Anomalous the Left Main Coronary Artery Originating from the Right Coronary Artery

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Abstract

Keywords

- coronary artery
- coronary anomaly
- left main coronary artery disease
- artery
- right coronary artery
- sudden cardiac death
- single coronary artery

The coronary anomalies are rarely seen in clinical practice. A 47-year-old female patient presented to hospital with chest pain on exertion. The coronary angiography and cardiac tomography showed the anomalous origin of the left main from the right coronary artery.

The incidence of coronary anomalies (CCA) is between 0.6 and 1.3%.^{1,2} Although most CCA are benign, some CCA might cause syncope, heart failure, or sudden death, even in the absence of atherosclerosis.³ Here, we present anomalous origin of the left main (LM) from the right coronary artery (RCA).

Case Report

A 47-year-old female patient with history of hypertension presented with chest pain on exertion for 2 months. The physical examination, biochemical values, and electrocardiography (ECG) were in normal ranges. The treadmill stress test showed ischemic changes on ECG. Conventional coronary angiography revealed LM was originating from the proximal part of the RCA (► **Fig. 1**). No luminal stenosis was noticed. Cardiac tomography (CTA) disclosed anomalous LM goes to the left ventricle anterior to the aorta and pulmonary artery, and distally branches circumflex and left anterior descending

artery (► **Fig. 2**). No ischemia was detected on the stress myocardial perfusion scan.

Discussion

CCA are mostly silent and usually diagnosed accidentally during the coronary angiography or autopsy.¹ The LM originating from the right sinus of Valsalva (RSV) as a separate vessel or as a branch of single coronary artery is extremely rare anomaly with incidence of 0.09 to 0.11%.⁴ Five types have been described according to their relations with the aorta and pulmonary artery: anterior (Type A) (as in our case), between (Type B), posterior (Type C), septal (Type D), and a combination of “anterior,” “septal,” and “posterior”. Conventional coronary angiography, CTA, and magnetic resonance imaging are helpful to show the ostium and course of the anomalous coronary arteries.

Most patients with anomalous LM arising from RSV or RCS (right coronary sinus) are asymptomatic and never suffer any complications lifetime.⁵ Nevertheless, even in the absence of

Fig. 1 Right coronary artery injection at cranial view. CFX, circumflex artery; LAD, left anterior descending artery; LMCA, left main artery; RCA, right coronary artery.

Fig. 2 The coronary arteries on cardiac computed tomography. CFX, circumflex artery; LAD, left anterior descending artery; LMCA, left main artery; RCA, right coronary artery.

atherosclerosis, acute angulation of the coronary takeoff, compression by larger arteries, vasospasm, and endothelial injury might cause serious cardiac events.⁵ Because of low incidence and limited publications, the treatment strategies

and the factors affecting prognosis are not fully understood. Nevertheless, surgery is recommended for the patients younger than 30 years. The patients older than 30 years with nonspecific symptoms such as chest pain, dyspnea, should have a stress myocardial perfusion scan to determine any ischemia. If any ischemia present on the wall supplied by the anomalous coronary artery, surgical correction is indicated.⁵

In our case, CTA showed anterior course of the anomalous LM. Even though the patient had chest pain on exertion, the stress myocardial perfusion scan did not show any ischemia. Thus, the patient has been treated with β -blocker therapy. Since 2 months, she is free from chest pain.

In conclusion, even though the incidence of CCA is low, they should be kept in mind during diagnosis process.

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Conflict of Interest

The authors have no conflicts of interest to disclose.

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