

CASE REPORT

Ectopic Origin of Coronary Arteries Diagnosed by Coronary Angiography

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ABSTRACT

Introduction: Anomalous origin of coronary arteries from opposite sinus of Valsalva is rare finding. The incidence of anomalous origination of the left coronary artery from right sinus is 0.15% and the right coronary artery from the left sinus is 0.92%. The ectopic origin of left coronary artery or right coronary artery from opposite sinus depending on pathways and considering atherosclerotic changes are manifested with different clinical significance. **Case report:** We report two cases, the first case the coronary angiography showed the left coronary artery arising from the right coronary sinus, presenting with proximally and distally stenosed left anterior descending artery (LAD), associated with medial and distal stenosed right coronary artery (RCA). The second case the coronary angiography revealed the right coronary artery arising from the left coronary sinus, associated with tortuous medial and distal segments of left anterior descending artery (LAD), without atherosclerotic changes. The first case successfully underwent treatment procedures based on guidelines for revascularization. **Conclusion:** The coronary angiography of patients with coronary ischemia determines atherosclerotic disease with possibility of the presence of coronary artery anomalies that in cases with ectopic origin from opposite sinus continues to exist as a challenge during treatment in interventional cardiology.

Key words: ectopic origin, coronary artery, coronarography.

1. INTRODUCTION

The coronary artery anomalies are classified into abnormalities of origin, distribution and termination. Congenital anomalies of coronary arteries have an incidence about 1% in patients undergoing coronary angiography while the incidence of anomalous origination of the left coronary artery from right sinus is 0.15% and the right coronary artery from the left sinus is 0.92% (1, 2). Based on the origin and course these anomalies were presented with 0.51% (3). The left coronary artery originates from the opposite sinus of Valsalva as uncommon finding is presented with interarterial course between the aorta and the pulmonary artery, septal course, retroaortic course passing posteriorly around the aortic root and anterior course over the right ventricular outflow tract (4-7).

The origin of the right coronary artery from the left sinus passes between aorta and pulmonary artery or posteriorly (8). The anomalous left circumflex artery (ALCx) may arises from a separate ostium within the right sinus, or very unusually as a proximal branch of the right coronary artery

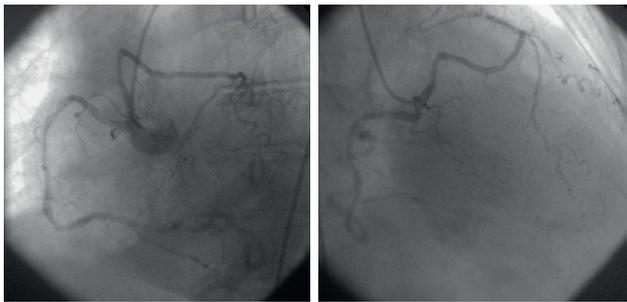
(RCA) with the approximate incidence of 0.37 to 0.7% in all patients (9, 10). In adult patients, the prognosis of coronary artery anomalies considering the vulnerability to atherosclerosis is determined on relationship of the arterial course to aorta and pulmonary arteries and may be associated with congestive heart failure, arrhythmia, myocardial infarction, syncope and sudden death (11-14). In this paper, we present two cases of anomalous origin of coronary arteries arising from the opposite sinuses.

2. CASE REPORT

First case is a 62-year-old female patient hospitalized in our clinic due to chest pain with a history of arterial hypertension and diabetes mellitus. Cardiac biomarkers showed: serum creatinine kinase level of 82 IU/L, creatinine kinase-myocardial band level of 33.6U/L and troponin-T level of 684ug/L. Electrocardiography characterized with ST segment depression in V1-V3. Transthoracic echocardiography (TTE) presented regional wall motion abnormality in the entire severely hypokinetic inferior wall.

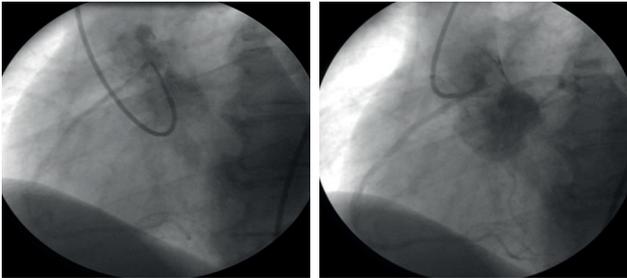
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The invasive coronary angiography revealed the left coronary artery arising from the right coronary sinus sharing a same ostium with right coronary artery (Figure 1). The proximally and distally stenosed left anterior descending artery (LAD) (Figure 2) associates with calcified atherosclerotic medial and distal right coronary artery (RCA) stenosis. The second case is a 47-year-old male who presented to emergency department with chest pain. He also had arterial hypertension and positive familial history for ischemic heart disease. Cardiac biomarkers: serum creatinine kinase, creatine kinase-myocardial band and troponin-T presented with normal values. Electrocardiography showed atypical ST segment changes in leads V4-V6. Transthoracic echocardiography (TTE) did not present regional wall motion abnormalities.

A coronary angiogram showed an anomalous right coronary artery arising from the left Valsalva sinus from a separate ostia with the left coronary artery (Figure 3, 4). Medial and distal segments of LAD were tortuous.

3. DISCUSSION

Ectopic origin of coronary arteries from the opposite sinus is clinically determined depending their course and the presence of atherosclerotic changes. Left coronary artery arises from the right sinus may passes anteriorly over the right ventricular outflow tract, posterior to the aorta, between the aorta and pulmonary artery and intramurally. Right coronary artery arises from the left sinus may passes between the aorta and pulmonary artery and posterior to the aorta. In this way, interarterial course is possible characteristic of both ectopic origin of anomalous coronary arteries that in case of left coronary artery correlates with the higher incidence of angina, syncope and sudden death while in case of right coronary artery is less dangerous (8, 15). The interarterial subtype clinically is determined mainly with proximal portion of anomalous vessel that may course through the wall of the aorta resulting in narrowing of the lumen, functional ostial stenosis-proximal portion often exits the aorta with an acute angle and can also course between the aorta and pulmonary artery compressed by pressure and volume expansion of the pulmonary artery against the aorta (16-18). Anatomic variants that presents with posterior, anterior and septal course are asymptomatic because myocardial perfusion is not provoked on physical effort (20). The athero-

sclerotic coronary artery disease leads to the need of coronarography find out the presence of ectopic origin from opposite sinus of coronary artery anomalies that considering the vulnerability to atherosclerosis will be challenging during treatment especially when presented with STEMI as a complex occurrence (14, 21, 22).

4. CONCLUSION

The coronary angiography of patients with coronary ischemia determined atherosclerotic disease with possibility of the presence of coronary artery anomalies, but also coronary angiography may reveal coronary artery anomaly without the presence of atherosclerotic changes. The ectopic origin from opposite sinus of coronary artery anomalies that presents with atherosclerotic changes continues to exist as a challenge during treatment in interventional cardiology.

• Conflict of interest: none declared

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