Anomalous left main coronary artery origin, silent ischaemia, risk of sudden death: a triad detected by combining coronary CT and dipyridamole SPECT

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DESCRIPTION

In March 2013, a 72-year-old male patient presented with angina during strenuous effort (SE), a left bundle branch block, type 2 diabetes and hypertension. He was undergoing treatment with valsartan, metformin and aspirin. Dipyridamole infusion on thallium-201 single-photon emission cardiac tomography (SPECT) detected a septal-inferior reversible defect (figure 1). Coronary tomography revealed the presence of an anomalous left main coronary artery (ALMCO) originating from the opposite sinus of Valsalva and coursing

between the aorta (AO) and the pulmonary artery (PA). The right coronary artery (RCA) arose at an acute angle from the same orifice of the ALMCO¹ (figure 2). Coronary angiography confirmed the observation. The effort angina aetiology could be explained by the transient coronary blood flow reduction elicited by the systolic compression of the ALMCO that is produced by the AO and PA during SE. Sudden death is often the first manifestation of ALMCO.² In this patient, the aortic root dilation may have compressed the acute angle take off of the RCA, inducing a dynamic stenosis.³

Figure 1 Pharmacological stress on thallium-201 single-photon emission cardiac tomography: mild, painless, reversible perfusion defects, inferior (red arrows) and septal (white arrows). The double product, measured after dipyridamole infusion, did not change from baseline values.

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Figure 2 Volume-rendered cardiac CT images indicate extramural anomalies of the left main coronary artery originating from the opposite sinus of Valsalva and coursing between the aorta and the pulmonary artery. The right coronary artery arises with an acute angle from the same orifice of the left main coronary artery. Ao, Aorta; CX, circumflex artery; LAD, left coronary artery; PA, pulmonary artery; RCA, right coronary artery.

Perfusion may have then become dependent on collaterals. Thus, dipyridamole-induced flow steal from RCA collaterals could not be ruled out for the genesis of the septal-inferior wall ischaemia.⁴ In ALMCO, the decision for surgery must be balanced between the risk of sudden death decreasing with age, the presence of symptoms and the ischaemic territory involved.⁵ As ischaemia was mild and asymptomatic, we decided to increase the patient's myocardial protection with β -blockers and set up a simple annual surveillance.

Learning points

- ▶ Cardiac sudden death (CSD) mostly occurs in young men with anomalous left main coronary artery (ALMCO) during strenuous effort.
- ▶ A systematic screening for the risk of CSD should be undertaken in all patients with ALMCO.
- ▶ Combined coronary tomography and stress single-photon emission cardiac tomography may detect patients at high risk for CSD and suggest optimal therapeutic decisions.
- ▶ Treatment with β -blockers or dihydropyridine calcium-channel blockers may provide cardioprotection from inducible myocardial ischaemia.
- ▶ Surgical evaluation with reimplantation of the coronary arteries into their proper sinuses or with a saphenous vein or arterial coronary artery bypass graft is justified if myocardial ischaemia is detected. However, the optimal surgical technique is not yet defined.

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Competing interests None.

Patient consent Obtained.

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