

Case Report

ANOMALOUS ORIGIN OF RIGHT CORONARY ARTERY FROM LEFT ANTERIOR DESCENDING ARTERY: SINGLE CORONARY ARTERY

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Abstract

A 70-year-old woman with hypertension presented to our clinic for evaluation of chest pain. A very rare anomaly, in which the right coronary artery originated from the left anterior descending artery, was incidentally found on coronary angiography. The acute angle made by the anomalous right coronary artery may have reduced the flow velocity and led to signs of myocardial ischemia.

Keywords: Coronary artery anomaly, right coronary artery, chest pain.

ARYA Journal, 2007, 3(2): 110-112

Date of submission: 7 Apr 2007, *Date of acceptance:* 1 Jul 2007

Introduction

Congenital coronary artery anomalies are usually an incidental finding during conventional coronary angiography.¹ Coronary artery anomalies are found in 0.6-1.5 percent of coronary angiograms.¹ The congenital absence of the ostium of the right coronary artery in the right sinus of valsalva with the origin of the right coronary artery from left anterior descending coronary artery is an extremely rare variant of the single coronary artery.²

Case report

A 70-year-old woman presented to our clinic with exertional chest pain. She had well controlled hypertension and family history of premature coronary artery disease. In addition to complaining of chest pain during heavy exercise, she had also begun experiencing chest pain in moderate exercise within the preceding 2 months. Physical examination and resting electrocardiography (ECG) were normal. We decided to perform coronary angiography because of her typical chest pain. Coronary angiography was performed through the right femoral artery using Judkins technique.

Selective coronary angiography of the left coronary artery displayed normal course of the left anterior descending artery (LAD) and left circumflex artery (LCX) that originated from the left main artery. The right coronary artery was visualized as a separate branch arising from the mid-portion of LAD distal to the septal branch (Figure 3). The conus artery originated from proximal left anterior descending coronary artery (Figure 3, white arrow).

Aortography obtained in the left anterior-oblique view revealed absence of the ostium of the right coronary artery in the right sinus of valsalva (Figure 4). Left ventriculography obtained in the right anterior oblique view showed a normal left ventricle with good contractility. Left ventricular end diastolic pressure was between 10-12 mmHg.

Discussion

Among coronary artery anomalies, the incidence of anomalous right coronary artery varies between populations, with the highest incidence seen in India and the lowest in Germany.² Most coronary anomalies remain asymptomatic and are incidental findings of coronary angiography.

The incidence of single coronary artery in the general population is approximately 0.024 %.³

The anomalous origin of the right coronary artery from LAD is very rare and to the best of our knowledge, 14 adult cases have been reported in the literature.⁴⁻¹¹ According to coronary angiography, our patient had non-significant stenosis in the mid-portion of the left anterior descending coronary artery. The mechanism responsible for manifestation of angina symptoms remains unexplained. However, the insufficient blood supply of the anomalous right coronary artery (RCA) to the inferior wall during exercise could be one reason, since the RCA arises from the LAD at a relative right angle and travels a longer course.¹

We did not recommend any interventions for the patient as no significant stenosis was present. We advised the patient to avoid heavy exercise.

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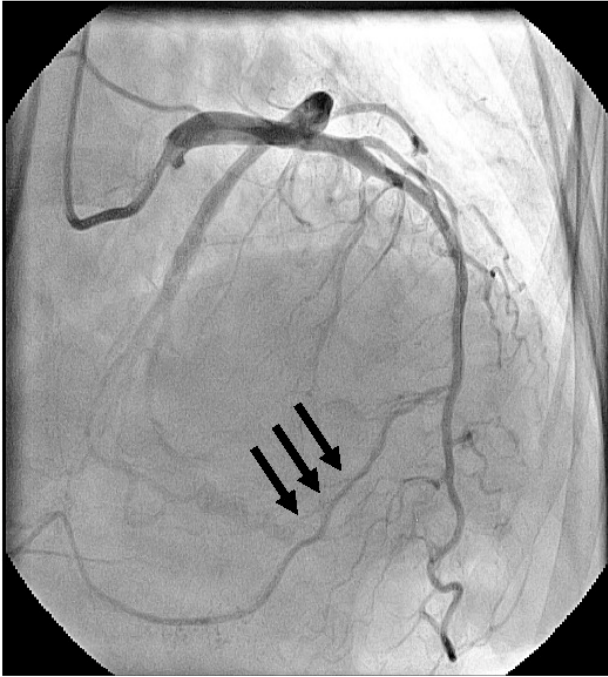


FIGURE 1. Right anterior oblique view (RAO), arrows show anomalous right coronary artery.

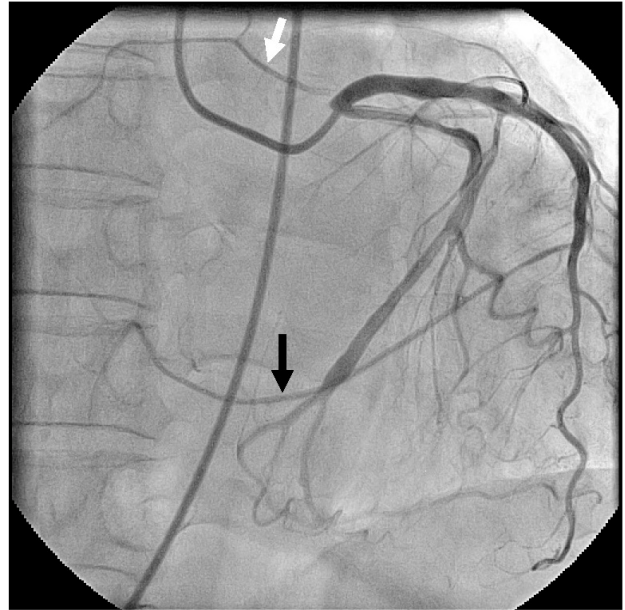


FIGURE 3. RAO caudal view shows RCA origin (black arrow) from mid-portion of LAD. White arrow shows the conus artery arising from proximal LAD.



FIGURE 2. Left anterior oblique view.

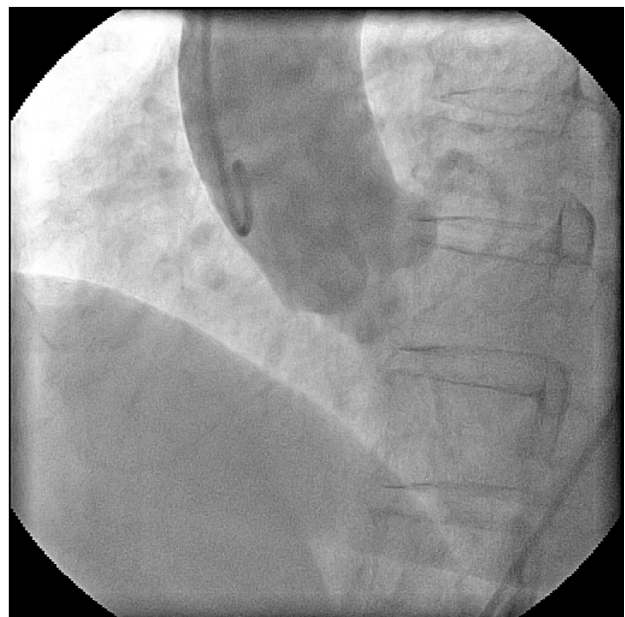


FIGURE 4. Aortography in the left anterior-oblique view; no right coronary artery ostium is seen in the right sinus of valsalva.

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