

Epidemiological, Diagnostic, Therapeutic and Evolutionary Aspects of Late-Presenting ST Segment Elevation Myocardial Infarction (STEMI): About 50 Cases Collected in Four Cardiology Departments in Dakar

Momar Dioum^{1*}, Papa Guirane Ndiaye², Louise H el ene Ndiaye¹, Joseph Salavador Mingou³, Saguinatou D. AW¹, Serigne Cheikh Tidiane Ndao⁴, Mohamed Gazaal², Mouhamed C. Mboup⁴ and Maboury Diao⁴

¹Fann University Hospital Cardiology Department, Dakar, Senegal.

²Hospital General Idrissa Pouye, Dakar, Senegal.

³Hospital Aristide Le Dantec, Dakar, Senegal.

⁴Hospital Principal Dakar, Dakar, Senegal.

*Correspondence:

Momar Dioum, Fann University Hospital Cardiology Department, Dakar, Senegal, Tel: 00221776551883.

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ABSTRACT

Introduction: The management of ST Segment Elevation Myocardial Infarction (STEMI) in African environment is a real problem with many diagnostic and therapeutic delays. The objective of this study was to identify the factors that lengthen consultation times and to assess the overall management of patients received after the deadline.

Methodology: This was a multicentre, prospective, analytical and descriptive study from August 1st, 2021 to April 30th, 2022. Were included all patients with STEMI received after the 12th hour after the onset of pain in four cardiology centers in Dakar.

Results: Fifty patients were included, representing 11.21% of all the STEMI. The predominance was male (68%). The average age of patients was 56.74 years. The main risk factors identified were hypertension (46%), diabetes (42%), dyslipidemia (36%) and smoking (34%). Chest pain was the main symptom and occurred mainly between 8h and 22h in 72% of cases. The average time between pain onset and admission to cardiology was 134.22 hours. The reasons cited for the delay in consultation were related to the late onset of pain (32%), self-medication (28%), financial concern (20%), ignorance of severity (10%) and the fact that pain is tolerable (10%). The average time between first medical contact and ECG completion was 52.64 minutes. Coronary angiography in 35 patients (70%) had mostly triple-vessel disease (28%). PCI was done in 42% of patients. Overall, the evolution was favourable (88%). Two deaths were recorded during hospitalization, for a hospital mortality rate of 4%.

Conclusion: Delays in the diagnosis and management of STEMI are enormous with significant consequences. For a definitive solution to the various factors identified, it will be necessary to change the paradigm that will mainly involve awareness and communication and the creation of a coronary pathway.

Keywords

STEMI, Delay, Dakar.

Introduction

ST Segment Elevation Myocardial Infarction (STEMI) is the ultimate stage in the evolution of coronary disease with its severe

consequences in terms of morbidity and mortality [1,2]. It is often secondary to thrombotic coronary occlusion that requires rapid myocardial reperfusion, ideally within the first 12 hours, either by thrombolysis or by gold standard percutaneous coronary intervention (PCI) [3,4]. The achievement of this reperfusion in time poses many problems in our regions with many more patients

received after the 12th hour defining the late-presenting STEMI.

The main objective of this study was to evaluate the overall management of patients received after the deadline and the specific objectives were to study the socio-demographic profile of patients, to describe the factors that lengthen the consultation times, the therapeutic strategy adopted and to appreciate the morbidity and mortality during hospitalization.

Methodology

This was a multicentre, prospective, analytical and descriptive study from August 1st, 2021, to April 30th, 2022, a period of 9 months.

The study had included all patients with STEMI received after the 12th hour after the onset of pain in four cardiology departments in Dakar (Aristide Le Dantec Hospital, Dakar Main Hospital, General Idrissa Pouye Hospital, and Fann National University Hospital) during the study period. Patients who refused to participate in the study and those with incomplete records were excluded.

We analyzed the epidemiological data, the management times (the delay between pain and first medical contact, the delay between the first medical contact and the first ECG, the delay between pain and admission in cardiology), medical history and cardiovascular risk factors. Clinical data (chest pain, dyspnea and other signs) as well as paraclinical data such as electrocardiogram, biology and echocardiography data have been reported. Coronary angiography's data were also evaluated and a record of clinical progression during hospitalization was made.

The data were entered using the SPHINX DEMO V software and the analysis carried out using the SPSS (Statistical Package for Social Science) software version 20.0.

Results

Fifty patients were included, representing 11.21% of the STEMI during this period. The predominance was male (68%). The average age of patients was 56.74 years with extremes of 22 and 85 years. The enrolment rate was 80%, the majority had secondary and university education (32%) respectively. Most had a medium socio-economic level (48%). Most patients lived in urban areas at 80%. Personal cardiovascular history was represented by coronary artery disease (4.3%) and peripheral arterial disease (2%). The main risk factors identified were hypertension (46%), diabetes (42%), dyslipidemia (36%) and smoking (34%).

Chest pain was the main symptom and was typical in 90%. It occurred mainly between 8h and 22h in 72% of cases. The average time between onset of pain and admission to the cardiac department was 134.22 hours with a minimum of 12 hours and a maximum of 792 hours. The reasons reported for the delay in consultation were related to the late onset of pain (32%), self-medication (28%), financial concern (20%), ignorance of severity (10%) and the fact that pain is tolerable (10%). Figure 1 shows the causes of consultation delays. Patients consulted between one (78%), two

(16%) and three (6%) health facilities before being admitted to cardiology. Ambulance was the most common means of patient transfer (60%); she was medicalized 32% of the time. The average time between first medical contact and ECG completion was 52.64 minutes. Clinical features are shown in Table 1. Physical examination was normal in 80% of patients. Signs of left heart failure were noted in 20% of patients.

Table 1: Patient Clinical Data.

Patient characteristics	Headcount	Percentage (%)
Number	50	-
Middle age	56,74	
School enrolment rate	40	80
Medium socioeconomic level		48
Cardiovascular risk factors		
Hypertension	23	46
Diabetes	21	42
Dyslipidemia	18	36
Smoking	17	34
Chest pain		
Typical	45	90
Schedule 8H-22H	36	72
Delays		
Pain and admission in cardiology	134 hours	
Delay 1st medical contact and ECG completion	52.64 minutes	

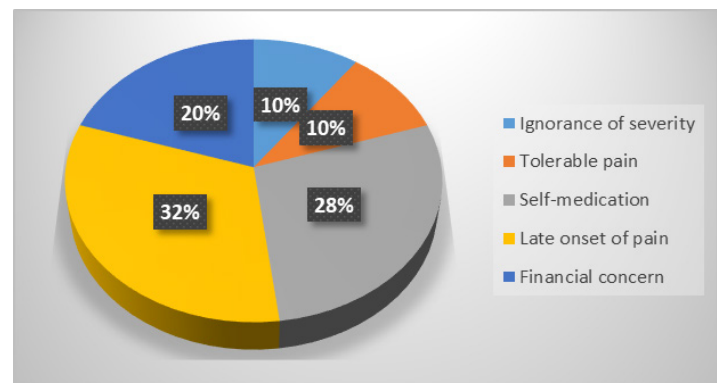


Figure 1: Causes of late consultation.

Troponinemia was positive for all patients. The electrocardiogram showed lesion of anterior territory in (66%) cases, inferior territory (28%) and lateral territory (6%). A necrosis Q-wave was present in 42 patients (84%). Rhythm and conduction disorders were present in 10 and 14% of cases respectively. Echocardiography had indicated wall motion abnormalities kinetics in 34 patients (68%). Left ventricle systolic function was impaired in 35 patients (70%). Left intraventricular thrombus was observed in 05 patients (10%) and pericardial effusion in 02 patients (4%). Coronary

angiography was made in 35 patients (70%) and found one-vessel lesion in 9 patients (18%), two-vessel lesions in 11 patients (22%) and three-vessel lesions in 14 patients (28%). Left anterior descending (LAD) artery was the most affected in 37% of cases. Twenty-one patients (42% of the total population and 60% of those who received coronary angiography) had PCI. The result was good in 81% of cases. A ventricular tachycardia complication was noted per procedure in a patient.

Overall, the outcome was favorable (88%). The average length of hospitalization was 07 days. Sixteen patients (32%) had enrolled in the cardiac rehabilitation program. We noted two cases of death, a hospital mortality rate of 4%.

Discussion

As everyone knows, The management of the STEMI is a race against the clock. The goal of the treatment is to ensure the reperfusion of the guilty artery within the first 12 hours [3,4]. Better current guidelines (American College of Cardiology Foundation/American Heart Association Task Force on Practice Guidelines) recommend that patients be treated primarily with PCI within 90 minutes of first medical contact (FMC) for patients who initially arrive at an hospital capable of performing angioplasty and within 120 minutes for a non-compatible hospital [5]. Knowing this disease with its high mortality and morbidity consequences [6,7], this approach to managing patients in strict time frames was associated with better patient survival [8,9]. Paradoxically, one thing was found in sub-Saharan Africa, the management of patients with STEMI was associated with very long delays with most patients who come out of time. In our series, the average time between pain onset and admission to the cardiology department was 134.22 hours and the average time between first medical contact and ECG completion was 52.64 minutes. These long delays have been found in most previous studies [10-12]. The rate of revascularization of patients by PCI was considered very insufficient at 42%.

The consequences of this delay in diagnosis and suboptimal management are not negligible with an alteration of the ejection fraction of the left ventricle noted in 70% of patients and a mortality rate of 4%.

In view of these consequences, it is important to improve diagnostic and management times. This may be achieved through a well-organized coronary care network and population awareness of coronary disease as it has been demonstrated in previous studies that the non-recognition of cardiac symptoms (44.6%) and misinterpretation of symptoms as non-serious (36.9%) were the main factors associated with delay [13,14].

Conclusion

Delays in the diagnosis and management of STEMI are enormous with significant consequences. For a definitive solution to the various factors identified, it will be necessary to change the paradigm that will mainly involve awareness and communication and the creation of a coronary pathway.

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