Single right coronary artery with apical ischaemia

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A 56-year-old female patient was referred to our institution for evaluation of chest pain. She had a history of hyperlipidaemia and type 2 diabetes mellitus. Stress exercise echocardiogram showed left ventricular apical ischaemia (Figure 1; see Supplementary data online, Video S1). Coronary angiogram showed no significant lesions in a large dominant right coronary artery, but the left coronary artery could not be found (Figure 2; see Supplementary data online, Video S2). CT coronary angiography for further evaluation of the coronary artery anatomy was done. It showed a single coronary artery arising from the right coronary sinus. It coursed around the entire atrioventricular groove, giving off all main coronary branches, and then directed anteriorly, ending in the mid-anterior interventricular groove (Figure 3; see Supplementary data online, Videos S3 and S4). No defined major coronary artery branch supplying the distal portion of the left ventricle could be found (Figure 4*).

Coronary artery anomalies are found in ~1.3% of patients undergoing coronary angiography. However, single coronary artery is an extremely rare congenital anomaly characterized by a single coronary artery ostium from an aortic sinus, which is seen in only 0.024–0.066% of patients who undergo coronary angiography. Fifteen per cent of isolated single coronary artery may have myocardial ischaemia directly caused by the abnormal anatomy of the arteries and not by coronary artery disease. CT coronary angiography is a non-invasive method that provides detailed three-dimensional (3D) visualization of complex coronary artery anatomy, and has currently become the method of choice for the detection and classification of coronary artery anomalies.

Supplementary data are available at European Heart Journal – Cardiovascular Imaging online.

Conflict of interest: none declared.

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