

LCX Artery Agenesis in a Middle-Aged Male Patient with Chest Discomfort

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Abstract

One of the rarest congenital anomalies of the coronary arteries is the congenital absence of the left circumflex artery. The literature reports few cases of this congenital anomaly. It is often an incidental finding following the request for cardiac imaging investigations due to the presence of chest pain of uncertain nature associated with a doubtful or positive stress test for suspected inducible ischemia. Consequently, computed tomography coronary angiography is the ideal diagnostic tool that is often used nowadays to confirm this suspicion and thus reliably diagnose this unique morphology. In this report the author describes the clinical case of a middle-aged patient with chest discomfort during effort followed by a positive cycle-ergometer Ex-ECG stress test for inducible myocardial ischemia.

Keywords: *Congenital Coronary Anomalies; Computed Tomography Coronary Artery; LCX Artery Absence; Athletes*

Introduction

Coronary artery anomalies are rare diseases even though they are among the most common causes of sudden cardiac deaths in young athletes. They have an overall prevalence of about 0.3% to 5.6% among the general population [1]. This rare congenital heart disease is represented by a coronary anomaly where the circumflex artery does not develop in the left atrioventricular groove. For example, some authors found this in only 4 of 126,595 patients undergoing coronary angiography and with a frequency of only 0.003% in all patients examined [2].

For this reason, a cardiac imaging examination such as coronary computed tomography angiography (CTCA) is certainly more useful than catheter angiography in differentiating between congenital absence and complete obstruction, because coronarography is known to be a luminal contrastographic examination.

Coronary computed tomography is also critical for delineating the course of the vessel related to the surrounding cardiac chambers [3]. In this anecdotal report we present the clinical case of an amateur athlete who complained of non-specific chest pain on exertion who underwent EX-ECG stress test resulted positive for suspected inducible ischaemia. Subsequent computed tomography coronary angiography revealed agenesis of the left circumflex artery with a super-dominant right coronary artery (RCA). Simply put, this article describes a case of a 58-year-old male presenting with exertional dyspnea who underwent a stress test that was positive for functional inducible ischemia at a low external workout. Subsequently, the gold standard CCTA showed LCX agenesis with dominant RCA.

Case Report

A 58-year-old sportive male, without hypertension and diabetes mellitus, came to our center complaining of chest discomfort during effort for three months. The physical examination was completely normal. The cardiovascular assessment was utterly regular. Also, blood analysis for lipid and renal function were standard. His resting electrocardiogram revealed a normal sinus rhythm without significant ST-T changes. 2D-TTE showed no kinetic regional wall motion abnormalities and a good left ventricular ejection fraction. An EX-ECG stress test showed an inducible ischemia at a low external workout. Thus, the patient underwent evaluation for coronary artery disease. An angiography using a 64-slice multi-detector computed tomography (MDCT) (Figure 1-3) performed the following day showed the absence of the LCX. However, a dominant RCA with the posterior descending artery (PDA) and the left posterior ventricle (PLV) branches were prominent. The PLV supplied the posterolateral wall of the left ventricle. The patient was diagnosed with a congenital absence of the LCX with a dominant RCA with no evidence of atherosclerotic artery disease. The patient was discharged with medical management and regular follow-up.

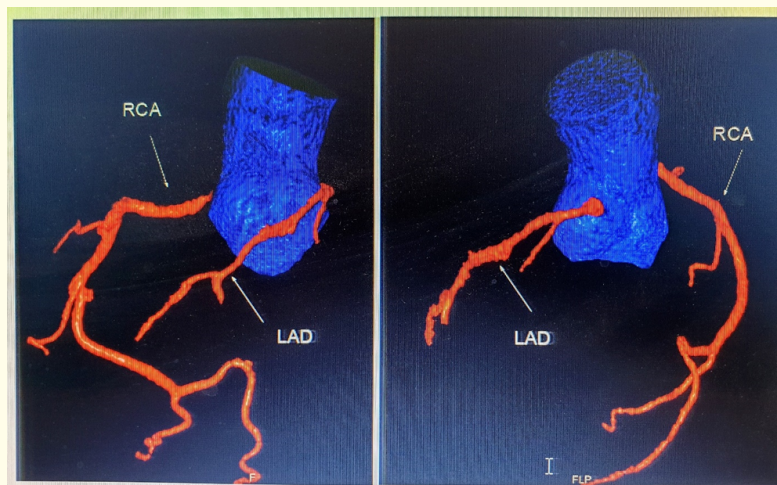


Figure 1

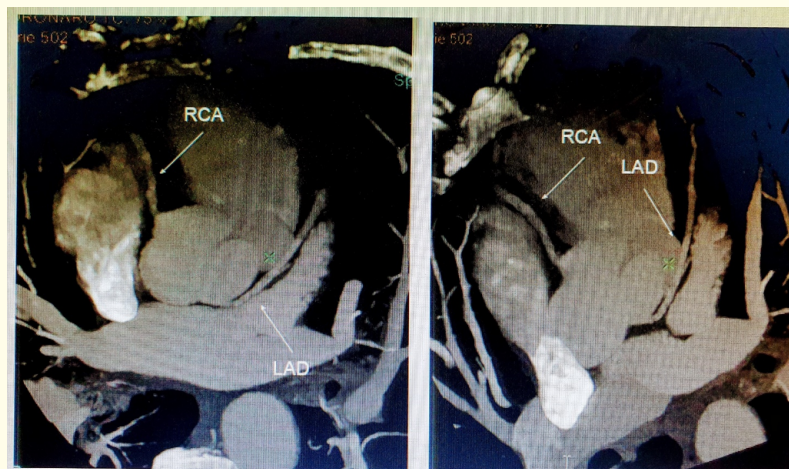


Figure 2

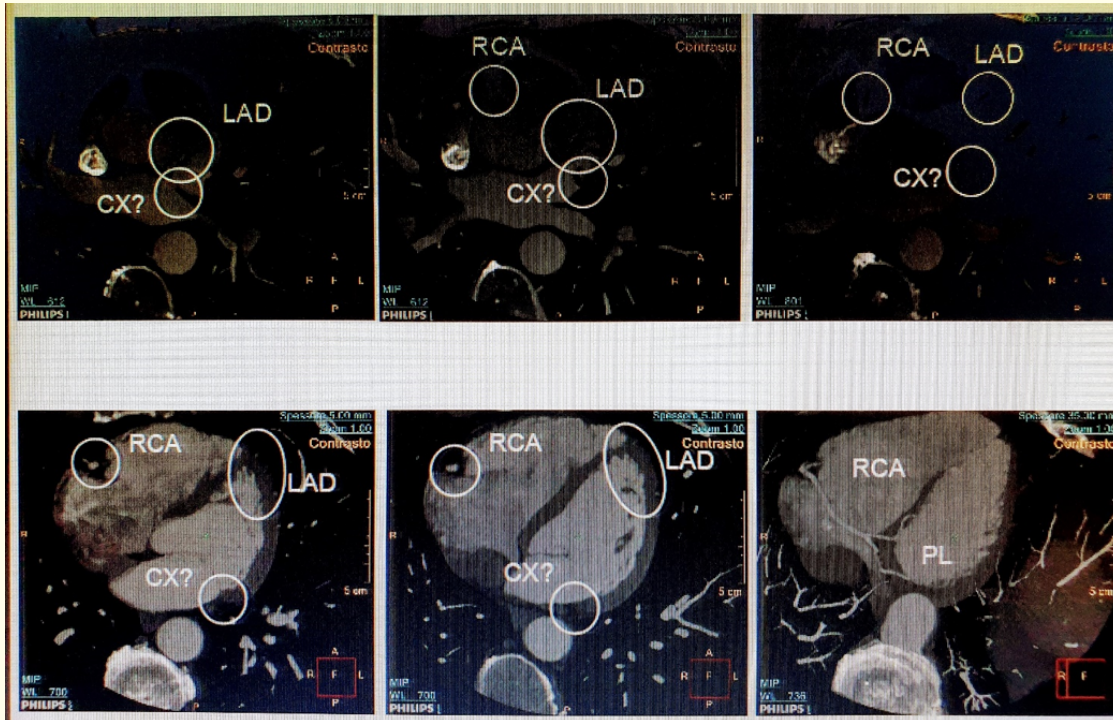


Figure 3

Figure 1-3: Computed tomography coronary angiography showed LCX artery agenesis with dominant RCA.

Discussion and Conclusion

Congenital absence of the left circumflex artery (LCX) is a rare anatomical defect invariably associated with right dominant circulation [1]. Patients with congenital absence of LCX can present with variable symptoms ranging from dyspnea on exertion to acute coronary syndrome-like onset myocardial infarction. Congenital anomalies of the coronary arteries are anomalies mostly diagnosed incidentally. The literature shows that the prevalence in different studies ranges from 0.6% to 1.3% [2]. Coronary artery abnormalities are frequent incidental findings in subjects undergoing computed tomographic coronary angiography to exclude presumed coronary artery disease. This cardiovascular imaging examination, which allows high spatial and contrast resolution, is an excellent tool for differential diagnosis between CAD and congenital anomalies providing optimal and indisputable results [3].

Conflict of Interest

None to declare.

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