Anomalous Origin of the Left Main Coronary Artery: Course Determination by Computed Tomography

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In the May 2010 issue of this journal, Continentino and da Silva[1] presented the case of a 68-year-old asymptomatic man in whom the computed tomographic coronary angiography displayed a right aortic sinus-connected single coronary artery that gave rise to the right and left main (LMCA) coronary artery[1]. My opinion and comments are related to the course of the LMCA, which was interpreted as being "between the pulmonary artery and aorta", i.e., interarterial.

An interarterial LMCA is expected to be depicted as passing through the aortopulmonary isthmus; however, in the three-dimensional images presented, this location is devoid of the LMCA[2]. Furthermore, shortly after its emergence, the LMCA embeds within the right ventricular infundibulum to surface in the anterior interventricular groove, where it bifurcates. The bifurcation point is displaced apically for which reason the left circumflex artery assumes a relatively long leftward, backward and superior proximal course in order to join its normally located segment. Accordingly, the LMCA must be following a subpulmonary or intraseptal course, namely underneath the right ventricular infundibulum and through the superior aspect of the crista supraventricularis in a subendocardial position and then intramyocardially, inside the upper interventricular septum.

Discrimination between an interarterial and intraseptal LMCA is important considering their different pathophysiological, surgical and prognostic implications[3,4]. The interarterial course carries the greatest risk for adverse repercussions among all coronary anomalies; it is linked to the proximal ectopic vessel, which is intussuscepted within the aortic wall media. In contrast, the intraseptal course is considered benign and has been only occasionally correlated with ischemic sequelae; it is linked to muscular compression of the intramyocardial ectopic segment during tachycardia. Computed tomographic coronary angiography may depict anatomic features that are specific to each of these courses, thereby facilitating their differentiation[5]. Thus, a LMCA with interarterial course is depicted above the pulmonary valve and on coronal images, it is seen *en face* between the aortic root and pulmonary trunk as an oval structure; the latter is due to the fact that the proximal intussuscepted ectopic segment is hypoplastic and laterally compressed.

In contrast, the intraseptal LMCA is depicted below the pulmonary valve and because of that, it is not revealed between the aortic root and pulmonary trunk on coronal images.

Keywords

Coronary angiography; computed tomography; truncus arteriosus.

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