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Case Report

Radiology Section

Duplicated RCA with Anomalous Origin of Left Circumflex Artery: A Rare Case Report

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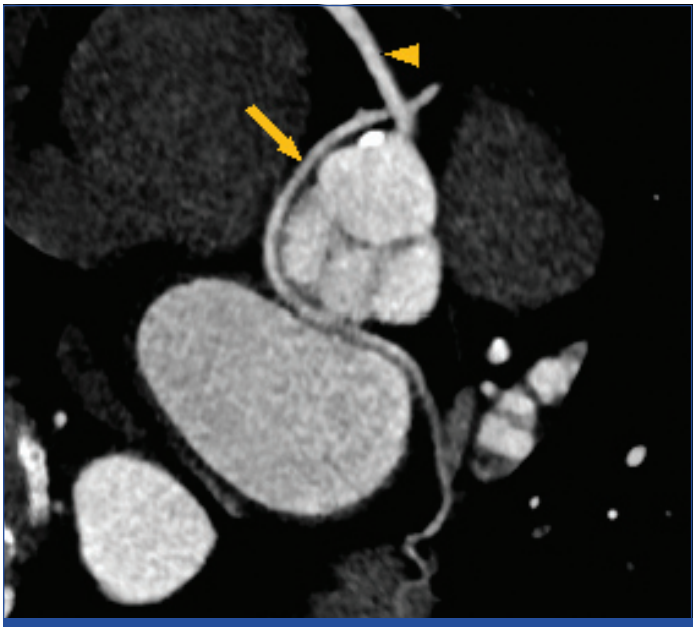
ABSTRACT

Coronary artery anomalies are found in around 1-2% of patients undergoing coronary angiography. Uncovering of more coronary anomalies has increased with increase in awareness and easy availability of non invasive Computed Tomography Coronary Angiography (CTCA). We present a rare case of a 64-year-old female with a history of atypical chest pain and mild ST depression ECG changes who underwent CTCA. The present case revealed unusual findings of an anomalous origin of the Left Circumflex Coronary artery (LCx) from the proximal Right Coronary Artery (RCA) with duplicated right coronary artery after arising as a common trunk from right coronary cusp. In the present case report we attempted to highlight the rarity of this coronary anomaly.

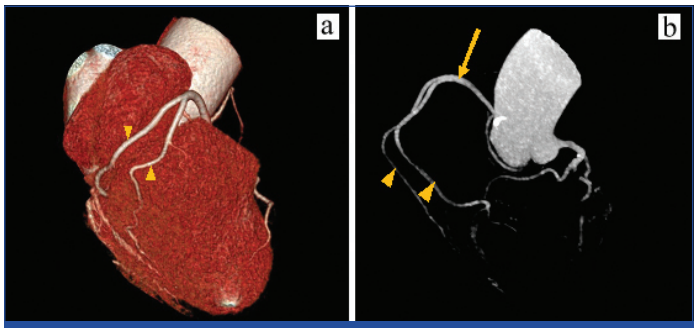
Keywords: Common trunk, Coronary angiography, Coronary anomalies, Right coronary artery

CASE REPORT

A 64-year-old female was admitted to the hospital with a recent history of chest pain and giddiness. She had no specific medical history. However, she had a history of diabetes mellitus and also a positive family history of premature atherosclerotic heart disease. On physical examination, cardiac and lung auscultation findings were normal. The chest X-ray findings were normal. Routine laboratory tests were nonspecific. The electrocardiogram revealed mild depression of ST in the leads of the inferior wall. She underwent CTCA to evaluate coronary artery disease. The CTCA was obtained in "Dual source 2×128 slice multi-detector CT machine" using retrospective ECG-gating with the administration of 80 mL of non ionic contrast at the rate of 5.5 mL/second. In the present patient, the LCx showed anomalous origin from the RCA with retroaortic course without significant compression or luminal narrowing was seen [Table/Fig-1]. The RCA shows duplication after common trunk of 4.5 cm arising from right coronary cusp [Table/Fig-2]. In addition no other haemodynamically significant abnormality was seen. The patient was later managed conservatively as the anomaly was not malignant and no haemodynamically significant stenosis was seen in the coronary arteries on CTCA.



[Table/Fig-1]: Anomalous origin of LCx (arrow) from right coronary artery (arrow head) with retroaortic course.



[Table/Fig-2a,b]: Duplication of RCA (arrow head) after a common trunk (arrow) arising from right coronary cusp.

DISCUSSION

The prevalence of coronary artery anomalies is usually cited as 1-2% of the general population [1,2]. Coronary artery anomalies are divided into haemodynamically significant anomalies (commonly associated with shunting, ischaemia or sudden cardiac death) and anomalies that are not haemodynamically significant. Atresia, interarterial course, origin from pulmonary artery and congenital fistula are considered to be haemodynamically significant anomalies. On the other hand duplication, origin from the aorta in an anomalous position which includes arteries that arise from the contralateral cusp or contralateral artery which takes a prepulmonic, transseptal or retroaortic course, high origin from aorta, origin from other systemic vascular structures, shepherd's crook RCA and systemic termination are haemodynamically insignificant coronary anomalies [3]. Ectopic origin of the LCx is the most common coronary anomaly and can be found in around 0.37-0.7% of patients. The anomalous LCx most commonly arises from a separate ostium within the right sinus or as a proximal branch of the RCA [4,5]. The retroaortic LCx usually passes into the space between the posterior aorta (the noncoronary cusp) and the interatrial septum [6]. In anomalous origin of LCx, patients may develop coronary symptoms due to kinking or compression in their retroaortic course. However, in addition to this, duplication of RCA was also evident in the present case, whose association is a rarer variant and only few cases are reported [7,8]. Although,

the anomaly being benign and asymptomatic, few cases of sudden death, myocardial infarction and angina pectoris have been reported [9]. Incomplete treatment can result from an insufficient knowledge of the existence of double RCA before any invasive procedure as if only one artery is catheterised during angiography and patient having coronary atherosclerotic disease in the other artery [10]. The double RCA anomaly is seen mainly in males, though the present patient was female [11]. Barthe JE et al., reported for the first time about double RCA anomaly. They observed double RCA originating from single ostium with the vessels within right atrioventricular groove. They reported that after the origin of the conus artery and a ventricular branch, the most anterior RCA descended towards the acute margin of the heart and terminated in a small Posterior Descending Artery (PDA) and the second RCA terminated in a small PDA and in posterolateral branches [12]. However, in the present case both right coronary arteries were originating from a common trunk which was arising from right coronary cusp, both were almost identical in size and both gave rise to a PDA. A classification of double RCA has been given by a Turkish author where most of the studies concerning anomaly have been reported and present anomaly falls in class G2 [13]. To our knowledge no G2 atypical double RCA associated with anomalous origin of LCx has been reported till date.

CONCLUSION

An anomalous origin of the LCx coronary artery with duplication of RCA is an extremely rare entity. The CTCA has become the standard of reference for evaluation of coronary artery anomalies over more invasive catheter angiography and therefore presently the primary modality for evaluation of coronary anomalies.

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