

Answer to the quiz on page 39 - Interventional cardiology: Coronary computed tomography angiography in non-ST elevation myocardial infarction

The correct answer is 1 - anomalous location of coronary artery

The correct answer is anomalous location of right coronary artery (RCA). In presented case, NSTEMI was diagnosed and coronary angiography was performed. However, RCA could not be selectively cannulated due to anomalous origin of RCA (Video 1. See video at www.hvt-journal.com). In computed coronary tomography angiography (CCTA) images, the anomalous origin of RCA is seen in Figure 1. In proximal segment of left anterior descending artery, a calcific –not thrombotic- lesion is seen. There is no dissection or plaque disruption or thrombus in coronary arteries.

In general population, the prevalence of coronary artery anomalies is approximately around 1%. The classification of coronary artery abnormalities has been made by their ostial, original or anatomic anomalies, congenital absence or hypoplasia and termination anomalies (1). There are five paths for anomalous origin of coronary artery to reach their cardiac perfusion territories: pre- pulmonic, retro- aortic, inter-arterial, trans- septal and retrocardiac (1). The inter-arterial

form, an artery with anomalous origin course between aorta and pulmonary artery – our presented case, is associated with sudden cardiac death, especially in young athletes. Angina pectoris, dyspnea, palpitations, myocardial infarction or syncope are the other clinical symptoms and outcomes, often occur after extreme physical training.

Beta-blockers, avoiding extreme physical exercise, stent deployment or surgery are the treatment options. In 2018 American Heart Association/ American College of Cardiology (AHA/ACC) guidelines for the management of adult congenital heart diseases, surgery is recommended when evidence is consistent with coronary ischemia attributable to the anomalous aortic origin of the coronary artery (AAOCA) (2). Similarly, in 2020 European Society of Cardiology (ESC) Guidelines of management of adults with congenital heart diseases, surgery is recommended for AAOCA in patients with typical angina symptoms who present with evidence of stress-induced myocardial ischemia in a matching territory or high-risk anatomy artery (3). In the light of recent guidelines, the patient was referred to surgery.

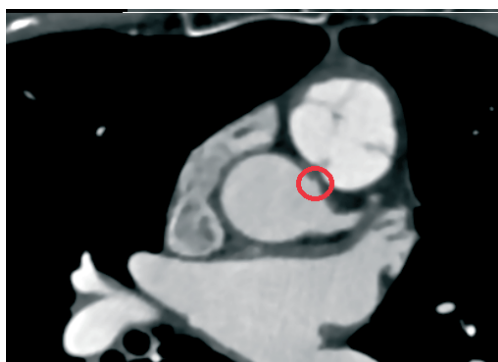


Figure 1. Coronary computed tomography angiography image of anomalous origin of right coronary artery from left sinus of Valsalva with inter-arterial course between aorta and pulmonary artery

Video 1. Coronary angiography views of failed selective cannulation of right coronary artery (visit www.hvt-journal.com to see video images)

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Received: 12.01.2021 **Revised:** 31.01.2021 **Accepted:** 31.01.2021
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B. The correct answer is 4 - myocardial infarction due to compression of RCA

In this case, RCA was running between aorta and pulmonary artery (inter-arterial) and was arising from left sinus Valsalva. A scissor-like mechanism of aorta and pulmonary artery is the cause of the compression in the affected artery (4). In lateral compression, stroke volume of the heart can cause pulsatile compression of the affected artery (4). In our case, compression of RCA seems to be the most explanatory mechanism of the troponin elevation. Another detail is that the proximal RCA looks thinner in CCTA images. This can be considered as a consequence of the intramural course of RCA. Lumen size of distal segments of RCA is normal, not ectatic.

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Peer-review: Internal and external

Conflict of interest: None to declare

Authorship: E.B.

Acknowledgement and funding: None to declare

References

1. 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; 8: 537-55. doi:10.4329/wjr.v8.i6.5375
2. Stotu KK, Daniels CJ, Aboulhosn JA, Bozkurt B, Broberg CS, Colman JM et al. 2018 AHA/ACC Guideline for the Management of Adults With Congenital Heart Disease: A Report of the American College of Cardiology/American Heart Association Task Force on Clinical Practice Guidelines. *Circulation* 2019; 139: e698-e800. doi:10.1161/CIR.0000000000000060
3. Baumgartner H, De Backer J, Babu-Narayan SV, Budts W, Chessa M, Diller G-P, et al. 2020 ESC Guidelines for the management of adult congenital heart disease. *Eur Heart J* 2020; ehaa554. doi:10.1093/eurheartj/ehaa554
4. Angelini P. Coronary artery anomalies: an entity in search of an identity. *Circulation* 2007; 115: 1296-305. doi:10.1161/CIRCULATIONAHA.106.618082



Pre-quarantine Paraty State, Rio de Janeiro, Brazil 2020. Andrea Lorenzo, Rio de Janeiro, Brazil