



## ***Coronary disobstruction in the acute phase of myocardial infarction: need for a management system in developing countries***

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**Abstract:** Coronary reperfusion strategies have reduced mortality from myocardial infarction (MI). The decision to prescribe coronary disobstruction for acute myocardial infarction is based on precise algorithms. In sub-Saharan Africa, the issue of management of acute myocardial infarction remains a topical issue. The purpose of this presentation is to highlight the need for the implementation of acute myocardial infarction care in countries with limited resources. We report here the first case of coronal disobstruction which is guided by the local therapeutic possibilities, in a hospital of high reference in Cameroon.

**Keywords:** Coronary disobstruction, Myocardial infarction.

### **Introduction**

The management of MI in the acute phase has two priorities: to prevent sudden death from ventricular fibrillation and to prevent the occurrence of heart failure, this is reperfusion [1]. Primary angioplasty allows for a higher recanalization rate than thrombolysis, but can only be achieved in emergency interventional cardiology centers [1, 2, 3]. The choice of the strategy of reperfusion, thrombolysis or angioplasty, is essentially guided by the possibilities and speed of implementation of one or the other technique [2, 3]. In the absence of angioplasty, thrombolysis should be started immediately.

It is completed in case of failure by a transfer for rescue angioplasty [3]. Early restoration of adequate coronary flow is associated with a better prognosis.

We report the first case of coronary disobstruction in a hospital of high reference in Cameroon, guided by local therapeutic possibilities.

The purpose of this presentation is to highlight the need for the implementation of acute myocardial infarction care in countries with limited resources.

### **Clinical presentation**

This is a 60-year-old patient with a history of high blood pressure on Amlodipine. Other cardiovascular risk factors include moderate obesity. The beginning of the symptomatology dated back to 19 hours before admission to the intensive care unit of the Essos Hospital Center, marked by the nocturnal epigastralgia that prompted a consultation in a vital emergency department. The occurrence of intense, constrictive and distressing chest pain that radiated into the mandible and upper limbs prompted further consultation in a specialized cardiac center.

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Clinical and para-clinical investigations led to acute myocardial infarction.

Hemodynamics was stable and ventilation mechanics satisfactory.

The ECG (figure1) was in favor of an irregular sinus rhythm with Pardee wave in anterosal and lateral, and a Q wave in the inferior territory. Transthoracic echocardiography showed septoapical akinesia and lower hypokinesia with a left ventricular ejection fraction at 50% according to Teicholz associated with diastolic dysfunction. The chest X-ray was normal. Ultra-sensitive troponin was very high at 11 627.2 *ng / L*.

There was no contraindication to pharmacological revascularization.

Intravenous thrombolysis with Alteplase (Actilyse \*) was performed according to the following protocol: 15 mg direct intravenous bolus, then 50 mg in 30 minutes and 35 mg in 1 hour continuous intravenous. No incidents were observed during thrombolysis. The evolution was marked by the regression of chest pain. The persistence of ST segment elevation at the ECG (figure2) reflected failure of fibrinolysis. The relay was taken by adjuvant therapeutic anti-thrombotic and analgesic.

Coronary angioplasty with stents in the circumflex artery and anterior interventricular artery was performed in France, at the American Hospital of Neuilly, 60 days after the first medical contact.

### **Discussion**

Myocardial infarction is almost always due to the formation of an occlusive coronary thrombus [2]. The recommendations of the

European Society of Cardiology (ESC) on the management of myocardial infarction (STEMI) have recently been updated [4, 5]. The novelties of this last update bring precise details on the ECG criteria of diagnosis, the delays of taking charge, the evolution of the levels of recommendations of the antithrombotic treatments, the active stents, and the complete revascularization [5].

The definite diagnosis of myocardial infarction is fundamental. His responsibility lies with the first medical contact. The time to care is an essential component and the reperfusion strategy depends on it. The cornerstone of the reperfusion strategy for acute myocardial infarction is the reduction of time from the onset of symptomatology to coronary reversal.

The diagnosis must be made in less than 10 minutes after the first medical contact, time from which the time clock is engaged. Primary angioplasty is recommended as first-line (within 12 hours of onset of symptoms); this must take place within 120 minutes after diagnosis [4,5]. If this 120 min delay is not feasible, fibrinolysis should be performed within the first 12 hours only and within 10 minutes of diagnosis [3,5].

Coronarography with angioplasty should be performed within 2 to 24 hours after successful fibrinolysis. Rescue angioplasty is urgently needed in case of failure of fibrinolysis (60 to 90 minutes after the fibrinolytic bolus) [5].

Patients transferred to a coronary angiography center should receive angioplasty within 90 minutes of diagnosis. Patients treated in the emergency department of a center

performing angioplasty should be revascularized within 60 minutes after Diagnosis according to the new recommendations.

The patient was seen by a general practitioner within one hour of the first symptoms. But the definite diagnosis was made 19 hours later after a qualified ECG. This situation makes it possible to put back on the agenda the continuous training of general practitioners on the reading of the ECG. In Africa and especially in Cameroon, emergency services are managed primarily by general practitioners. It is important to develop a training strategy for rapid ECG reading to improve the management of acute myocardial infarction. The diagnostic error has a real impact on the survival of patients with myocardial infarction. 1/3 of myocardial infarction is misdiagnosed upon entry into the emergency department.

Regarding admission times in Africa, only 40% of patients are admitted in the first 6 hours following the onset of symptoms. 36 percent are admitted beyond 12 hours of the onset of chest pain [6]. Our patient was admitted to the intensive care unit 19 hours after the initial symptomatology. He received thrombolysis within a time frame beyond the latest recommendations of the European Society of Cardiology. In the latest update of the management of ESC acute myocardial infarction, a major effort was made to ensure consistency with other ESC recommendations [7,8] in order to lead to the 2017 recommendations. Africa would benefit from aligning itself with the recommendations published by ESC. This linkage absolutely requires the creation of emergency interventional cardiology centers, equipment for coronary angiography services and continuing

medical education. In accordance with the recommendations of the ESC, our patient would have benefited preferentially from a primary angioplasty. Primary angioplasty should be considered for patients seen late, within 12 to 48 hours of the onset of symptoms [5, 7, 8].

### **Conclusion**

Coronary reperfusion strategies are based on coronary angioplasty and fibrinolysis. The choice of one strategy over the other is based on the respective assessment of the benefit / risk ratio. Primary angioplasty is the safest and most effective technique, but fibrinolysis has the advantage of being simple to perform. To improve the quality of acute care for myocardial infarction, it is urgent for emerging countries to build care networks and establish quality indicators, in order to implement strategies for improvement of practices.

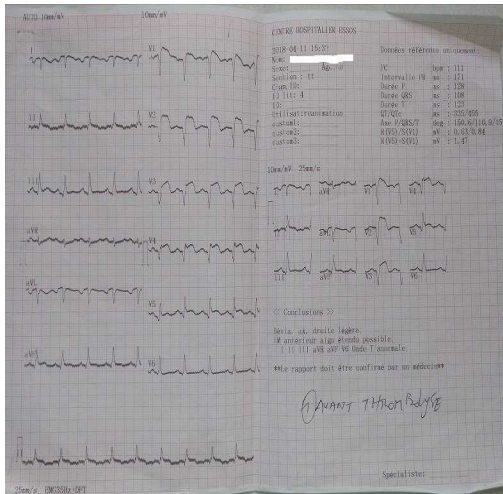
### **Conflicts of interests**

The authors declare no conflict of interests.

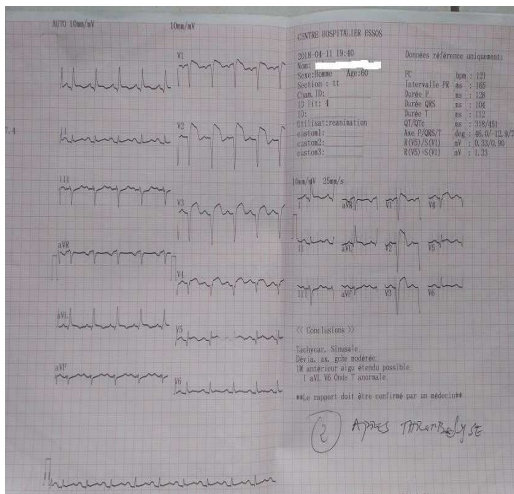
### **Contributions of the authors**

All authors contributed to the realisation of typescript. All authors contributed to the behaviour of this job. All authors also declare to have read and approved the finished version of the typescript.

**Figure 1:** Aspect of the ECG before thrombolysis



**Figure 2:** Aspect of the ECG after thrombolysis



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