Unexpected discovery of anomalous aortic origin of coronary arteries during routine evaluation: a case report

Ivana Peršić[1]*, Ena Mršić[2], Tin Nadarević[2], Ivana Grgić Romić[1,2], Teodora Zaninović Jurjević[2]

[1]University of Rijeka, Faculty of Medicine, Rijeka, Croatia
[2]University Hospital Centre Rijeka, Rijeka, Croatia

KEYWORDS: congenital abnormalities, coronary artery disease, diagnostic screening programs.

CITATION: Cardiol Croat. 2025;20(5-6):152. | https://doi.org/10.15836/ccar2025.152

***ADDRESS FOR CORRESPONDENCE:** Ivana Peršić, Medicinski fakultet, Braće Branchetta 20, HR-51000 Rijeka, Croatia. / Phone: +385-91-9159259 / E-mail: ipersic@student.uniri.hr

ORCID: Ivana Peršić, https://orcid.org/0009-0001-0236-0128 • Ena Mršić, https://orcid.org/0009-0002-0859-3413
Tin Nadarević, https://orcid.org/0000-0002-1174-5281 • Ivana Grgić Romić, https://orcid.org/0000-0002-0035-4445
Teodora Zaninović Jurjević, https://orcid.org/0000-0001-8359-3910

Introduction: Coronary artery anomalies (CAAs) are rare congenital conditions characterized by an abnormal origin or course of any of the three main epicardial coronary arteries.[1] Most often, CAAs are discovered accidentally during evaluations for ischemic heart disease. Patients are generally asymptomatic, but they may present with chest pain, syncope, or sudden cardiac death, particularly in young athletes. Incidence in the general population ranges from 0.24% to 1.3 %.[2]

Case report: We present the case of a 34-year-old male, referred to a cardiologist following the incidental detection of a heart murmur during a routine check-up. The patient was asymptomatic, with an unremarkable electrocardiogram. Transthoracic echocardiography revealed a bicuspid aortic valve (with peak transvalvular gradient of 16 mmHg), along with a mobile interatrial septum and mild atrial enlargement. Left ventricular systolic function was preserved, with no evidence of segmental wall motion abnormalities. For further evaluation, a CT angiography of the aortic valve and coronary arteries was performed, revealing an aberrant common origin of the right coronary artery (RCA) and the left main coronary artery (LM) arising from the sinotubular junction, just above the left coronary cusp (LCC). Importantly, a malignant interarterial course of the RCA, passing between the ascending aorta and the pulmonary outflow tract, was observed. Given that the patient is a highly active special police unit member exposed to significant occupational stress, further evaluation was needed. A stress cardiac magnetic resonance imaging was done, which revealed possible inducible ischemia in the basal regions.

Conclusion: Due to the potential for dynamic compression between the aorta and pulmonary artery, the anomalous origin of the RCA arising from the sinotubular junction just above the LCC with a malignant interarterial course is considered a high-risk anomaly. In addition, a bicuspid aortic valve presents an added challenge in long-term follow-up and surveillance. This RCA course can lead to myocardial ischemia, syncope, arrhythmias, or SCD.[3-4] This case underscores the critical importance of a thorough evaluation of incidental cardiac findings, as congenital coronary anomalies may carry life-threatening risks, even in asymptomatic individuals.

RECEIVED:
March 16, 2025

ACCEPTED:
April 2, 2025

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. Tessitore A, Caiffa T, Bobbo M, D'Agata Mottolese B, Barbi E, Chicco D. Anomalous aortic origin of coronary artery: For a challenging diagnosis, a transthoracic echocardiogram is recommended. Acta Paediatr. 2022 Feb;111(2):265-268. https://doi.org/10.1111/apa.16160
3. Villa AD, Sammut E, Nair A, Rajani R, Bonamini R, Chiribiri A. Coronary artery anomalies overview: The normal and the abnormal. World J Radiol. 2016 Jun 28;8(6):537-55. https://doi.org/10.4329/wjr.v8.i6.537
4. Jiang MX, Blackstone EH, Karamlou T, Ghobrial J, Brinza EK, Haupt MJ, et al; Cleveland Clinic Adult AAOCA Working Group. Anomalous Aortic Origin of a Coronary Artery in Adults. Ann Thorac Surg. 2021 Oct;112(4):1299-1305. https://doi.org/10.1016/j.athoracsur.2020.06.153