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# Journal of Cardiovascular Disease Research

Letter to the Editor

# A rare variant of single coronary artery presenting with angina

Sir,

We read with great interest the report by Kalyani et al in the 2011 (Volume 2) issue on the significance of a single coronary artery and the risk of sudden cardiac death associated with it.[1] We describe the case of a patient with a variant of single coronary artery who presented with exertional angina.

A 60-year-old male, with a history of hypertension, was admitted with complaints of recent-onset angina on exertion. Inducible ischemia was demonstrated on an exercise stress test. His echocardiogram revealed a normal left ventricular ejection fraction with no segmental wall motion abnormalities. Coronary angiogram (CAG) showed a single coronary artery originating from the left sinus of Valsalva. The right coronary artery (RCA) originated from the mid left anterior descending artery (LAD) after the origin of a major septal branch (Figs. 1–3) with a subsequent course in the usual right atrioventricular groove. The ostium of the RCA had a 40% eccentric plaque (Fig. 1, white arrow). The left circumflex and anterior descending arteries were normal. He was advised coronary computed tomography (CT) scan, which he refused due to financial constraints. He was managed conservatively with aspirin

(150 mg once daily), statins (rosuvastatin 10 mg once daily), and nitrates (sustained-release sorbitrate 30 mg once daily). He was asymptomatic on drugs at a follow-up after eight months.

Coronary artery anomalies, though rare, are extensively classified and categorized. The overall incidence of coronary artery anomalies is about 1% in the general population. Single coronary artery and its variants account for approximately 0.024% in the general population.[2] Commonly, the aberrant RCA originates from the left main coronary artery. An RCA originating from the midportion of the LAD is an exception, with very few case reports describing the same.[3] Most of the coronary anomalies are asymptomatic; however, reports of patients presenting with exertional angina and sudden death have been described. The clinical presentation is dependent on the subsequent course of the RCA between the aorta and the pulmonary artery. Strenuous exercise, the usual precipitant, activates the sympathetic system with subsequent increase in systolic pressure which tends to distend the root of the aorta. The exact mechanism of myocardial ischemia is unknown; it is postulated to be due to stretch or compression of major vessels adjacent to the aortic wall. Transesophageal echocardiography, magnetic resonance imaging (MRI), and CT scans are more sensitive in defining the course between the great vessels. Surgical correction with reimplantation of the RCA to the aortic root is
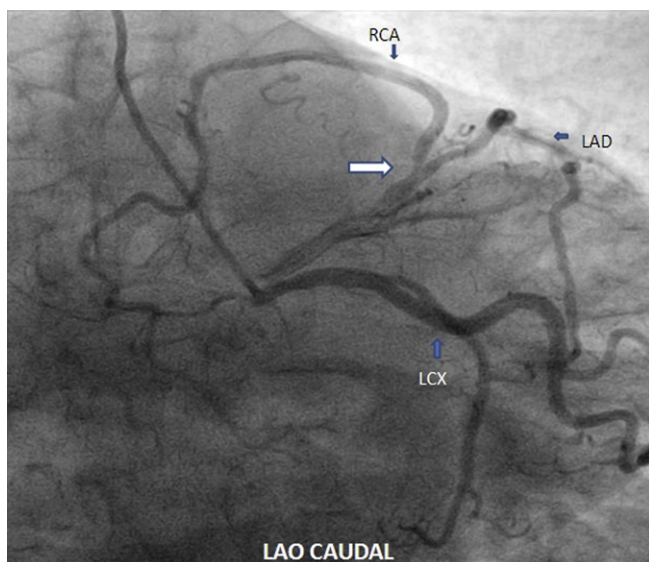


Fig. 1. LAO caudal view showing the origin of RCA from mid-LAD after the major septal branch. The RCA has an ostial 40% plaque (white arrow). The subsequent course of the RCA is in the right AV groove. LAO: left anterior oblique, LAD: left anterior descending artery, LCX: left circumflex artery, RCA: right coronary artery, AV: atrioventricular.
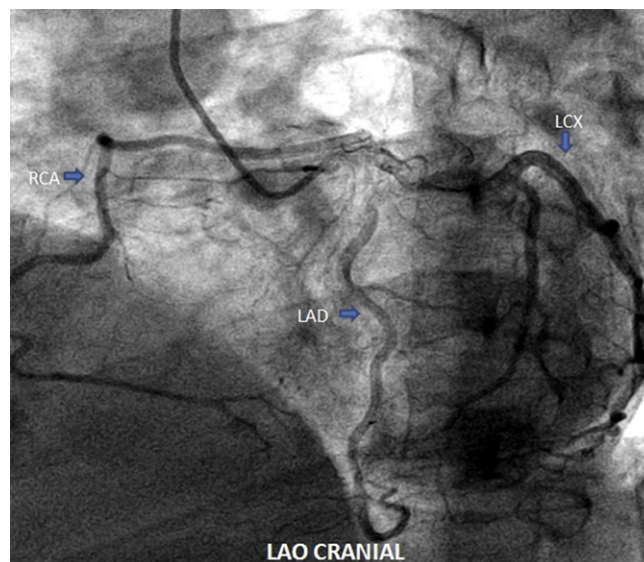


Fig. 2. LAO cranial view showing the subsequent course of the RCA in right AV groove. LAO: left anterior oblique, RCA: right coronary artery, AV: atrioventricular.
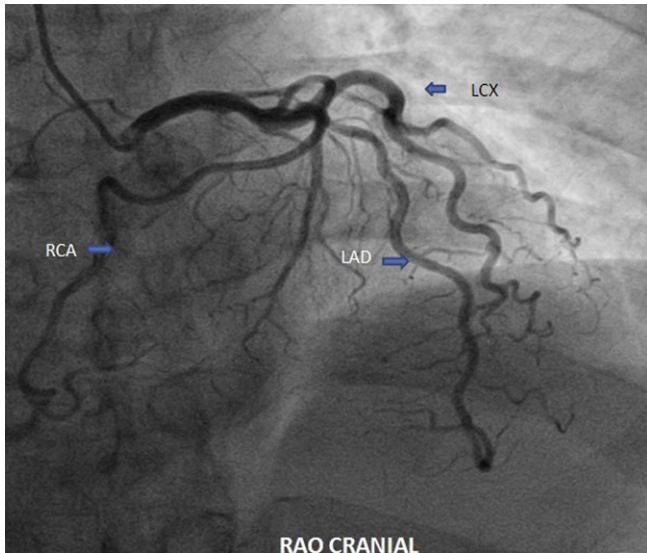
**Fig. 3.** RAO cranial view showing the subsequent course of the RCA in right AV groove with normal LAD and LCX. RAO: right anterior oblique, RCA: right coronary artery, AV: atrioventricular, LAD: left anterior descending artery, LCX: left circumflex artery.

recommended for symptomatic patients or patients with a positive stress test. It is worth noting that the clinical course is unpredictable even in asymptomatic patients with a negative stress test. In conclusion, there is a strong need to define both the origin and course of the vessels in patients with very rare coronary anomalies either with a CT or MRI, and plan surgery to prevent sudden cardiac death.

### References

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