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Symptomatic Abnormal Origin of the Right Coronary Artery from the Left Main Coronary in an Elderly Patient: Case Report.

I.Alla, N. Ismaili and N. El Ouafi

Service De Cardiologie, Chu Mohammed VI De Oujda.

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ABSTRACT

The ectopic right coronary artery arising from the left main coronary is a very rare anomaly. This abnormality is often asymptomatic and is fortuitously discovered with coronary angiography. Nevertheless, it can be associated with serious cardiac events including sudden death. We report the case of a patient with a left common trunk divided into three arteries: right coronary artery, left descending artery and circumflex artery.

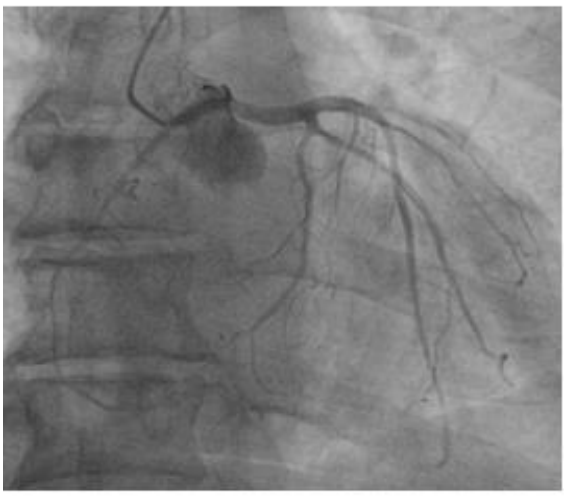
Introduction

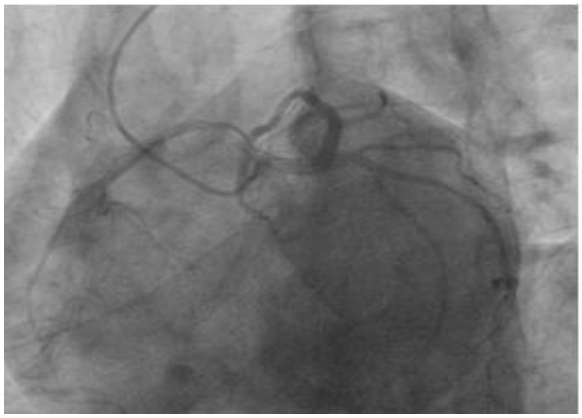
The ectopic right coronary artery arising from the left main coronary is a very rare anomaly representing 0.009%. [1].

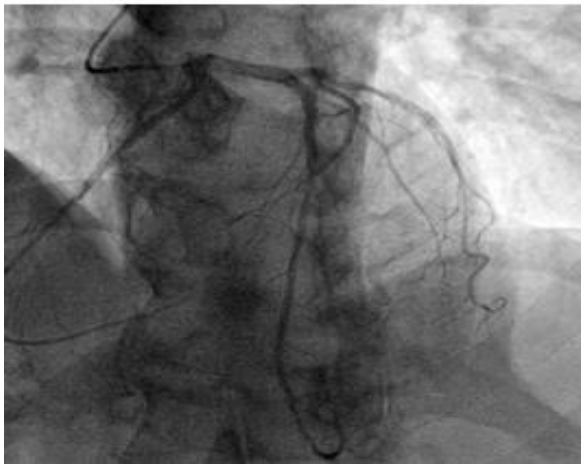
This abnormality is often asymptomatic and is fortuitously discovered with coronary angiography. Nevertheless, it can be associated with serious cardiac events including sudden death. This risk is mainly related to the course that the ectopic coronary artery travels to reach the heart territory that it irrigates.

Case:

We report the case of a 60-year-old diabetic patient presenting typical effort angina. The electrocardiogram was normal as well the transthoracic echocardiography. Coronary angiography has objectified a dominant left network with a left common trunk divided into three arteries : a dominated right coronary artery with tight ostial stenosis. The left descending artery and the Circumflex artery were free from stenosis. In our patient we opted for medical treatment with good clinical evolution.







Discussion:

The ectopic coronary artery connected to the contralateral artery is defined by the existence of a single coronary ostium connected in the usual sinus with a non-ectopic coronary artery following its usual path, and an ectopic artery (left or right coronary) connected generally on the first millimeters of the contralateral artery or one of its branches [2].

Tele:

E-mail address: alla.ikbal07@gmail.com

This anomaly concerns more the left coronary artery than the right coronary artery. [3]

The incidence of abnormal right coronary artery in congenital coronary anomalies is variable in different populations. It is the most common abnormality in the Japanese population, and mainly in the Hispanic and Indian populations (78.6%, 62% and 48.74%, respectively). The lowest incidence is observed in German populations (0.04%) [4]. The possible explanation for this discrepancy may be genetic and geographical.

The ectopic coronary artery has necessarily an abnormal initial path relative to the arterial trunks and adjacent cardiac structures allowing it to reach its myocardial territory. There are four possible courses: pre-infundibular, retro-infundibular, pre-aortic, and retro-aortic.

These abnormalitie is usually asymptomatic and is detected accidentally during coronary arteriography [5], but may manifest as ischemia, syncope, myocardial infarction, congestive heart failure or sudden death. [5,6] especially in young subjects, during sport activities. [7]

This risk concerns only the coronary artery with a pre-aortic course [8]. Pre-infundibular, retro-infundibular or retro-aortic courses should not be considered as at-risk anatomical forms.

Two mechanisms of ischemia have been proposed for this anomaly. Large vessels (the aorta and pulmonary infundibulum) dilate during exercise and compress the coronary artery [9,10]. We think that was the case with our patient. The anomaly probably did not affect the hemodynamics of the heart until the aorta and pulmonary trunk became sufficiently thickened and widened with age. [9].

The second mechanism suggests that acute angulation of the artery as it crosses the left sinus to the right may induce ischemia. [10]

Garb et al. have reported that atherosclerotic plaques in abnormal coronary arteries have been observed in 33% of patients [11]. This was the case with our patient. It has been also proposed that ischemia may be caused by sporadic spasm of the abnormal coronary artery induced by endothelial injury. [7]

Conventional coronary angiography was traditionally considered the "gold standard" for the diagnosis of coronary anomalies. However, it is limited by the fact that it is a two-dimensional examination. [12,13]

Transthoracic echocardiography is non-invasive method that can be used to assess the origin of the abnormal coronary artery and its proximal path with great precision and without exposure to radiation [14]. In adults and subjects with low echogenicity the transesophageal echocardiography is more sensitive. [15]

Coronary computed tomography angiography and magnetic resonance cardiac imaging has become the first-line imaging, it offers 3D imaging to visualize the origin and complete evolution of the abnormal coronary artery. MRI allows also to precise the relationships of the coronary artery with the great vessels. It also provides additional information, including valve function, ventricular function, myocardial contractility, and myocardial viability. [16,17, 18,19]

The only available recommendations for the treatment of this anomaly are North American they recommend surgical correction of all abnormal proximal connections of the left coronary arteries with a pre-aortic course, whether or not there is myocardial ischemia, and abnormal proximal connections of the right coronary arteries with a pre-aortic course associated with documented myocardial ischemia. [20]

In our case, the patient was maintained on oral medication since dominance is left.

Conclusion :

It is necessary to know the normal coronary anatomy as well as the anatomical variants in order to identify the forms at risk.

there are currently complementary noninvasive examinations that make it possible to diagnose abnormalities of coronary artery origin with greater reliability and fewer side effects than coronary angiography.

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