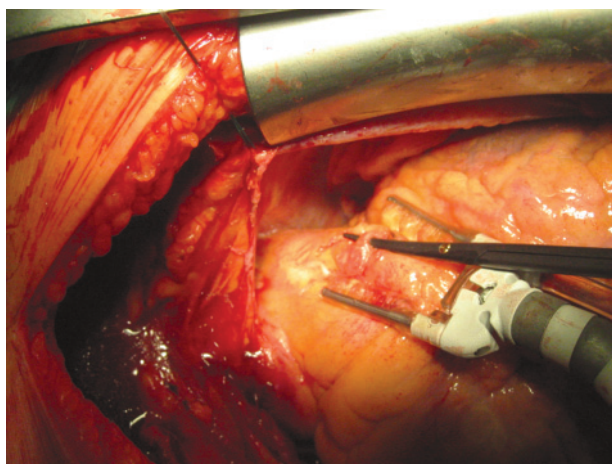


Figure 2. Intraoperative view of the fistula

type arise from a single branch of coronary artery and drain into a single recipient chamber or vessel and they are not usually associated with clinical signs [2, 3]. Large fistulas with significant shunts cause symptoms like continuous murmurs, dyspnea on exertion, exercise intolerance or congestive heart failure, and they should be corrected surgically [2, 4]. Our patient did not complain of symptoms that would have suggested the presence of a fistula before admission due to ACS.

The incidence of coronary artery fistulas can be underestimated, due to their spontaneous closure throughout the

course of life [5]. A link between coronary artery fistulas and premature atherosclerosis as the mechanism of its closure has been suggested [4]. Additionally, single cases of coincident coronary artery fistula and endocarditis have been reported [6]. In our patient, the CABG procedure provided a good opportunity to close the fistula and avoid future endocarditis.

Vitarelli et al. [7] found transoesophageal echocardiography to be a more precise method of diagnosing fistulas than transthoracic echocardiography, especially in showing the site of termination. The development of more sensitive colour Doppler flow mapping has caused more frequent diagnosis of small coronary artery fistulas [8].

In particular, three-dimensional colour Doppler imaging seems to be superior to standard mode due to the unrestricted viewing plane manipulation [9]. In our case, optimal visualisation of the anatomy of the fistula, especially localisation of the drainage site, was performed via MSCT before the operation [3, 10]. Neither the echocardiography nor MSCT revealed the presence of a small left ventricular wall aneurysm which was only found during the operation. On this occasion, surgery provided the final diagnosis.

Conflict of interest: none declared

References

- Engel HJ, Torres C, Page HL. Major variations in anatomical origin of coronary arteries: angiographic observations in 4,250 patients without associated congenital heart disease. *Cathet Cardiovasc Diagn*, 1975; 1: 157–169.
- Yamanaka O, Hobbs R. Coronary artery anomalies in 126,595 patients undergoing coronary arteriography. *Cathet Cardiovasc Diagn*, 1990; 21: 28–40.
- Kurzawski J, Domagała Sz, Heciak J et al. A patient with coronary-pulmonary fistula and acute coronary syndrome — clinical and diagnostic problem. *Kardiol Pol*, 2010; 68: 446–449.
- Jaffe RB, Glancy DL, Epstein S et al. Coronary arterial-right heart fistulae. Long term observations in seven patients. *Circulation*, 1973; 47: 133–143.
- Sherwood MC, Rockenmacher S, Colan SD et al. Prognostic significance of clinically silent coronary artery fistulas. *Am J Cardiol*, 1999; 83: 407–411.
- Alkhulaifi AM, Horner SM, Pugsley WB et al. Coronary artery fistulas presenting with bacterial endocarditis. *Ann Thorac Surg*, 1995; 60: 202–204.
- Vitarelli A, De Curtis G, Conde Y et al. Assessment of congenital coronary artery fistulas by transesophageal color Doppler echocardiography. *Am J Med*, 2002; 113: 127–133.
- Kaplan JD, Redberg RF. Coronary to pulmonary artery fistula detected by transthoracic echocardiography. *Am Heart J*, 1995; 129: 839–840.
- Kidawa M, Peruga JZ, Forys J et al. Acute coronary syndrome or steal phenomenon — a case of right coronary to right ventricle fistula. *Kardiol Pol*, 2009; 67: 287–290.
- Funabashi N, Komuro I. Aberrant fistula arteries from the left main branch and right coronary artery to the left pulmonary arterial sinus demonstrated by multislice computed tomography. *Inter J Cardiol*, 2006; 106: 428–430.