CLINICAL VIGNETTE

Aneurysmal coronary arteries with a giant coronary sinus fistula resulting in mitral regurgitation

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Coronary artery fistula (CAF) originating from the left circumflex coronary artery (LCx) and reaching the coronary sinus (CS) is an infrequent condition.[1-4] We present an extremely rare case of a patient with a fistula to the CS that originated from the aneurysmal left main coronary artery (LMCA) and LCx and contributed to mitral regurgitation (MR), which is an extraordinary finding in patients with CAF.

A 57-year-old man with a history of heart failure and a diagnosis of severe MR was admitted to the hospital due to HF exacerbation. Previously, no other cardiac abnormalities had been detected. Transthoracic echocardiography revealed impaired left ventricular function (ejection fraction, approx. 40%–45%), turbulent blood flow close to the Valsalva sinuses, an eccentric posterior MR jet, and dilated CS (approx. 20 mm) (FIGURE 1A; Supplementary material, *Video S1*). Transesophageal echocardiography confirmed MR. It demonstrated turbulent flow in the LMCA (FIGURE 1B) and a severely dilated LCx (FIGURE 1C) affecting the mitral valve. Coronary angiography revealed an aneurysm of the LMCA and LCx with a giant CAF extending from the LCx to the CS (FIGURE 1D; Supplementary material, *Video S2*), as well as a stenotic lesion of the right coronary artery (Supplementary material, *Figure S1*). Computed tomography confirmed the above-mentioned findings (FIGURE 1E). The left anterior descending artery and obtuse marginal branch were of normal diameter.

The patient was referred for an open-heart surgery (Supplementary material, *Figure S2*). Intraoperative assessment revealed a noncoapting mitral valve with the distorted posterior mitral annulus due to aneurysm of the LCx and dilated CS secondary to CAF. The distorted valve was replaced with a bioprosthesis. The LMCA and fistulous connection were ligated. The left anterior descending artery was bypassed with the left internal mammary artery. The origin of the obtuse marginal branch was occluded and bypassed with a saphenous vein graft. A vein graft was also used to bypass the right coronary artery. The left atrial appendage was closed to reduce thromboembolic risk.

On day 7 after the surgery, the patient was discharged from the hospital. During follow-up 3 months later, he reported no symptoms, had normal prosthetic valve function, patent grafts, and no fistulas (FIGURE 1F).

SUPPLEMENTARY MATERIAL

Supplementary material is available at www.mp.pl/kardiologiapolska.

ARTICLE INFORMATION

CONFLICT OF INTEREST None declared.

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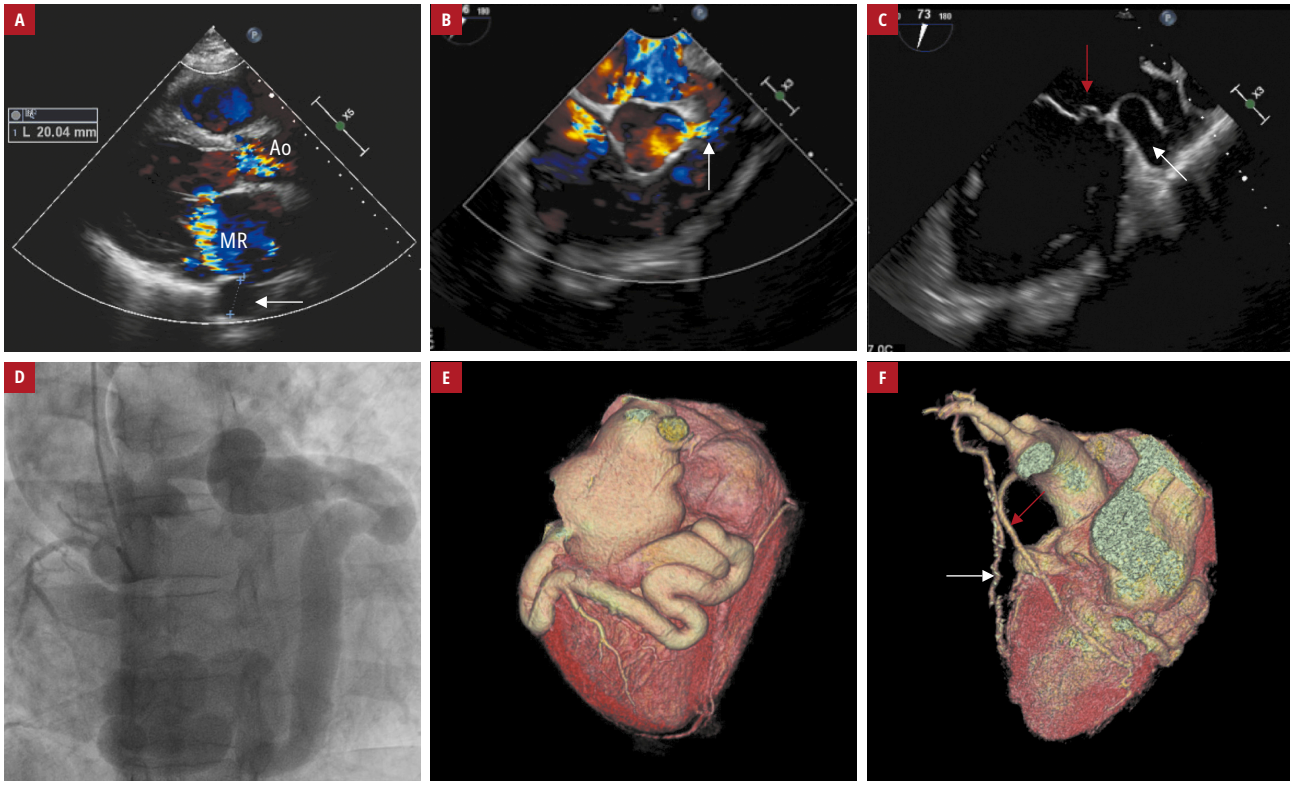

FIGURE 1 **A** – transthoracic echocardiography (parasternal long-axis view): an eccentric posterior mitral regurgitation jet, the dilated coronary sinus (CS) (arrow) and turbulent blood flow close to the sinuses of Valsalva; **B** – transesophageal echocardiography (mid-esophageal short-axis view): turbulent blood flow in the left main coronary artery (arrow); **C** – transesophageal echocardiography (midesophageal commissural view): the severely dilated left circumflex coronary artery (white arrow) affecting the mitral valve (red arrow); **D** – nonselective coronary angiography: a giant left circumflex coronary artery fistula extending to the CS; **E** – computed tomography: a giant left circumflex coronary artery fistula reaching the CS; **F** – postoperative computed tomography: the patent left internal mammary artery crossing to the left anterior descending artery graft (white arrow), the saphenous vein leading to the obtuse marginal graft (red arrow), no fistulas

Abbreviations: Ao, aorta; MR, mitral regurgitation

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