A case of double right coronary artery with bifurcation stenosis in association with complete heart block

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ABSTRACT

Congenital coronary artery anomalies are present at birth, but most anomalies are discovered as incidental findings during coronary angiography or at autopsy. Double right coronary artery (RCA) is a rare coronary anomaly. Double RCA with bifurcation stenosis in association with degenerative complete heart block (CHB) have never been reported in literature to the best of our knowledge. We therefore report an interesting case of a patient with double RCA and degenerative CHB.

Key words: Bifurcation stenosis, complete heart block, congenital coronary artery anomalies

INTRODUCTION

Congenital coronary artery anomalies are present at birth, but most anomalies are discovered as incidental findings during coronary angiography or at autopsy. Double right coronary artery (RCA) is a rare coronary anomaly. Double RCA with bifurcation stenosis in association with degenerative complete heart block (CHB) have never been reported in literature to the best of our knowledge. We therefore report an interesting case of a patient with double RCA and degenerative CHB.

CASE REPORT

A 70-year-old male presented to our hospital with the history of multiple episode of syncope for three years and effort angina class III for the last one year. He had past history of hypertension and type II diabetes mellitus well controlled on amlodipine 5 mg and glimepiride 2 mg once daily. Pulse rate was 44/min, and blood pressure measured was 110/80 mmHg and rest of the physical examination was normal. His electrocardiogram shows the CHB with wide QRS escape [Figure 1].

Routine blood biochemistry and cardiac biomarkers (Trop-I & CPK MB) were within normal limits. The patient underwent coronary angiography, at the time of temporary pacemaker implantation which demonstrated the left circumflex and obtuse marginal (LCX –OM1) bifurcation 90% stenosis (1, 0, 1) and double RCA with 80% bifurcation stenosis (0, 1, 0) [Figures 2–4]. As the patient was having persistent

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	DOI: 10.4103/0975-3583.98903

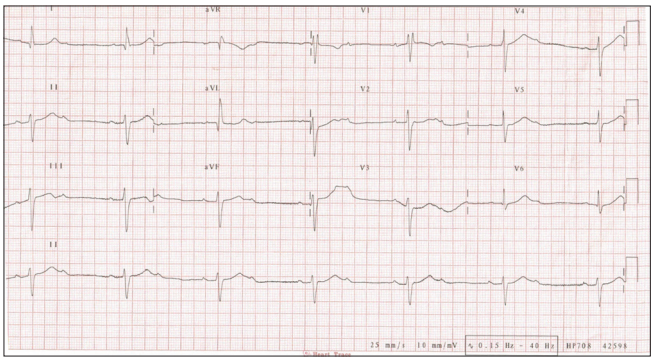

Figure 1: An ECG showing complete heart block with slow escape rhythm

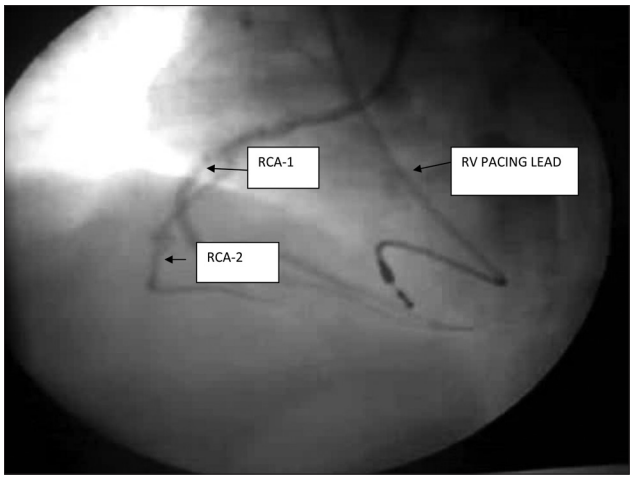

Figure 2: A left anterior oblique view demonstrating double right coronary artery

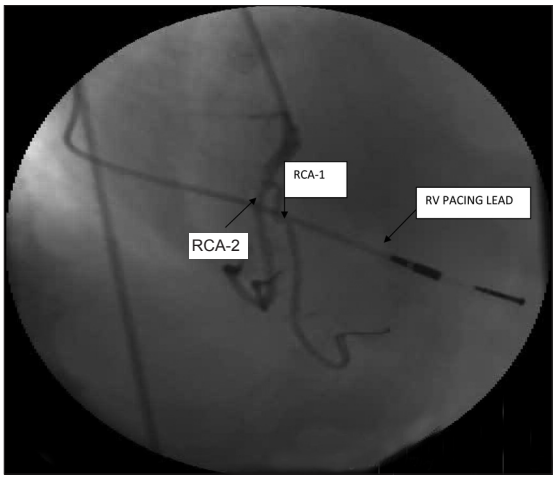

Figure 3: A right anterior oblique view demonstrating double right coronary artery

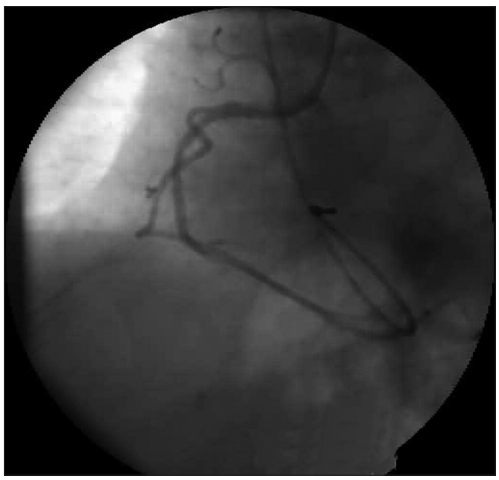

Figure 4: A left anterior oblique view demonstrating double right coronary artery (RCA-POST PCI)

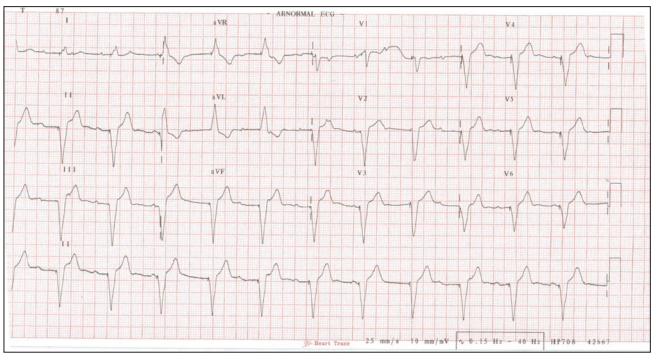

Figure 5: An ECG after VVI pacemaker implantation

CHB and normal cardiac biomarker, we put the VVIR (Medtronic) pacemaker at RV apex [Figure 5] and discharged the patient on full anti-anginal therapy, which includes aspirin 75 mg/day, ramipril 5 mg/day, atorvastatin 40 mg/day, metoprolol 50 mg/day and isosorbide dinitrate 20 mg twice daily. As the angina persisted even on medical therapy, we performed PCI to the Culprit RCA and LCX lesion by using drug eluting stent (Xience V 2.75X18 MM) [Figure 4] and Xience V 2.75 × 24 mm, and patient was discharged along with aspirin 75 mg/ day, clopidogrel 75 mg/ day, ramipril 5 mg/ day, atorvastatin 40 mg/day and metoprolol 50 mg/day.

DISCUSSION

Coronary artery anomalies occur in 1.3% of the cases undergoing coronary angiography.[1] Most common coronary anomalies are separate Ostia of LAD and LCX. Double RCA is one of the rarest coronary anomalies that were reported 22 times in the literature so far and a total of 27 cases reported previously[2-4]; if we include our case, a total of 28 cases of double RCA will be reported. Most patients with congenital coronary artery anomalies are free of symptoms, with the abnormality discovered as an incidental finding after coronary angiography for suspected coronary artery disease.

In a largest series of 1,26,595 patients who underwent coronary angiography, there is no description of this congenital abnormality.[1] Double RCA is generally considered as a benign entity; it might be atherosclerotic and can present as acute coronary syndromes, as well as sudden death. It is more commonly reported in males. It is very difficult to distinguish double RCA with single orifice, from RCA which has a high take off of a large right ventricular artery, solely by coronary angiography. Sato et al. have proposed that double RCAs are defined when they supply the blood to the inferior left myocardium,

thus both of the RCAs should course downwardly to reach the interventricular sulcus whether or not they cross the crux.[5] By using this reasonable definition from Sato *et al.*, we diagnosed our case as typical double RCA. Recently multidetector row computed tomography (MDCT) allows 3D comprehension of the coronary artery system, and it is extremely useful might in differentiating double RCA from high take off of a large RV branch.[6]

In conclusion, although double RCA also has been described previously, but this case is peculiar, because of its association with CHB as well as atherosclerosis together.

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How to cite this article: Singh AK, Pandey AK. A case of double right coronary artery with bifurcation stenosis in association with complete heart block. J Cardiovasc Dis Res 2012;3:242-4.

Source of Support: Nil, **Conflict of Interest:** None declared.