

Coronaro-Cameral Fistula: About A Case and Literature Review

Yousra Hamine*, Karim Badaoui, Hatim Amine Zahidi, Abdennacer Drighil, Rachida Habbal

University Hospital Ibn Rochd, Casablanca, Morocco.

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***Corresponding author:** Yousra Hamine,
University Hospital Ibn Rochd, Casablanca, Morocco.

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Abstract

Coronary artery fistulas are a rare subset of defects within the coronary circulation system. They may be congenital or acquired malformations in the assembly and circuitry of coronary arteries. Most often asymptomatic.

Accurate clinical diagnosis is based on multimodal imaging, including Doppler echocardiography, coronary angiography, Computed tomography and magnetic resonance imaging. We report a unique case of a 52-year-old patient who was admitted for evaluation of an exertional angina, revealing an underlying Coronary artery fistula in the cardiology Department of IBN ROCHD UNIVERSITY HOSPITAL of Casablanca. The objective is to address the clinical, diagnostic and therapeutic aspects of coronary fistulas.

Keywords: Coronary fistula; Coronary angiography; Embolisation

Introduction

Coronary-cameral fistulas are rare clinical entities that are characterized by an aberrant vascular shunt between coronary arteries and cardiac chambers. A low pressure receptor cavity is often the drainage site for these fistulas. Most often asymptomatic, the diagnosis is made by Doppler echocardiography, coronary angiography, CT scanner and magnetic resonance imaging. While surgery was the only treatment for a long time, today percutaneous occlusion using different devices seems to be the most appropriate choice [1].

Case Presentation

A 52-year-old man presented to our service with a chief complaint of an exertional angina pectoris onset for several months. In addition, he had fatigue, palpitations and exertional dyspnea but denied orthopnea. Of note, he underwent a clinical evaluation one month prior that was significant for newly identified hypertension and a type 2 diabete. Past medical history was significant for an Aspirin allergy.

Upon physical examination, he was alert, oriented in time and place, with a temperature of 36,8 °C, a heart rate of 62 bpm, a respiratory rate of 15bpm, and with a blood pressure of 120/60 mmHg. Oxygen saturation on room air was 98%. A cardiopulmonary examination showed normal S1 and S2 with a maximal systolic murmur, and no friction rubs. Pulmonary, abdominal, neurologic, musculoskeletal and lymph node exams were normal.

A baseline electrocardiogram (EKG) was obtained which revealed no abnormal feature. An echocardiogram showed a good Left Ventricle (LV) systolic function, with an estimated ejection fraction of 55%, a mild mitral regurgitation. Doppler imaging of the transmitral flow indicated an early diastolic (E)/late diastolic (A) ratio of 0,7. The right ventricular size and function were normal. The inferior vena cava was dilated and non-collapsing with the respiratory cycle.

The patient underwent an exercise stress testing which was maximal (possible predicted maximum HR was exceeded). At stage 3 of the Bruce protocol, there was significant horizontal ST depression (~2 mm) in leads V4–V6 and the ventricular extrasystols, while the patient complained of chest pain which persisted until recovery stage.

Coronary angiography revealed a coronary-cameral fistula originating from the branches of the proximal IVA without further coronary involvement.

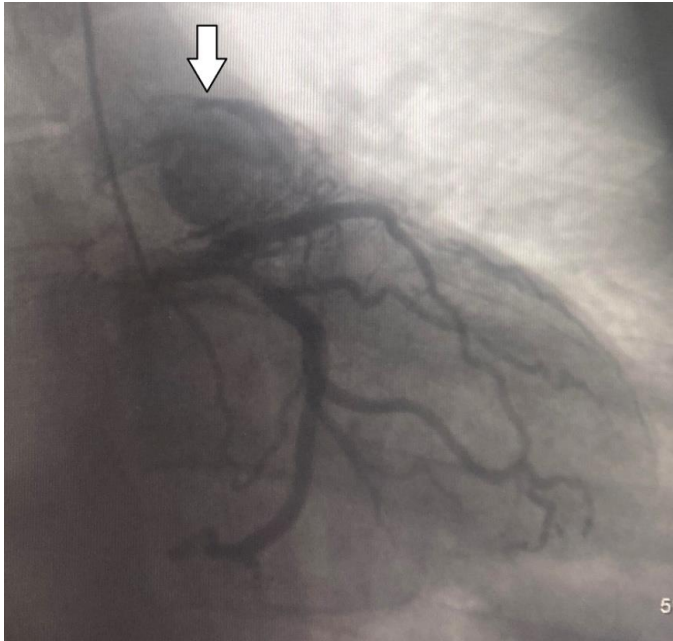


Figure 1: Coronary angiogram image showing fistula from IVA to the left atrium

Following a heart team discussion, percutaneous closure of the fistula was indicated, but the patient refused the procedure and preferred annual monitoring. He was discharged in stable condition after 2 days.

Discussion

Coronary-cameral fistulas are direct connections between a coronary branch and a heart chamber.

According to the meta-analysis by AM Said, the origin is the left coronary artery in 69% of cases and the right coronary artery in 31% of cases [2], they are unilateral in 80% of cases, bilateral in 18% of cases and in 2% multilateral. 90% of fistulas drain cases in the venous circulation (right ventricle: 41%, right atrium: 26%, pulmonary artery 17%, coronary sinus 7%, and superior vena cava 1%), rarely in the chambers of the heart left (left atrium 5%, left ventricle 3%) [3].

In our case, the shunt occurred between the IVA's branches and the left atrium.

The clinical diagnosis is made on a continuous precordial murmur and, in large fistulas, on signs of left-to-right or left-to-left shunt. Confirmation of the diagnosis and anatomy of the fistula is done by echocardiography to locate the abutment in a heart cavity and quantify the volume of the shunt. Transesophageal echocardiograms (TEE) were helpful in assessing turbulent blood flow and delineating origin and insertion points of the fistulas in adults [4]. Cardiac magnetic resonance imaging can also be used to appreciate coronary

artery fistulas [5].

Angiography is the reference examination which makes it possible to define the path of the abnormal branch, the coronary branches which arise from the fistula and the presence of a stricture zone in the terminal portion of the fistula. Recently, there has been a shift from coronary angiography to coronary computerized tomography angiography (CTA). Not only are coronary CTAs non invasive, but they are also able to detect coronary artery fistulas at a higher rate as compared to standard invasive coronary catheterization with angiography [6].

From a search of medical literature, we identified some uncommon complications that were attributed to coronary-fistulas like aneurysmal formation, pericardial effusion, infective endocarditis, and supraventricular and ventricular arrhythmias [6].

Although surgical repair was once considered to be a treatment for coronary artery fistulas, recently catheterized closure has become the treatment of choice. The objective is to embolize the artery at the most distal aspect at the fistula, closest to the site of termination.

The Elective surgical or percutaneous "coil" closure is recommended in symptomatic adults, especially those with a significant left-to-right shunt or one responsible for complications [7].

Conclusion

Coronary fistulas are uncommon entities, usually asymptomatic but easily detectable with advances in imaging. They are mostly diagnosed in adulthood, but yet and can lead to established complications. Thus, clinicians should keep in mind this rare feature of aberrant communication.

Conflict of Interest

The authors declare no competing interest.

Authors' contributions

- All authors of this research paper have directly participated in the planning, execution & analysis of this study.
- All authors of this paper have read and approved the final version submitted.

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