

Taking over the Territory: A Case of Superdominant Right Coronary Artery

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Abstract

Coronary artery anomalies are a diverse group of congenital disorders, with a reported incidence of 0.6 – 1.3%. Congenital absence of the LCX is an extremely rare anomaly, with a frequency of only 0.003% in all patients who undergo coronary angiography. Here, we present a case of 76-year-old female who had an episode of chest pain while she was hospitalized for management of small bowel obstruction with elevated troponin and coronary angiogram showed super-dominant right coronary artery without any obstructive disease.

Keywords: left circumflex artery; super-dominant; right coronary artery

Running Title: Congenital absence of left circumflex artery

Abbreviations:

LCX=left circumflex artery

RCA=right coronary artery

Introduction

A 76-year-old female with history of hypertension, diabetes mellitus type 2, and hyperlipidemia was admitted with a diagnosis of small bowel obstruction and managed conservatively. During her hospitalization, she complained of chest pressure. Initial evaluation included a physical

examination and electrocardiogram, which were unremarkable. Troponin I peaked at 3.94 ng/ml (≤ 0.04 ng/ml). Her Echocardiogram demonstrated apical segment akinesis with an ejection fraction of 30%. Coronary angiogram showed no angiographic evidence of coronary artery disease. However, the left circumflex artery (LCX) artery did not originate from the left main coronary artery. Rather, the super-dominant right coronary artery (RCA) had a large postero-lateral branch, which occupied the atrio-ventricular groove and supplied the lateral wall of the myocardium (Figure 1, Figure 2a, 2b and 2c).

Figure 1:

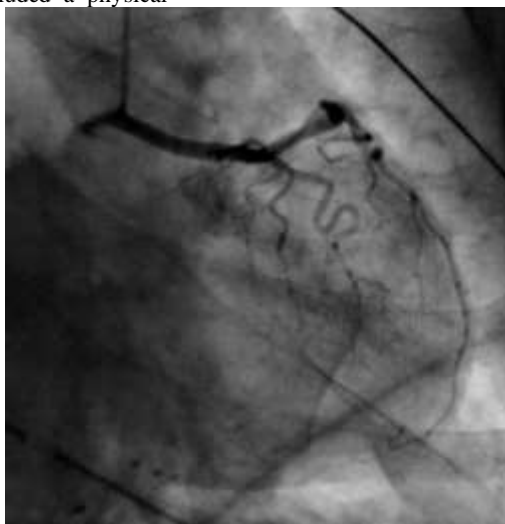


Figure 1: Title: Coronary angiography of left system. Legend: Left main coronary artery continuing as Left anterior descending artery

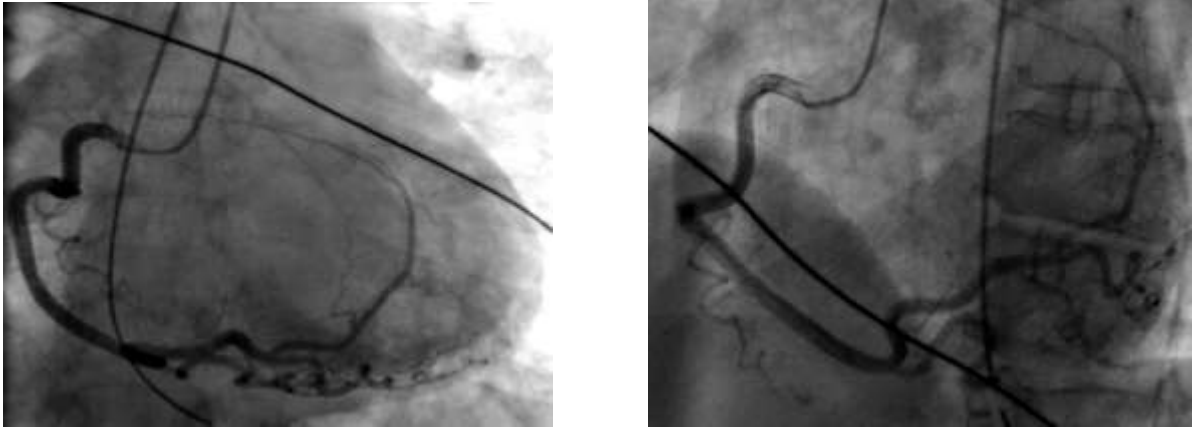


Figure 2A and 2B: Title: Coronary angiography of right system. Legend: Super-dominant right coronary artery giving rise to postero-lateral branch

Coronary artery anomalies are a diverse group of congenital disorders, with a reported incidence of 0.6 – 1.3%. (1) Congenital absence of the LCX is an extremely rare anomaly, with a frequency of only 0.003% in all patients who undergo coronary angiography [1]. With absence of LCX, the lateral wall of the left ventricle is mostly supplied by a super-dominant RCA (90% of the time) or occasionally by a multiple diagonal branch of LAD [2,3]. On literature review, super-dominant RCA is always associated with an absent LCX. Considered to be a benign anomaly, a few cases have reported its association with systolic click syndrome, ischemic changes in the zone of hypoperfusion, heart failure, and syncope [3,4]. Coronary angiogram or coronary CTA are used for definitive diagnosis.

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