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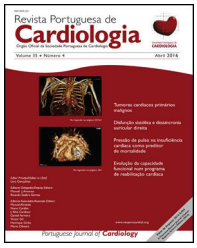

EDITORIAL COMMENT

Anomalous coronary arteries arising from the opposite aortic sinus: When to intervene?

Anomalias nas artérias coronárias com origem no seio aórtico oposto: quando intervir?

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The reported incidence of anomalous origin of the coronary arteries is 0.1% to 1.3% in the general population. Anomalous coronary arteries arising from the opposite sinus of Valsalva (ACAOS) are the most frequently found of such anomalies and are associated with adverse cardiac events, particularly in the young.[1–3] The left circumflex artery originating from the right sinus is the most common ACAOS, with an incidence of 0.4%. The right coronary artery arising from the left sinus or the left main coronary artery arising from the right sinus are less common, with a prevalence in the general population between 0.1% and 0.3%.

The clinical relevance of this rare entity is thought to be related directly to the hemodynamic significance of particular anatomic features such as an interarterial course, slit-like ostium, acute angle take-off, intramural course, elliptical vessel course, and proximal vessel narrowing of the anomalous vessel. Patients with these features may be more prone to sudden cardiac death (SCD) or even myocardial infarction (MI) as a direct consequence of scissor-like shearing, kinking or lateral dynamic compression of the vessel due to increased pressure in both the aorta and the pulmonary artery during strenuous physical exercise.[3,4]

Timely diagnosis can be challenging because clinical presentation may range from complete absence of symptoms to angina, palpitations, MI, heart failure, syncope, and SCD. This issue is of great importance in younger and active patients, because in most instances they are asymptomatic and standard electrocardiographic testing under resting or exercise conditions is unlikely to provide clinical evidence of myocardial ischemia and would not be reliable as a screening test in large populations. Basso et al. reviewed two large registries, assembled consecutively in the US and Italy, of young competitive athletes who died suddenly in order to characterize their clinical profile and to identify clinical markers that would enable ACAOS to be detected during life in young competitive athletes.[5] They found that warning cardiac symptoms were not uncommon shortly before SCD (typically associated with a anomalous left main coronary artery), suggesting that a history of exertional syncope or chest pain requires exclusion of this anomaly.

Diagnostic workup is usually guided by the suspicion of coronary artery disease, so ischemia-driven testing is frequently the initial approach, followed by coronary imaging (coronary angiography, coronary computed tomography angiography [CCTA], or magnetic resonance imaging).[6] Recently CCTA has been used more widely, which will probably lead to further increases in incidental diagnosis of ACAOS. The question of appropriate management for such cases will therefore arise more frequently.

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The indication for surgical intervention is straightforward when there are symptoms or myocardial ischemia related to the coronary anomaly. Nevertheless, the type of lesion and the course of the coronary artery should also be taken into account. Intravascular ultrasound has been demonstrated to be a valuable tool in assessing the origin and proximal segment of the anomalous vessel and lateral compression of the coronary wall by the aorta when present.[7] However, in asymptomatic patients the decision whether to operate should be made on an individual basis.

In this issue of the *Journal*, Sousa et al.[8] describe their experience in surgically managing seven patients with this anomaly, reporting no mortality and good medium-term survival. Based on their results, they advise surgery in symptomatic patients suggestive of myocardial ischemia, asymptomatic patients with a left coronary artery arising from the right sinus of Valsalva, and some patients with an anomalous right coronary artery from the left sinus, when the expected surgical risks are minimal, particularly when they are young and engaged in physically strenuous jobs or hobbies.

A recent study by Grani et al.[9] suggests a more benign course in middle-aged patients with ACAOS, since medium-term outcomes (major adverse cardiac events) were favorable and not statistically different from a matched control cohort without coronary artery anomalies, regardless of whether there was an interarterial course. These findings are only applicable in this setting; in a pediatric population or even in young adults the results could be different. In this context, Sousa et al.'s study is important, since they have demonstrated that it is possible to perform anatomical correction, avoiding coronary artery bypass grafting, in the majority of cases with excellent perioperative results. We therefore believe that the age factor should also be considered when dealing with asymptomatic patients with ACAOS and an interarterial course, and that surgical intervention should be reserved for younger patients, under 35-40 years of age.

Conflicts of interest

The author has no conflicts of interest to declare.

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