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Anomalous coronary artery as a rare cause of angina pectoris

Anomalia tętnic wieńcowych jako rzadka przyczyna dławicy piersiowej

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A 53 year-old man was admitted to the emergency department with signs of angina pectoris. The symptoms that appeared were: general fatigue, shortness of breath, and chest pain. The patient did not have any medical history of heart disease or of any other health problems. Physical examination showed no other significant pathologies. His blood pressure and heart rate were within the normal ranges.

The electrocardiography (ECG) presented a sinus rhythm with a normal QRS complex, an isoelectric ST segment, a QTc duration within the normal range, and no pathological Q waves. The results for troponins, electrolytes, biochemistry tests, and blood count did not show any clinically significant deviations. It was decided to perform a coronary computed tomography angiography.

The coronary artery calcium score was 0.0, which signified the absence of calcifications in the coronary arteries and excluded significant coronary stenosis with a high degree of confidence [1]. The type of vascularisation showed domination of the left coronary artery. The left main coronary artery (LM) was wide, and the left anterior descending artery (LAD) gave typical diagonal and septal branches with no sign of stenosis. The left circumflex artery (LCx) created marginal branches, showing no pathology either. The right coronary artery (RCA) was divided into three marginal branches with no abnormalities. However, a significant anomaly was found in the additional coronary vessels.

The first was autonomically descending at an acute angle from the Valsalva aortic sinus near the RCA. At the beginning, it travelled inter-arterially between the pulmonary trunk and the aorta, and then into the interventricular septum through the myocardium for a distance of 4.5 cm. It later left the myocardium and ran into the further end of the anterior interventricular groove.

The second vessel branched from the beginning of the RCA just outside the aortic sinus. The course of this coronary artery was ascending around the aorta to its posterior wall before disappearing into the right atrium — which could be the sinus node artery.

The left ventricular ejection fraction was 80%. All valves were working properly, and no excessive pericardial fluid was found. There were no pathological lymph nodes and no sign of any lung disease. Spondylithic changes in the thoracic spine were imaged.

An aberrant coronary artery is a very rare entity; prospective screening data estimates that 0.1–0.2% of the population have this anomaly [2]. An inter-arterial course between the aorta and the pulmonary artery is called malignant because it is the most dangerous, carrying a high risk of sudden cardiac death in otherwise healthy and asymptomatic individuals [2, 3]. Currently, patients may undergo surgery as treatment for this condition. This is supported by the guidelines for the management of adults with congenital heart disease [4]. On the other hand,, the retro-aortic run of such an artery is considered to be benign. Whether congenital coronary artery fistulae should be treated remains controversial, and the decision depends upon the symptoms or whether the shunt is haemodynamically relevant. But it may still have some influence on survival [5].

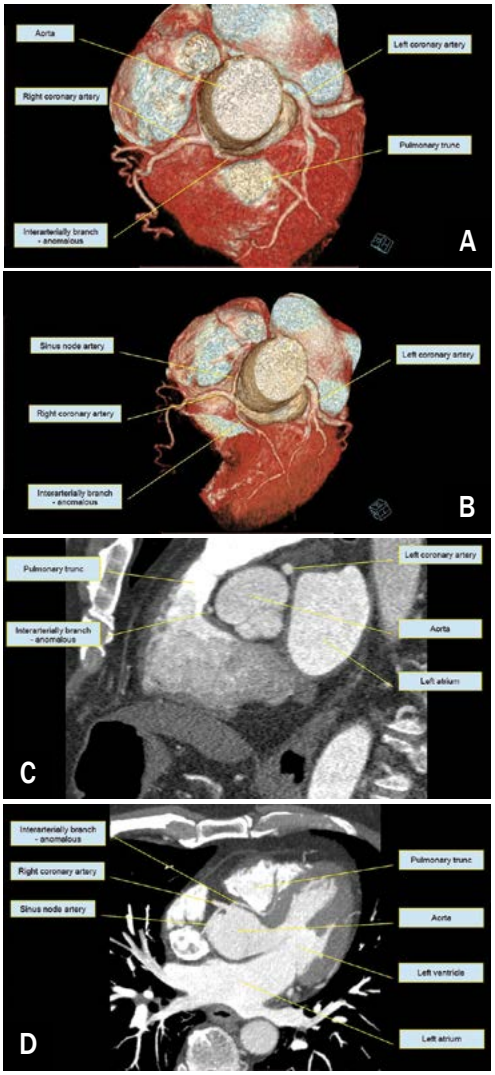

Figure 1. Anomalous coronary artery in cardiac computed tomography: **A.** Volume rendering technique (VRT) reconstruction — view from above; **B.** VRT reconstruction — view from above. The pulmonary trunk has been removed for better visualisation of the inter-arterial anomaly; **C.** Multiplanar reformated (MPR) reconstruction — sagittal view; **D.** Maximum intensity projection (MIP) reconstruction — axial view

Conflict(s) of interest

The authors declare no conflict of interest.

References

1. Konieczyńska M, Tracz W, Pasowicz M, et al. Use of coronary calcium score in the assessment of atherosclerotic lesions in coronary arteries. Kardiol Pol. 2006; 64(10): 1073–9; discussion 1080, indexed in Pubmed: 17089239.
2. Peñalver JM, Mosca RS, Weitz D, et al. Anomalous aortic origin of coronary arteries from the opposite sinus: a critical appraisal of risk. BMC Cardiovasc Disord. 2012; 12: 83, doi: 10.1186/1471-2261-12-83, indexed in Pubmed: 23025810.
3. Wu GR, Saini A, Ahmed I, et al. Interarterial course of anomalous right coronary artery: pathophysiology, diagnosis, and treatment. Radiol Case Rep. 2017; 12(4): 664–667, doi: 10.1016/j.radcr.2017.06.006, indexed in Pubmed: 29484044.
4. Stout KK, Daniels C, Aboulhosn J, et al. 2018 AHA/ACC guideline for the management of adults with congenital heart disease. J Am Coll Cardiol. 2019; 73(12): e81–e192, doi: 10.1016/j.jacc.2018.08.1029.
5. Click RL, Holmes DR, Vlietstra RE, et al. Anomalous coronary arteries: location, degree of atherosclerosis and effect on survival — a report from the Coronary Artery Surgery Study. J Am Coll Cardiol. 1989; 13(3): 531–537, doi: 10.1016/0735-1097(89)90588-3, indexed in Pubmed: 2918156.

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