

Acute Coronary Syndromes in the Elderly: Multicentric Study about 76 Cases in 3 Cardiology Departments in Dakar

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Abstract

Background: Acute coronary syndromes (ACS) in the elderly are often a problem in their diagnosis and treatment, explaining a high mortality. Our study aimed to evaluate diagnostic, therapeutic and evolutive aspects in 3 cardiology departments of Dakar. **Patients and Methods:** We conducted a multicentric, retrospective and descriptive study during 2 years from January 1, 2017 to December 31, 2018. All patients older than 75 years admitted for acute coronary syndromes were included. The diagnosis was based on clinical signs with typical electrocardiographic changes and troponin assays. **Results:** Seventy and six patients (76) were enrolled. The prevalence of ACS in the elderly was 2.5% of all hospitalized patients and 21.8% of all ACS. The average age was 78.76 years. The sex ratio male/female was 1.71. The cardiovascular risk factors were essentially physical inactivity (97%) and hypertension (6.84%). Angina pain was the master symptom, but the pain was atypical in the most cases (52.63%). The second sign was dyspnea (46.05%). The average admission time for patients with STEMI (ST-segment elevation myocardial infarction) was 27 hours. Among these patients, 67% had a STEMI, 24% had NSTEMI (non-ST segment elevation myocardial infarction) and 9% had an unstable angina. Four patients had a thrombolysis with an average time of 5.75 hours. The thrombolysis was not successful for all patients. Eighteen (18) patients had a percutaneous coronary intervention (PCI), but only two had a primary PCI. DES (drug-eluting-stents) were the most used stents (55.5%). Eighty and nine (89%) of PCI were successful. Complications were essentially hemodynamic and rhythmic (26.6%). In-hospital mortality was 14.47%; n = 11. **Conclusion:** Our study revealed a delay in diagnosis and management of ACS in

the elderly. Reperfusion therapy was less practiced in our context and the prognosis was poorer with a high mortality.

Keywords

Acute Coronary Syndromes, The Elderly, Dakar, Senegal

1. Background

Acute coronary syndromes (ACS) are more frequent in the elderly. The incidence is 2% in people younger than 60 years, but it is higher from 6% to 10%, between 75 and 84 years [1]. The risk is higher in the elderly.

In western countries, the international GRACE (Global Registry of Acute Coronary Events) found a higher prevalence of 25% [2]. There is a lack of data in sub-Saharan Africa despite the increase in life expectancy.

This is a serious pathology with severe and diffuse lesions, and this is the first cause of death in the world. Age is a predictive factor of complications and of a higher mortality [3]. In people older than 85 years, the mortality is three times higher [4].

Clinical signs are often atypical with comorbidities, impacting the prognosis. It is also a population with a high risk of ischemic events and hemorrhagic complications with reperfusion and antithrombotic therapy.

The main objective of our study was to evaluate the management of all ACS in the elderly people older than 75 years in 3 major cardiology departments of Dakar.

The specific objectives were:

- To study epidemiological aspects of acute ACS of people older than 75 years in Senegal.
- To appreciate clinical, paraclinical, therapeutic and evolutive aspects of ACS in the elderly.
- To analyze prognostic factors of mortality.

2. Patients and Method

We conducted a multicentric, retrospective, descriptive and analytic study in the department of cardiology of 3 major hospitals in Dakar: general hospital Idrissa Pouye, Aristide Le Dantec hospital and Fann hospital. The study took place over 2 years from January 1, 2017 to December 31, 2018.

We enrolled all the patients older than 75 years admitted for ACS who consented to participate. ACS was defined by association of typical or atypical chest pain with specific ECG changes in 2 contiguous leads and troponin assay.

We analyzed epidemiological data (age, sex), cardiovascular risk factors (hypertension, diabetes, smoking, family history of coronary artery disease, dyslipidemia, menopause) and personal cardiovascular medical history (angina pectoris, PCI, coronary artery bypass graft) were analyzed. Clinical data (chest pain, dyspnea,

palpitations), paraclinical (electrocardiogram, biology, echocardiography, coronary angiography), therapeutic (thrombolysis, PCI) and evolutive data were also recorded.

Patient records and reports of coronary angiography and/or angioplasty allowed us to collect data. Studied parameters were recorded on a survey form and entered with ODK software. Data analysis was realized with STATAI software. Univariate analysis provided the determination of every variable's distribution. Multivariate analysis provided the research of prognosis factors.

The chi-square test was used. A p-value less than 0.05 (≤ 0.05) was statistically significant.

3. Results

Among 4230 patients admitted in the 3 departments during the period of study, 503 were admitted for ACS and 110 were older than 75 years. The prevalence of ACS in the elderly was 2.5%. After exclusion of incomplete medical reports, 76 cases were included.

The average age was 78.76 ± 3.1 years [75 - 94 years]. There was a male predominance (sex-ratio = 1.71). Socio-economic level was low; only 27% had a health insurance.

Cardiovascular risk factors were essentially physical inactivity (74; 97%), hypertension (28; 36.84%), diabetes (24; 31.58%) and dyslipidemia (10; 13.16%). All the patients had many cardiovascular risk factors, at least 2. Six patients (7.89%) had already a previous ACS and 3 had a percutaneous coronary intervention (PCI) in their medical history (**Table 1**).

The average time of admission for STEMI was 27 hours after onset of pain. Eleven (11 patients) have been admitted in the 12 first hours, but all the other patients have been admitted after the twelve hours (**Figure 1**).

Most all the patients (56; 73.68%) were referred. Only, 20 patients (26.31%) were directly admitted in the emergency department of the hospital.

Clinical signs were essentially chest pain for 72 patients (94.7%). The pain was atypical in 52.63% cases. Twenty-six (26, 34.21%) patients had a left-sided heart failure (**Table 2**).

Electrocardiogram findings associated to troponin assay allow to classify the diagnosis: STEMI for 51 patients, NSTEMI and unstable angina for 25 patients (33%). Anterior territory was the most represented (23; 45.1%) followed by inferior territory (15; 29.4%).

Echocardiography was realized for 62 patients and showed left ventricular kinetic disorders essentially hypokinesia in 50 cases (80.64%). The average left ventricular ejection fraction (LVEF) was 47.82% [18% - 77%]. It was reduced for 38 patients (61.3%) (**Table 2**).

PCI was realized for 25 patients (32; 8%) and was abnormal for all these patients. Radial access was the most used (19 patients, 76%). For the other patients (6, 24%), it was the femoral access. The most affected artery was the left anterior

descending artery (LAD) in 56% cases followed by circumflex artery (24%) and right coronary artery (8%). Twenty-two patients had a single-vessel disease (88%). Two patients had a three-vessel disease (8%) and only one patient had a two-vessel disease (4%). Seven patients had calcified lesions (28%). **Figure 2** showed PCI pictures of a patient with a two vessel-disease.

Only four patients had a thrombolysis (8%) for STEMI. Streptokinase was the only thrombolytic. All the thrombolysis failed (**Table 3**).

Eighteen patients had a PCI (72%). Two patients had a primary PCI and only

Table 1. General characteristics of patients.

General characteristics	Number	Percentage (%)
Total number of patients	110	-
Prevalence	-	2.5
Enrolled patients	76	
Patients with STEMI	51	67
Patients with other ACS	25	33
Average age (years)	78.76 ± 3.1	-
Sex-ratio	1.71	-
Physical inactivity	74	97
Hypertension	28	36.84
Diabetes	24	31.58
Dyslipidemia	10	13.16
Past medical history of CAD	06	7.8
Past medical history of ischemic stroke	03	3.9
Past medical history of PAD	03	3.9

STEMI: ST-segment elevation myocardial infarction; ACS: Acute coronary syndromes; CAD: coronary artery disease; PAD: peripheral arterial disease.

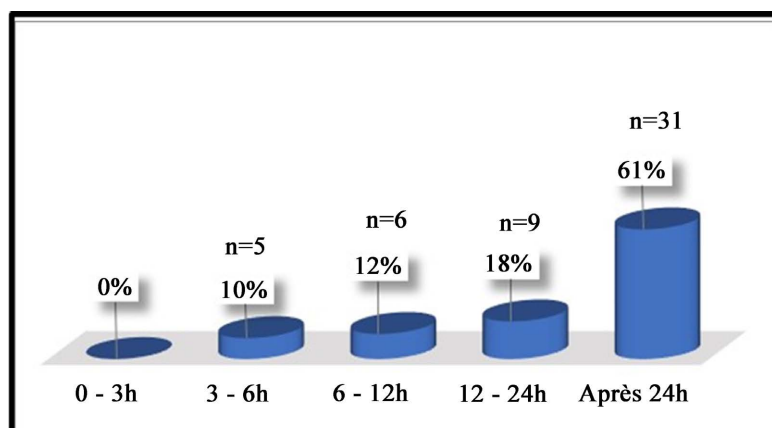


Figure 1. Repartition of patients (admitted for STEMI) according to the consultation time (n = 51).

Table 2. Clinical and paraclinical characteristics of patients.

Clinical and paraclinical characteristics	Number	Percentage (%)
Chest pain	72	94.7
Typical	32	42
Atypical	40	52.63
Dyspnea	35	46
Palpitations	5	6.58
Left-sided heart failure	26	34.21
Right-sided heart failure	03	3.95
ECG territories		
Anterior	23	45.1
Inferior	15	29.4
Apical and lateral	10	19.6
Reduced LVEF	38 (n = 62)	61.3
Cavity dilation	13 (n = 62)	21
Left ventricular thrombus	02 (n = 62)	03
LAD disease	22	56
Circumflex artery disease	06	24
RCA disease	02	8
Single-vessel disease	22	88
Two-vessel disease	1	04
Three-vessel diseases	2	08
Calcified lesions	7	28

LAD: left anterior descending artery; Cx: Circumflex artery; RCA: right coronary artery; LVEF: left ventricular rejection fraction; ECG: electrocardiogram.

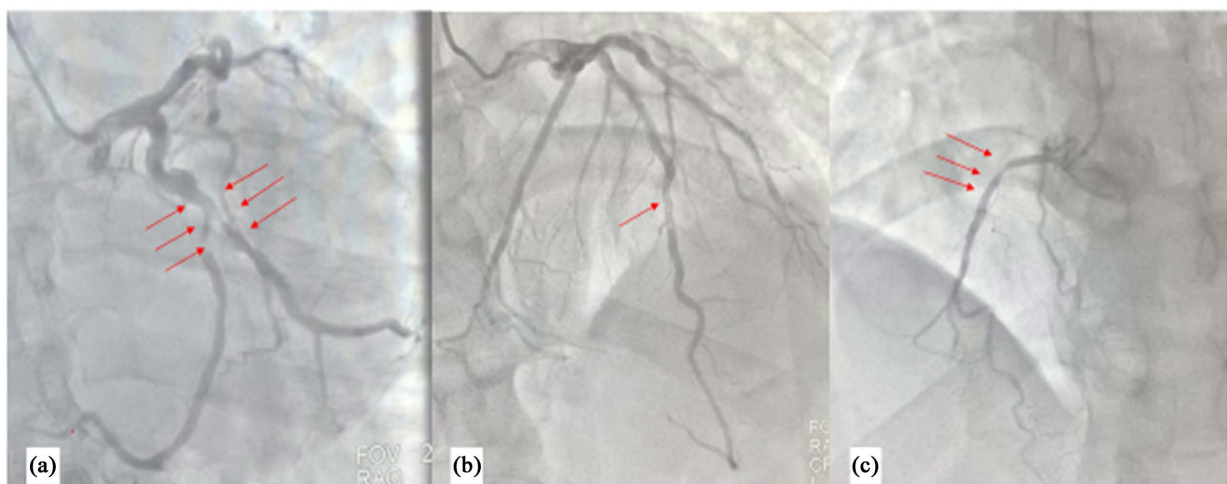


Figure 2. Percutaneous coronary intervention pictures of a patient. (a) Bifurcation lesion of circumflex artery before the first marginal artery classified Medina (0.1.1) with a proximal aneurysm. (b) No significant plaque on left anterior descending artery. (c) Short stenotic lesion (less than 10 mm) of right coronary artery.

Table 3. Summary of therapeutic and evolutive data.

Therapeutic and evolutive data	Number	Percentage (%)
Thrombolysis	04 (n = 51)	08
PCI	18 (n = 25)	72
Primary PCI	2	11
Rescue PCI	1	5.5
Scheduled PCI	15	83.3
Success	16	89
Average length of hospitalization	12 (1 à 25) jours	
Favourable developments	31	41
Complications	45 (n = 76)	59.2
Left heart failure	26	57.78
Cardiogenic shock	02	4.44
Complete atrio-ventricular block	3	13.5
In-hospital mortality	11	14.47

PCI: percutaneous coronary intervention.

one patient had a rescue PCI. PCI was planned for all the other patients. Drug-eluting-stents (DES) were the most used (10; 55.5%); the other 8 patients (44.4%) had bare-metal-stents (BMS). PCI was successful for 16 patients (89%).

The average time of admission was 12 days [1 - 25 days]. The outcome was good without complications for 31 (41%) patients. Among these patients, there were 18 cases of STEMI (35% of all STEMI) and 13 cases of other ACS (52% of all other ACS). But, 45 patients (59%) had some complications. Hemodynamic complications were the most frequent, essentially left-sided heart failure for 26 patients (57.78%), cardiogenic shock for 2 patients with STEMI (4.44%).

Eleven (11) patients died during their hospital stay; 9 patients with STEMI (17.6% n = 51) and 2 patients with other ACS (8% n = 25). No predictive factor of mortality has been identified (**Table 3**).

4. Discussion

According to our results, ACS in the elderly are a real entity. Our study found a prevalence of 21%. In western countries, the international GRACE (Global Registry of Acute Coronary Events) found a higher prevalence of 25% [2]. This difference can be explained by the higher life expectancy and more resources for diagnosis.

There was a male predominance (63%, sex ratio of 1.71). This male predominance was noted in Tunisian registries ESTIM SAMU03 (94.8%) and FAST-MI (79.8%) [5], also in national north American Registry of Myocardial Infarction (NRM) with a rate of 73% [6]. However, a French study found a female predominance (68.75%) [7].

There were many cardiovascular risk factors in these patients. At least, a pa-

patient had two risk factors. In Africa, the presence of at least one cardiovascular risk factor is frequent for ischemic cardiomyopathy and increasing in the number of risk factors is a predictive factor of coronaropathy severity [8].

The average time of admission for patients with STEMI in cardiology was long: 27 hours. This time exceeds the delays of 15 hours in NOBILA's study [9] and 14.5 hours in SARR's study [10]. These long delays of admission in our countries constitute a real problem for a good medical management of our patients. This can be explained by the atypical symptoms in the elderly (atypical chest pain, dyspnea) but also the negligence or the unconsciousness of the severity of symptoms by the medical staff. This extends the delays of management of patients [11].

Transmural myocardial infarction with anterior localization was the most frequent (43%). This anterior territory predominance was frequent in African literature [12] [13].

Troponin assays is essential for diagnosis of ACS in particular the atypical forms in the elderly. However, renal failure (frequent in the elderly) can cause a troponin elevation without any ACS [14].

PCI was realized in 32.8% cases. This relative low rate can be explained by the absence of health insurance for most patients. Radial access was the most used in 76% cases. It is recommended even for old patients. It permits to avoid some difficulties caused by vascular loops and to reduce the hemorrhagic complications frequent in the elderly.

There were essentially single-vessel lesions. Instead, APPROACH study found a two-vessel disease predominance in 60% patients older than 80 years [15].

Reperfusion strategies (PCI or thrombolysis) were less used. Four patients had a thrombolysis and eighteen had a PCI. Most of patients had only a medical treatment.

In ACOS registry [16], for ACS in the elderly, the hospital mortality was 12.5% in the group with medical treatment alone, but 6% in the group with invasive treatment. Invasive strategy was better in this category of population, but usually this strategy is less used in the elderly because of an overestimation of the hemorrhagic risk and an underestimation of the ischemic risk.

The hospital mortality in our study was 14.47%. The mortality is less important in western countries with a rate of 7% to 10% according to data from literature [17].

This difference can be explained by long delays of admission in our hospitals and low use of reperfusion strategies like PCI and thrombolysis.

The limitations of the study were:

- Retrospective character.
- Short duration.
- The absence of coronary angiography for all patients.

5. Conclusion

Our study revealed a delay in diagnosis and management of ACS in the elderly.

Reperfusion therapy was less practiced in our context and the prognosis was poorer with a high mortality.

Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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