

Case Report

Double Right Coronary Artery Arising From the Left Main Stem and Right Coronary Sinus Associated with Ventricular Septal Defect in an Adult: An Extremely Rare Case

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Anomalies of the coronary arteries are often asymptomatic and uncommon in general population. In this report we describe a case of a 48-year-old male patient with ventricular septal defect and double right coronary artery originating from the left main coronary artery and the right coronary sinus.

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Introduction

Congenital coronary artery anomalies are detected in about 0.6–1.3% of adult patients undergoing coronary arteriography.^{1,2} Although some of these anomalies can cause ischaemia and congestive heart failure, most are detected incidentally during coronary arteriography.³ Although many of the congenital coronary anomalies are haemodynamically insignificant, it is important to know the anatomic variants of this anomaly in patients with coronary artery disease who are undergoing either surgical myocardial revascularisation or coronary angioplasty.

Double right coronary artery is a well-described but rare congenital anomaly.^{4,5} In this report, we present a patient with an extremely rare form of double right coronary artery; with one originating from the left main stem and the other from the right coronary sinus.

Case Report

A 48-year-old male patient who had been followed-up with a VSD for 20 years readmitted to our hospital with the complaints of worsening dyspnea and angina pectoris. His medical history was unremarkable except for VSD. He had no conventional risk factors for atherosclerosis. On

physical examination, blood pressure was 120/70 mmHg and heart rate was 84 beats/minute. Examination of the cardiovascular system showed a harsh pansystolic murmur of 4/6 degree at the lower left sternal border. Surface electrocardiogram showed left atrial abnormality, and deep Q and tall R and T waves in leads V5 and V6. His chest X-ray demonstrated mildly increased cardiothoracic ratio and pulmonary plethora. Transthoracic echocardiography showed a perimebraneous VSD with left-to-right shunt ratio of 1.6 and mild pulmonary hypertension (systolic pulmonary artery pressure of 42 mmHg). Since reparative surgery was planned, preoperative coronary arteriography had been performed due to his age and anginal symptoms. Selective injection of the contrast media into the left main coronary artery with a left coronary Judkins catheter revealed a normal left anterior descending artery and a dominant left circumflex artery. An abnormal coronary artery originating from the left main coronary artery reaches to the right atrioventricular groove after traversing between the pulmonary artery and the aorta as a transverse truncus. It ends after giving a few small branches (Figure 1A and B). Selective right coronary angiography with a right coronary Judkins catheter revealed a second right coronary artery with high anterior takeoff, which lies on the free wall of the right ventricle (Figure 2A and B). To better identify the course of right coronary artery arising from the left main coronary artery, a Cournand catheter was inserted into the pulmonary artery via the right femoral vein. This manoeuvre suggested that after its origin this left-sided right coronary artery possibly crosses posterior to the catheter that is positioned in the main

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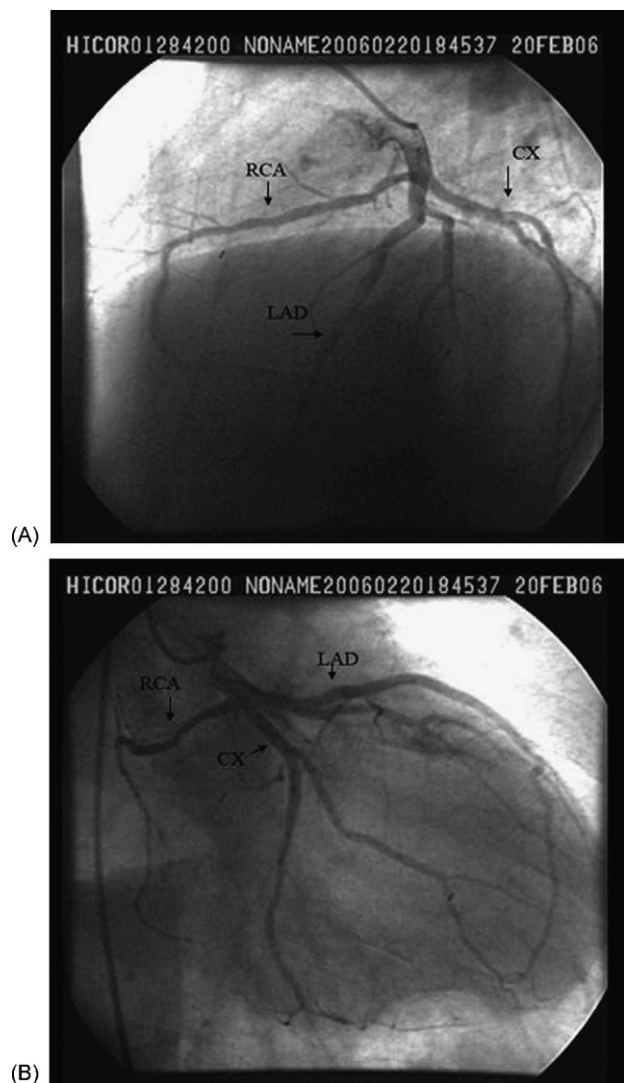


Figure 1. (A) Left cranial oblique and (B) right anterior oblique view of the selective left main coronary injection showing an abnormal coronary artery originating from left main coronary, after traversing between the pulmonary artery and the aorta, reaches right atrioventricular groove, where it ends after proceeding a while. LAD, left anterior descending artery; CX, circumflex artery; RCA, right coronary artery.

pulmonary artery (Figure 3). In addition to this finding, absence of an anterior curve in transverse truncus that is generally observed in left-sided right coronary arteries when they are running just anterior to the main pulmonary artery also supported the course of right coronary artery. A left ventricular angiogram in the left anterior oblique position revealed a defect in perimebraneous portion of interventricular septum (Figure 4). To evaluate whether this abnormal coronary artery causes myocardial ischaemia, exercise single-photon emission computed tomography with thallium-201 was performed and found to be normal. Elective surgery was planned for closure of VSD. Surgeon confirmed the posterior course of left-sided right coronary artery but did not attempt to reimplantate

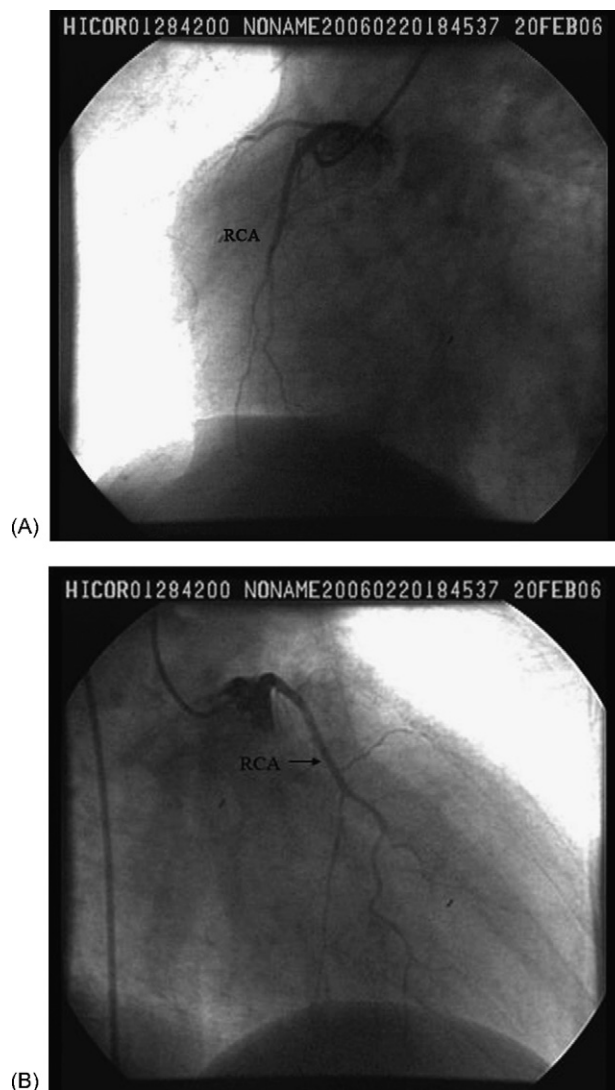


Figure 2. (A) Left anterior oblique and (B) right anterior oblique views showing a second right coronary artery with a high anterior takeoff descends along the free wall of the right ventricle. RCA, right coronary artery.

this abnormal artery to the aorta due to lack of demonstrable ischaemia. Evidence of dual perfusion of right ventricular free wall supplied by the help of two different right coronary arteries also affected this final decision. VSD was repaired by using a pericardial patch. Patient experienced an uneventful postoperative course and was discharged from the hospital on the 5th postoperative day. At 1-month follow-up he denied any symptom.

Discussion

Congenital anomalies of the coronary arteries may either be a part of the complex congenital malformations of the heart or an isolated defect.⁶ They are generally asymptomatic but they can result in ischaemia, myocardial infarction, congestive heart failure, or sudden death.^{3,7}

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