

LEFT CIRCUMFLEX CORONARY ARTERY ARISING AS A TERMINAL EXTENSION OF RIGHT CORONARY ARTERY: AN EXTREMELY RARE CONGENITAL CORONARY ARTERY ANOMALY

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Summary

Anomalous origin of one or more coronary arteries occurs in about 0.6-1.15 % of patients undergoing coronary angiography. In the present paper, we report a patient with an extremely rare congenital coronary artery anomaly, in whom the left circumflex artery arising as a terminal extension of the right coronary artery. The main stem and obtuse marginal branches of the circumflex artery were normal and well developed. To our knowledge, this is the second case of a coronary artery anomaly reported in the medical literature in which the left circumflex artery arises as a terminal extension of the right coronary artery. (Arch Turk Soc Cardiol 2003;31:357-60)

Key words: Circumflex artery, coronary artery anomaly, right coronary artery

Özet

Sol Sirkümfleks Koroner Arterin Sağ Koroner Arterin Bir Terminal Uzantısı Olarak Çıkışı: Oldukça Nadir Bir Konjenital Arter Anomalisi

Bir veya daha fazla koroner arterin anormal çıkışı koroner anjiyografi uygulanan hastaların yaklaşık %0.6-1.15'inde görülür. Bu yazıda sol sirkümfleks koroner arterin sağ koroner arterin bir terminal uzantısı olarak çıktığı oldukça nadir bir konjenital koroner arter anomalisine sahip hasta sunuldu. Sirkümfleks arterin ana gövde ve obtus dalları normal ve iyi gelişmişti. Bizim bilgimize göre bu olgu sirkümfleks arterin sağ koroner arterin bir terminal uzantısı olarak çıktığı literatürde yayınlanmış ikinci olgudur. (Türk Kardiyol Dern Arş 2003;31:357-60)

Anahtar kelimeler: Koroner arter anomalisi, sağ koroner arter, sirkümfleks arter

Anomalous origin of one or more coronary arteries occurs in about 0.6-1.15% of patients undergoing coronary angiography^(1,2). Many of these anomalies are incidental and benign findings while others may have serious implications. Angiographic recognition

and identification of these anomalies is of great importance prior to surgery and coronary interventions. In the present paper, we report a patient with an coronary artery anomaly, in whom the left circumflex coronary artery arising as a terminal

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extension of the right coronary artery. To our knowledge, this is the second case reported in the medical literature regarding this unique coronary artery anomaly.

REPORT of CASE

A 67-year-old man was admitted to our hospital with a pressurelike chest pain which was often precipitated by effort and relieved by rest. The admission electrocardiogram showed dynamic ST segment changes suggestive of ischemia in the lateral precordial leads. Patient was hospitalized with the diagnosis of unstable angina pectoris. A conventional antiischemic therapy was initiated. A subsequent electrocardiogram, when the patient was pain-free, showed resolution of these changes. Risk factors for coronary artery disease included a family history of coronary artery disease, hypertension and cigarette smoking. On physical examination, blood pressure was 140/85 mmHg and pulse rate was 84/min. Other physical examination findings and chest x-ray were normal. Two-dimensional and Doppler echocardiographic findings were unremarkable. Coronary arteriography and left ventriculography were performed via the right femoral artery by means of the Judkins technique. The left ventricle was of normal size with good global and segmental contractility and had an ejection fraction of 67%. The left ventricular end-diastolic pressure was 10 mmHg, and mitral regurgitation was not observed. The left coronary ostium was located as normal in the left sinus of Valsalva. The left main coronary artery and the left anterior descending artery had normal origin and course. The left anterior descending artery exhibited 80% stenosis after giving the first septal and diagonal branches (Figure-1). The circumflex artery was absent and the area that is normally perfused by the circumflex artery was avascular and free of collateral circulation (Figure-1). Selective right coronary artery injection showed normal right coronary artery. The left circumflex coronary artery was found to be arising as a terminal extension of the right coronary artery (Figure-2 and -3). The main stem and obtuse marginal branches of the circumflex artery were normal and well developed.

This anomalous artery was perfusing the region which is usually supplied by the left circumflex artery. Coronary bypass operation was recommended for a significant stenosis on the left anterior descending artery.

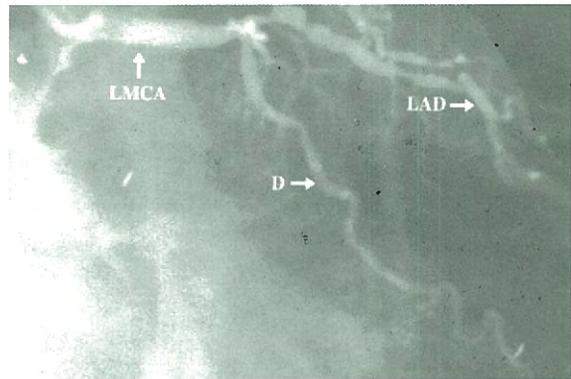


Figure 1: Right anterior oblique view of left main coronary injection showing that the left circumflex artery was absent and the left anterior descending artery was normal in its origin and distribution. Left anterior descending artery also had a significant stenosis after giving the first septal and diagonal branches (LMCA: Left main coronary artery, LAD: Left anterior descending artery, D: Diagonal branch of the left anterior descending artery).

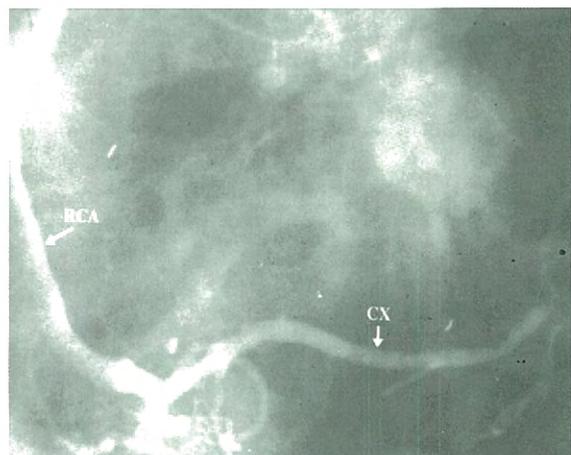


Figure 2: Left anterior oblique cranial view of selective right coronary artery injection showing that the left circumflex artery arises as a terminal extension of the right coronary artery and followed the course, retrogradely, of the normal left circumflex artery distribution (RCA: Right coronary artery, CX: Circumflex artery).

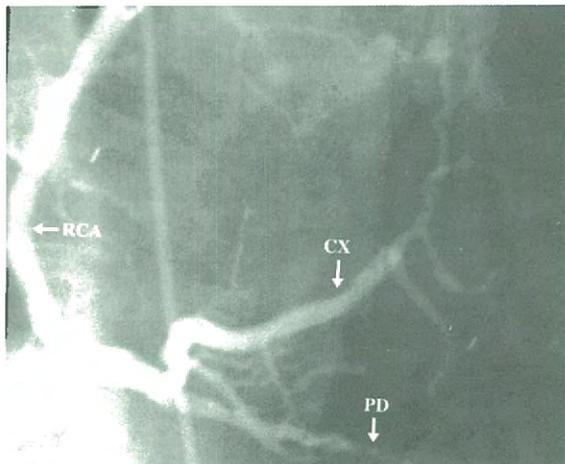


Figure 3: Right anterior oblique cranial view of selective right coronary artery injection showing that the left circumflex artery arises as a terminal extension of the right coronary artery and followed the course, retrogradely, of the normal left circumflex artery distribution (RCA: Right coronary artery, CX: Circumflex artery, PD: Posterior descending branch of the right coronary artery).

DISCUSSION

Anomalous origin of the left circumflex artery from the right coronary sinus is the most common congenital coronary anomaly^(3,4). However, left circumflex artery arising as a terminal extension of the right coronary artery is an extremely rare congenital coronary artery anomaly. To our knowledge, this is the second case reported in the medical literature regarding this unique coronary artery anomaly. Sağkan et al have presented a similar case in which the circumflex coronary artery arose as a terminal extension of the right coronary artery⁽⁵⁾.

Although most patients with anomalous origin of the coronary arteries are asymptomatic, some of these anomalies have been associated with sudden death and ischemic complications, particularly in cases of aberrant origin of the left main coronary artery from the pulmonary artery and aberrant origin of the left main and right coronary artery from the right and left sinuses, respectively⁽⁶⁾. The case described here represents a very rare and mostly benign form of isolated congenital

coronary anomaly. It is not expected to cause ischemia or any other complication. In the present case, ischemic complications were found to be related with a significant stenosis on the left anterior descending coronary artery. Recently, we have reported a congenital single coronary artery anomaly with a benign course in which the right coronary artery originated from the distal left circumflex coronary artery⁽⁷⁾.

For therapeutic and diagnostic reasons, the knowledge of possible variations of the coronary circulation, their different origins and their course is of great importance. During coronary angiography, one should attempt to exclude a coronary abnormality when coronary branches cannot be opacified by direct injection of contrast medium. Angiographic recognition of coronary artery anomalies prior to surgery is of great importance. The cardiac surgeon must be aware of the abnormal anatomy in order to avoid accidental ligation or transection at the time of surgery⁽⁸⁾. Accurate identification of origin and course of anomalous coronaries is mandatory before planning coronary interventions also, so that an appropriate guiding catheter, wire advancement and balloon systems may be selected⁽⁹⁾. Furthermore, the proof of coronary anomalies in the presence of coronary artery disease is of practical importance, especially when a decision between angioplasty or bypass surgery has to be made.

In conclusion, we presented an extremely rare congenital coronary artery anomaly. The left circumflex coronary artery arose as a terminal extension of the right coronary artery. Every angiographer should be aware of anatomical variations for making the right diagnosis and therapeutic decisions.

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