

Echocardiography in anomalous coronary artery diagnostics

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Introduction: Increased use of cardiac imaging leads to earlier identification of coronary artery anomalies (CAA)^{1,2}. Multimodality imaging and functional tests could be crucial in CAA diagnosis and management^{1,3}. Routine echocardiography plays a key role in their detection, as CAA are often diagnosed incidentally³.

Case report: 60-year-old patient with insulin-dependent diabetes presented with non-ST-elevation acute myocardial infarction (non-ST-elevation inferior changes; hsT I 2329.3 ng/L) to the Šibenik General Hospital. On transthoracic echocardiogram, there was a mild basal inferior hypo-contractility, with no other pathological abnormality described. The patient was transferred for urgent coronary angiography at the University Hospital Centre Split, revealing a single coronary artery arising from the right coronary cusp with subtotal stenosis of the right coronary artery as the culprit lesion. Percutaneous coronary intervention with one drug-eluting stent was successfully performed. To further define CAA and its course, computed tomography was done confirming the abovementioned findings (Figure 1). The circumflex artery exhibited a retro-aortic course, while the left anterior descending artery followed a pre-pulmonic course. After one year, the patient developed angina recurrence and was referred for invasive angiography. A significant (~80%) in-stent restenosis of the right coronary artery and a subtotal (~95%) stenosis of the circumflex branch were observed and successfully treated with drug-coated balloons (Figure 2). The transthoracic echocardiography was again performed, showing clear signs of CAA (Figure 3) and emphasizing a distinct long and tortuous course of left coronary artery branches, potentially precipitating this patient for turbulent flow and accelerated atherosclerosis².

Conclusion: Echocardiography is a useful modality for early detection of the retro-aortic circumflex artery, although such findings could remain undetected in daily clinical settings^{1,2}. Despite CAA usually being benign, their timely detection is important as it could be associated with coronary disease². To this patient, it would mean closer cardiac supervision and clinical follow-up.

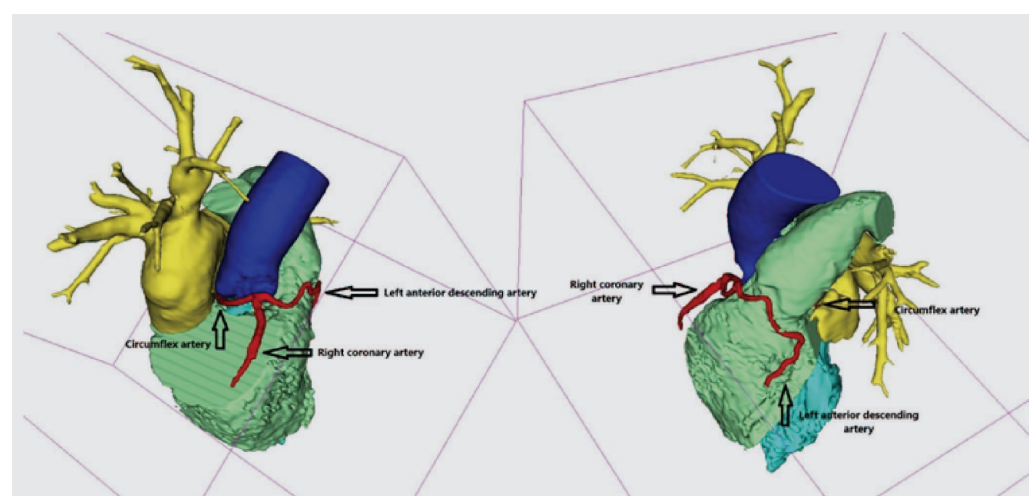


FIGURE 1. Computed tomography reconstruction demonstrating the anomalous flow of the coronary arteries.

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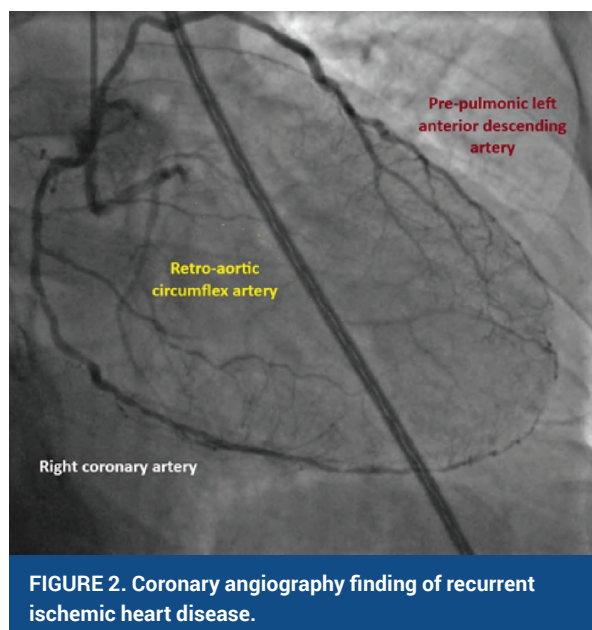


FIGURE 2. Coronary angiography finding of recurrent ischemic heart disease.

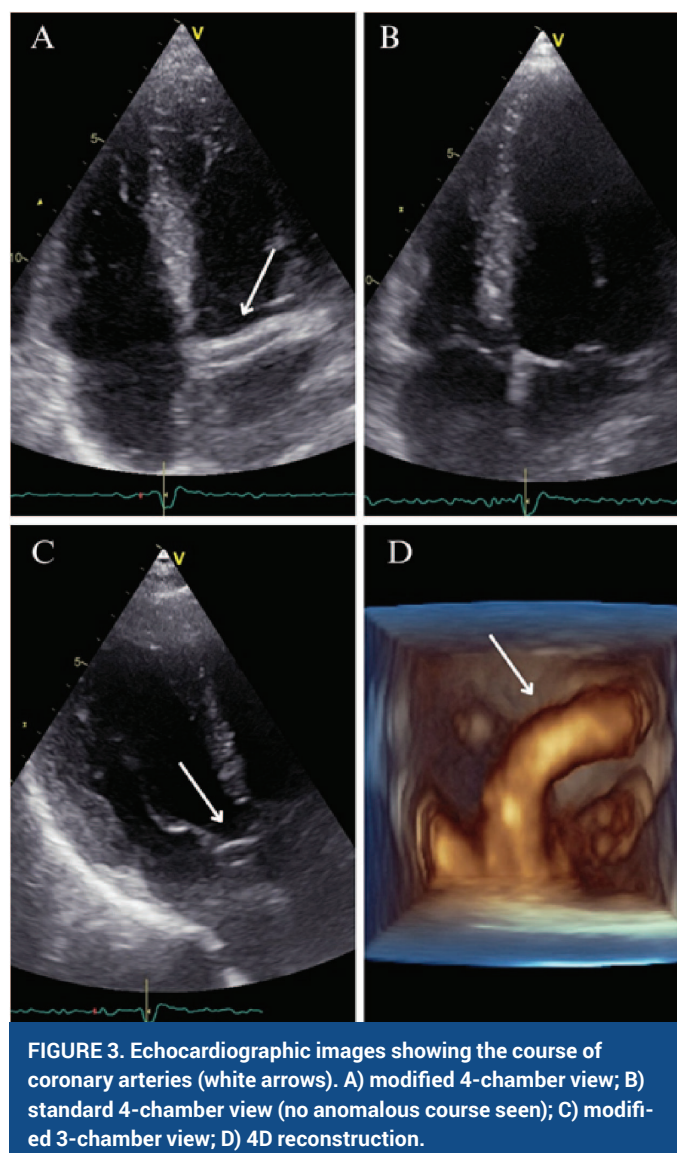


FIGURE 3. Echocardiographic images showing the course of coronary arteries (white arrows). A) modified 4-chamber view; B) standard 4-chamber view (no anomalous course seen); C) modified 3-chamber view; D) 4D reconstruction.

LITERATURE

1. Gentile F, Castiglione V, De Caterina R. Coronary Artery Anomalies. *Circulation*. 2021 Sep 21;144(12):983-996. <https://doi.org/10.1161/CIRCULATIONAHA.121.055347>
2. Gräni C, Kaufmann PA, Windecker S, Buechel RR. Diagnosis and Management of Anomalous Coronary Arteries with a Malignant Course. *Interv Cardiol*. 2019 May 21;14(2):83-88. <https://doi.org/10.15420/icr.2019.1.1>
3. Gräni C, Benz DC, Schmied C, Vontobel J, Mikulicic F, Possner M, et al. Hybrid CCTA/SPECT myocardial perfusion imaging findings in patients with anomalous origin of coronary arteries from the opposite sinus and suspected concomitant coronary artery disease. *J Nucl Cardiol*. 2017 Feb;24(1):226-234. <https://doi.org/10.1007/s12350-015-0342-x>