



A Case of Double Right Coronary Artery with Separate Ostium

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Received 09 December 2012; Accepted 14 May 2013

Abstract

Coronary artery anomalies are rare, with their incidence varying from 1 to 5%. Angiography is a commonly used modality for the assessment of coronary artery anomalies. Based on previous reports, a majority of coronary artery anomalies are of origin or distribution, with separate ostia of the left anterior descending artery and left circumflex artery. Coronary artery anomalies may cause myocardial ischemia secondary to atherosclerosis in the same artery. We present a rare case of duplicated right coronary artery with a separate ostium, which caused myocardial ischemia. Our patient was a 51-year-old diabetic woman with typical chest pain and dyspnea on exertion. Electrocardiography showed left axis deviation, poor R progression, and biphasic T wave in the precordial leads. Echocardiography revealed left ventricular ejection fraction of 30-35% and global hypokinesia. Coronary angiography demonstrated three-vessel disease and a double ostial right coronary artery. We recommended coronary artery bypass graft surgery, but the patient refused it and we continued her treatment with anti-ischemic drugs.

J Teh Univ Heart Ctr 2014;9(3):135-136

This paper should be cited as: Kheirkhah J, Habibifar A, Moladoust H. A Case of Double Right Coronary Artery with Separate Ostium. *J Teh Univ Heart Ctr* 2014;9(3):135-136.

Keywords: Coronary angiography • Coronary vessel anomalies • Women

Introduction

The prevalence of coronary artery anomalies in patients undergoing coronary angiography is 1-5%. A major risk of coronary artery anomalies is ischemic heart disease and sudden cardiac death,^{1,2} with the latter occurring most commonly in young people.^{3,4} Similar to other anomalies of the coronary artery, double right coronary artery (RCA) with two separate ostia is a benign entity with no hemodynamic significance. Double RCA is extremely rare and the incidence is not known. A sufficient knowledge of the existence of double RCA with two separate ostia is vitally important before any invasive procedure inasmuch as if only one artery

is catheterized during angiography and the patient has a coronary atherosclerotic disease, it may lead to incomplete treatment.²

In this report, we present a rare case of duplicated RCA with a separate ostium, which caused myocardial ischemia.

Case Report

A 51-year-old diabetic woman was on medical treatment. Two months before admission to the hospital, she had typical chest pain and dyspnea on exertion. One week before admission, the patient's symptoms were exacerbated.

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On admission, the electrocardiogram showed left axis deviation, poor R progression, biphasic T wave in the precordial leads. She underwent echocardiography, which revealed left ventricular ejection fraction (LVEF) of 30-35%, global hypokinesia, grade one diastolic left ventricular (LV) dysfunction, mild mitral regurgitation, and mild tricuspid regurgitation with a low pressure gradient. Cardiac biomarkers (Troponin I & CK-MB) were within normal limits.

With unstable angina, the patient was subjected to coronary angiography, which demonstrated three-vessel disease and double ostial RCA (Figure 1).

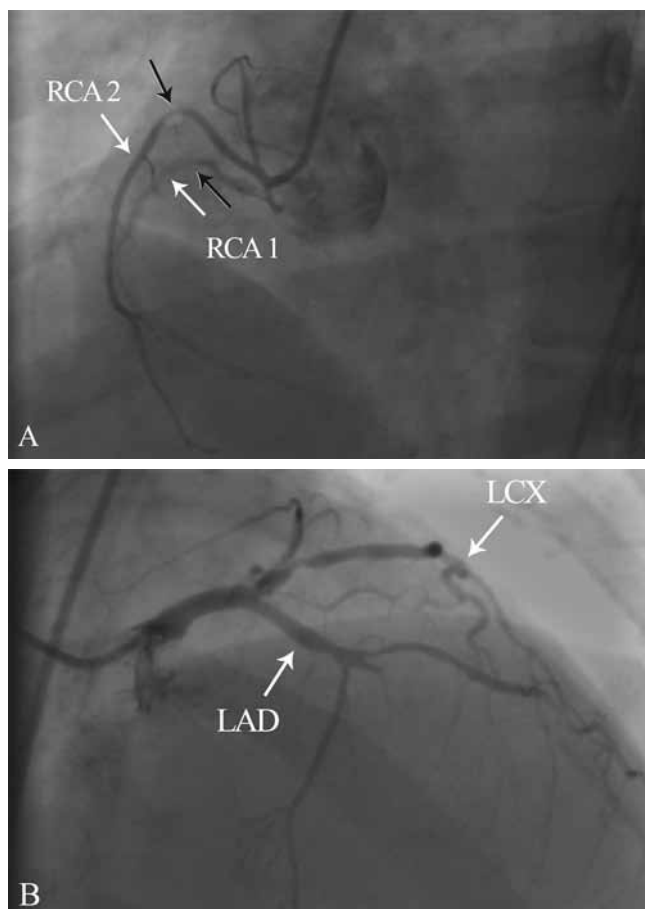


Figure 1. A: Left anterior oblique (LAO) angiography image of the double ostia right coronary artery (RCA) and atherosclerotic involvement (black arrows) B: Right anterior oblique (RAO) angiographic view, showing atherosclerotic lesions (small arrows) on the left anterior descending artery (LAD) and left circumflex artery (LCX)

Discussion

The most common anomaly of coronary arteries originates from the left anterior descending artery (LAD) and RCA ostia. Double RCA is one of the rarest anomalies of the coronary arteries. To the best of our knowledge, double RCA

has been reported in 23 articles so far and a total of 28 cases have been reported previously.⁵

Double RCA can have a single ostium with a common short or long trunk. It can have a separate ostium with two arteries arising separately, which can be missed during catheter angiography. Double RCA with two separate ostia is very uncommon. It can be associated with other anomalies such as valvular disease.⁶ In our patient, no associated anomaly was found. Double ostial RCA may have atherosclerotic changes and present with acute coronary syndrome or sudden cardiac death.^{2,4} It is more commonly reported in males. If one artery is missed during angiography, it is possible that the assessment of the patient becomes incomplete and the symptoms remain unchanged.^{7,8}

Conclusion

In conclusion, coronary anomalies must be specified before any interventional or cardiac surgery. The case presented herein is of significance insofar as the patient was recommended to undergo coronary artery bypass graft surgery (CABG) on account of her ischemic symptoms. A thorough knowledge of the anatomy of coronary arteries for the surgeon before a surgical procedure is of vital importance.

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