

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

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Abstract

Congenital absence of the left circumflex artery is a very rare congenital anomaly of the coronary arteries. Few cases have been reported in the literature. 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]. Congenital absence of the left circumflex coronary artery (LCX) is a very rare coronary anomaly in which the artery fails to develop in the left atrioventricular groove. For example, Yamanaka and Hobbs found it in only 4 out of 126,595 patients undergoing coronary angiography and with a frequency of only 0.003% in all patients [2]. For these reasons, coronary angiography with computed tomography (CT) is certainly advantageous over catheter angiography in differentiating between congenital absence and complete obstruction, coronarography being a luminal examination in the absence of haemodynamics. Coronary computed tomography also helps to delineate the course of the vessel in relation 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. Physical examination did not reveal any abnormal findings. The cardiovascular assessment was utterly regular. Also, blood analysis for lipid and renal function were standard. His resting electrocardiogram showed a sinus rhythm with no significant ST-T changes. Echocardiography revealed no regional wall motion abnormalities with left ventricular ejection fraction over 60%. An exercise stress test showed a positive result for inducible ischemia at a low external workout. The patient underwent evaluation for coronary artery disease. Thus, angiography using a 64-slice multi-detector computed tomography (MDCT) (Figure 1-2-3) performed the following day showed the absence of the LCX but 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 without atherosclerotic coronary artery disease evidence. The patient was discharged with medical management and regular follow-up.

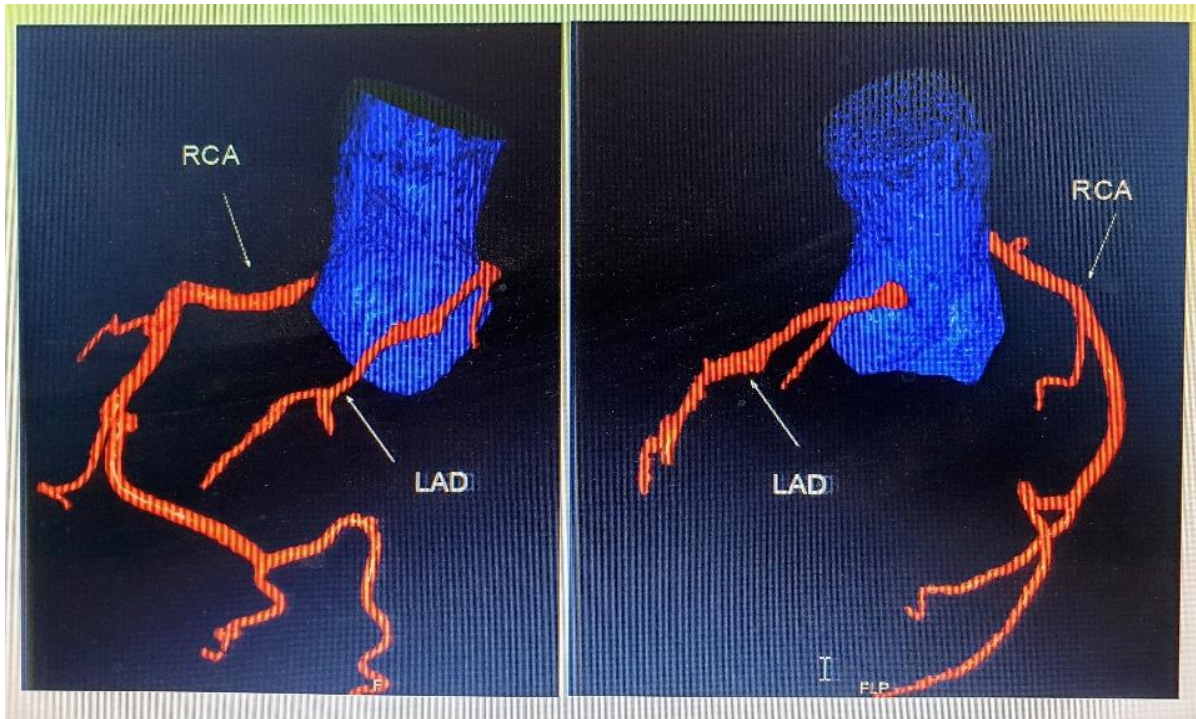


Figure 1

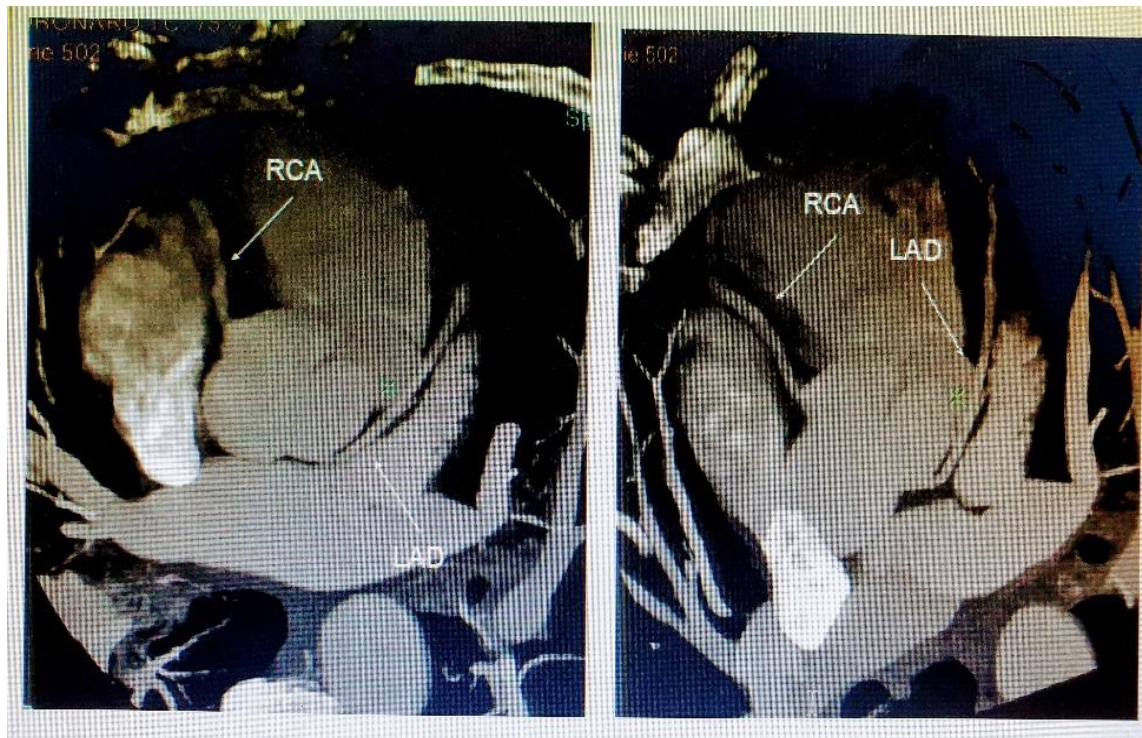


Figure 2

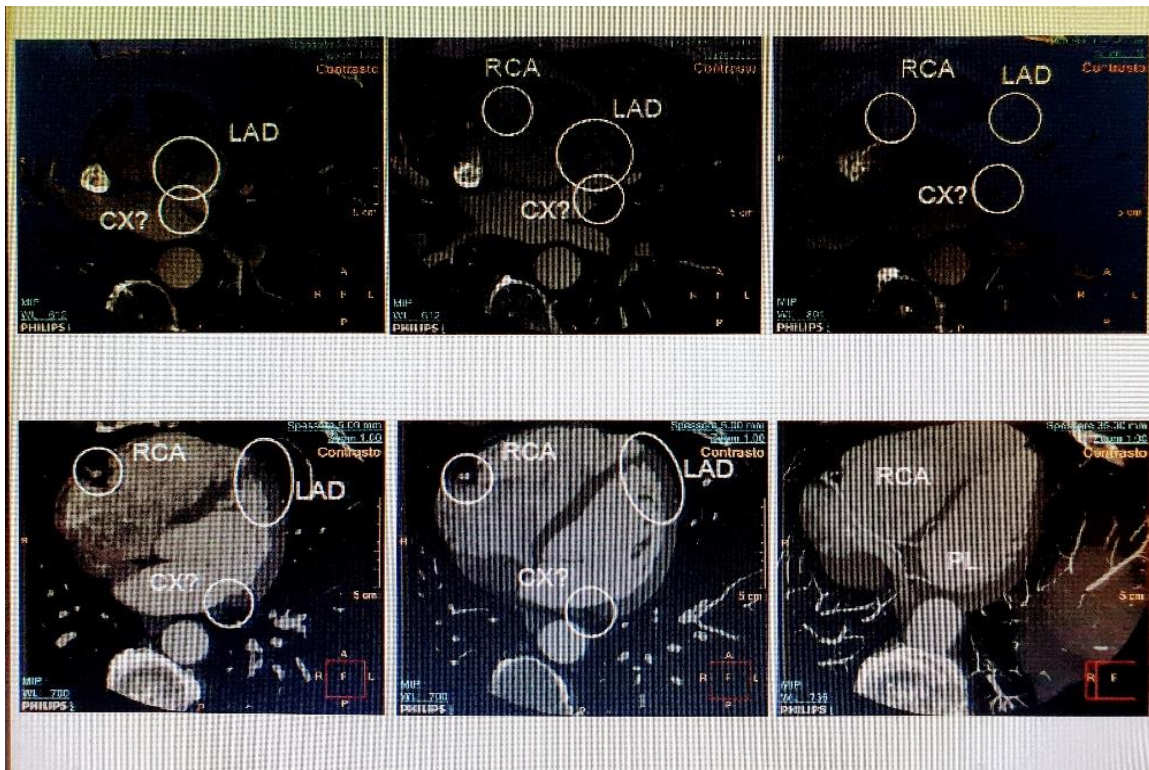


Figure 3

Figure 1-2-3: 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 anomalies are often incidental findings in patients undergoing coronary angiography for coronary artery disease (CAD) exclusion. Cardiovascular computed tomography, thanks to its high spatial and contrast resolution, constitutes an excellent tool for the differential diagnosis between CAD and congenital anomalies providing typical findings [3].

Conflict of Interest

None to declare

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