

## **Case study**

# **CORONARY CAMERAL FISTULA : LITERATURE REVIEW, DIAGNOSIS AND MANAGEMENT, ABOUT A CASE**

## **SUMMARY**

### **INTRODUCTION AND IMPORTANCE**

An arterial coronary fistula is defined as a direct communication between a coronary artery and a heart chamber, large vessel or other vascular structure "bypassing" the myocardial capillary bed. It is a rare pathology, the discovery of which is made at a late age most often, exceptionally during childhood. We report the case of a young patient admitted for chest pain and dyspnea with the discovery of a coronary fistula on angiography.

### **CASE PRESENTATION**

Patient of 66 years hypertensive for 16 years under dual therapy and diabetic for 4 years under AOD admitted for typical angina and dyspnea with positive stress test. The clinical examination returns to a good general condition, presence of angina radiating to the upper limbs associated with dyspnea stage 3 NYHA without signs of heart failure. The balance sheet notes a slight increase in troponins. The ECG returns to a regular sinus rhythm with electric LVH and negative waves in circumferential without rhythm or conduction disorders. ETT regains hypertensive heart disease with good global and segmental contractility without significant valvular heart disease associated with PAPS at 35mmHg. A coronary angiogram is performed with evidence of a non-significant lesion of the middle CX artery and a coronary cameral fistula from the first diagonal artery and flowing into the left ventricle.

The management consisted in an optimization of the medical treatment. The patient was declared discharged with a consultation appointment.

### **CLINICAL DISCUSSION**

The coronary cameral fistula is rare and found in about 0.3% of coronary angiography performed. Mostly congenital, it can be acquired mainly during trauma, during an erosion infection of the vascular wall or be caused by iatrogeny during transluminal coronary angioplasty, myocardial biopsies or valve replacement. Often simple but complicated and multiple forms can be described. The gold standard for diagnostic confirmation remains coronary angiography which will highlight the artery concerned as well as the drainage site. The cardiac scanner takes more and more an important place because provides precise information, especially morphological. Surgical or percutaneous treatment of fistula by coils is recommended in adult patients who present with symptoms especially when there is a significant or complicating right left shunt. Treatment with beta-blocker is proposed by authors in the presence of multiple sinusoid-like fistulas associated with hypertrophy of the ventricular wall. In case of asymptomatic small fistula, close monitoring is recommended.

### **CONCLUSION**

The coronary cameral fistula is a rare congenital or acquired pathology most often asymptomatic and discovered in adulthood. Coronary angiography and/or cardiac CT scan can be used to establish the diagnosis. Management is most often surgical or endovascular. However, a medical treatment based on beta blocker could be proposed in some cases.

**KEYS WORDS** : FISTULAE-CAMERAL CHORD-DIAGONAL ARTERY-LEFT VENTRICULE

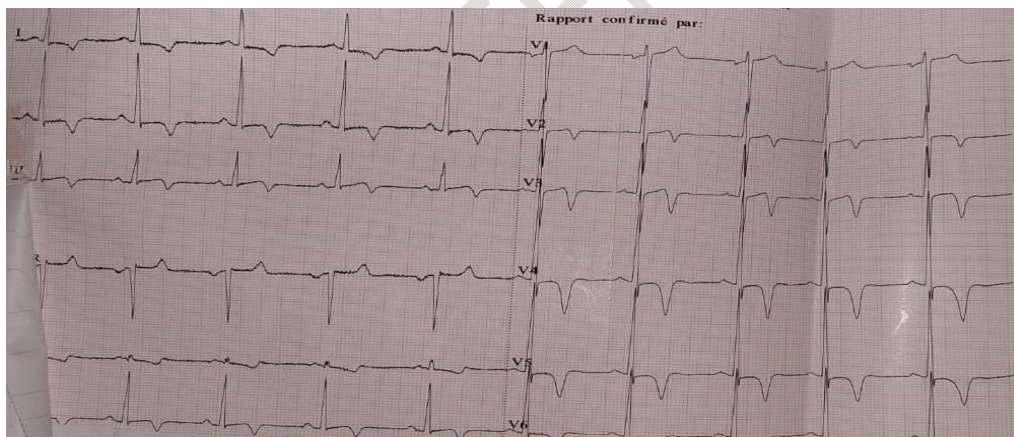
## **INTRODUCTION**

An arterial coronary fistula is defined as a direct communication between a coronary artery and a heart chamber, large vessel or other vascular structure "bypassing" the myocardial capillary bed. It is mostly congenital but can be acquired in certain situations (1,2). Its incidence varies from one series to another with an estimate on the general population of the order of 0.002%. It is a rare pathology whose discovery is made at a late age most often, exceptionally during childhood (3, 4).

We report the case of a young patient admitted for chest pain and dyspnea with the discovery of a coronary fistula on angiography.

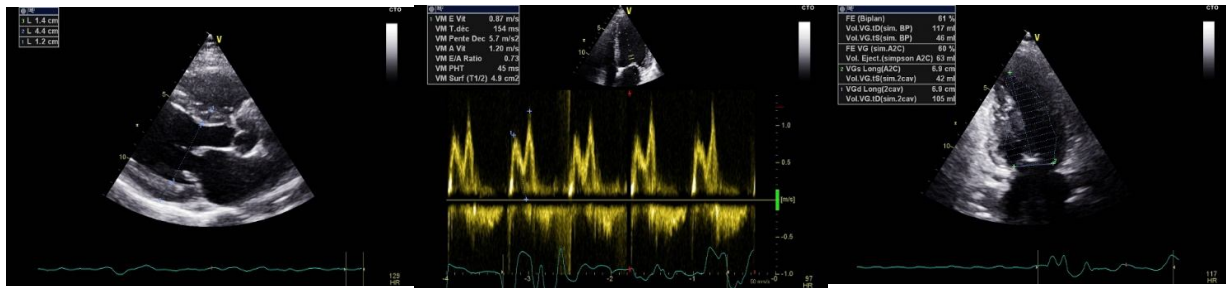
## **OBSERVATION**

66-year-old patient hypertensive for 16 years on dual therapy and diabetic for 4 years on ADO admitted for typical angina and dyspnea. The clinical examination returns to a good general condition, presence of angina radiating to the upper limbs associated with dyspnea stage 3 NYHA without signs of heart failure. The rest of the somatic examination was unremarkable and PA=140/70mmHg with FC at 69BPM. The ECG returns to a regular sinus rhythm with electric LVH and negative waves in circumferential without rhythm or conduction disorders (figure1).



**FIGURE 1**: ECG image with electric HVG + negative T-waves circumferentially

ETT regains hypertensive heart disease with good global and segmental contractility without significant valvular heart disease associated with PAPS at 35mmHg (figure 2).



**FIGURE 2:** ETT images showing hypertensive heart disease with good ventricular function

On blood work, US troponins are slightly positive at 18, HG = 12g / dl, creatinine = 9.9mg / l with GFR at 64ml / min, HBA1C = 6.6%. Initial management consisted of treatment with aspirin 75mg/24h, Statine 40mg/24h, ACE inhibitor and calcium channel blocker, propranolol 50mg/24h, LMWH 0.8ml x2/24h.

A coronary angiogram is performed with evidence of a non-significant lesion (<30%) of the middle circumflex artery and a coronary cameral fistula from the first diagonal artery and flowing into the left ventricle (figure3).



**FIGURE 3:** Coronary angiography images showing a dominant right network free of injury, a fistula of the first diagonal and a non-significant lesion of the middle circumflex

The patient was discharged on medical treatment: aspirin, statins, ACE inhibitors and calcium channel blockers with dose optimization of beta blocker and antianginal if necessary. She is seen in consultation at 1 month and 3 months after discharge and reports a clear clinical improvement with disappearance of chest pain and regression of dyspnea (stage II during the return consultation).

## **DISCUSSION**

Described as an abnormal communication between the coronary arteries and the heart chambers or their connected vessels, the coronary cameral fistula is rare and found in about 0.3% of coronary angiography performed (5,6). Mostly congenital, it can be acquired mainly during trauma, during an erosion infection of the vascular wall or be caused by iatrogeny during transluminal coronary angioplasty, myocardial biopsies or valve replacement. Often simple but complicated and multiple forms can be described. The fistula drains mostly in the right cavities (7) unlike in our case where drainage is done in the left cavity. It can be unilateral, bilateral or multiple and most often arises from the right coronary (40-60%), infrequently from the anterior interventricular (30-60%) and exceptionally from the circumflex artery, the common trunk not being spared (8). Most fistulas drain into the venous circulation with low-pressure diet functioning. Drainage in the right ventricle is most described in about 41% of cases regardless of the artery affected (9) unlike our case where drainage is rather in the left ventricle.

The symptomatology is mainly dependent on the hemodynamic impact and is most often revealed in adulthood, exceptionally in children. The vast majority of patients are asymptomatic but signs such as angina pectoris and dyspnea can be telltale signs most often pointing to coronary syndrome as is the case of our patient. The most obvious mechanism of the occurrence of angina pectoris is ischemia secondary to a coronary flight phenomenon. Other complications such as pulmonary arterial hypertension, heart failure, aneurysmal dilation or arrhythmia disorders can occur especially in cases of large shunt (10).

The diagnostic approach will lead to the realization of an ECG which most often finds signs of overload and an ETE / ETO which may highlight a dilation of a coronary artery or a disturbance of the Doppler flow. The gold standard for diagnostic confirmation remains coronary angiography which will highlight the artery concerned as well as the drainage site. The cardiac scanner takes more and more an important place because provides precise information, especially morphological.

The spontaneous closure of the fistula is very little observed with a mechanism that is little known. The prognosis is clearly dependent on complications.

Surgical or percutaneous treatment of fistula by coils is recommended in adult patients who present with symptoms especially when there is a significant or complicating right left shunt. Treatment by endovascular techniques such as embolization with a jettisonable balloon or a metal coil, or occlusion methods with an amplatz occluder or a plug is booming and has significantly reduced the need for surgery. These endovascular techniques have an immediate success described in the literature of the order of 95%. The main goal of treatment is to treat the fistula in its distal portion to prevent clogging of the branches irrigating the healthy myocardium (11). The presence of a large shunt or fistula with high flow, multiple communications, a tortuous aspect of the fistulous path, the existence of multiple endings or the presence of aneurysm are an operative indication. Treatment with beta-blocker is proposed by authors in the presence of multiple sinusoid-like fistulas associated with ventricular wall enlargement (12). In case of asymptomatic small fistula, close monitoring is recommended. In our patient we opted for a surgical or endovascular therapeutic abstention with optimization of beta blocking treatment and regular clinical and ultrasound control.

## **CONCLUSION**

The coronary cameral fistula is a rare congenital or acquired pathology most often asymptomatic and discovered in adulthood. Coronary angiography and/or cardiac CT scan can be used to establish the diagnosis. Management is most often surgical or endovascular. However, a medical treatment based on beta blocker could be proposed in some cases.

### **Ethical approval**

Written informed consent was obtained from the patient for the publication of this case report and accompanying images. A copy of the written consent is available for review by the editor-in-chief of this journal upon request.

### **ABBREVIATIONS**

ADO= Oral Antidiabetic

BPM= Beat per minute

GFR= Glomerular filtration rate

ECG =Electrocardiogram

ETT= Transthoracic echocardiography

ETO= Transesophageal echocardiography

HR= Heart rate

HVG= Left ventricular hypertrophy

LMWH= Low molecular weight heparin

HG= Hemoglobin

ACE=ACE inhibitors

PA= Blood pressure

DECLARATIONS :

### **Ethics approval and consent to participate**

It is not applicable

### **Consent for publication**

In accordance with international and academic standards, written consent for publication was obtained from the patient and retained by the authors.

### **Availability of data and materials**

The datasets supporting this article are included in the article.

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