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ORIGINAL ARTICLE

# Contemporary retrospective analysis of acute coronary syndrome. An Egyptian study



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## KEYWORDS

Acute coronary syndrome;  
PCI;  
MACE

**Abstract** *Background:* Cardiovascular disease is the leading cause of death in Egypt and worldwide, placing great strain on the world's health systems. This is one of the few Egyptian registries dealing with patients with acute coronary syndrome admitted in critical care department, Cairo University.

*Methods:* This is a retrospective non-controlled cohort study of patients with acute coronary syndrome admitted from January 2010 to December 2012. Retrospective analysis of these patients data were retrieved through reviewing written paper and electronic database.

*Results:* A total number of 503 patients were enrolled in our study. The mean age was  $57.2 \pm 10.4$  years. Their pain duration was  $14 \pm 24.4$  h. Average length of stay was ( $7 \pm 4.4$  days). Primary percutaneous coronary intervention (PCI) was done to 154 patients (30.6%), while we had 105 elective PCI procedures (20.9%). Major adverse cardiac events (MACE) were higher in patients with higher age (60 years vs 56.7 years  $P$  value 0.021), STEMI (25.7% vs. 18% in UA/NSTEMI  $P$  value 0.002), higher CKMB levels ( $157\text{iu/l}$  vs  $89\text{iu/l}$   $P$  value 0.019), and higher Killip class upon presentation (class III-IV 64.9% vs 2.2% class I-II  $p < 0.001$ ). Patients with UA/NSTEMI who were treated conservatively developed statistically significant higher incidence of MACE as compared to those treated interventionaly (23.4% vs. 13.5%  $P$  value 0.031). Patients with STEMI who were treated without intervention have significant higher incidence of MACE than those who were treated interventionaly (15.4% vs. 5.5%  $p = 0.46$ ).

*Conclusion:* 1. Higher incidence of MACE was observed in the higher age group, higher levels of cardiac biomarkers, and higher Killip class. 2. Outcome was affected by early interventional treatment in all patient groups.

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## 1. Introduction

Effective treatment of acute coronary syndrome (ACS) requires a highly functioning health care delivery system, driven by valid, reliable measurement for continuous improvement. Registries have been used to identify concrete practices associated with improved patient outcomes, identify

prevalence of substandard or dangerous treatment patterns and quantifying racial and socioeconomic disparities in both treatment patterns and health outcomes. Systematic collection of data on health outcomes is a fundamental first step toward strengthening hospital care, and might be especially helpful in low and middle income countries (LMICs), where resource constraints are a major concern. Registries provide both evidence for the design and prioritization of improvement strategies and a means to evaluate the effects of strategies after implementation. Any study should describe the challenges and opportunities identified through the ACS course with a focus on the lessons learned through the process of registry development and operationalization [1,2].

## 2. Aim of the work

The aim of the work was to determine our local performance in the management of acute coronary syndrome patients either treated by conservative or invasive strategy and to find out clinical or procedural risk factors that could result in poor outcome in terms of high major adverse cardiac events and mortality rates.

## 3. Patients and methods

The material of the registry included 503 patients who were admitted to the Critical Care Department, Cairo University with ACS between January 2010 and December 2012. Patient data were retrieved through reviewing written papers and electronic database i.e. patients' files, and reviewing PCI reports. Data collection was focused on patients' demographics, risk factors for CAD, percutaneous coronary intervention indications, baseline clinical status and Killip class [3] & associated medical conditions, angiographic & PCI procedure details, angiographic & clinical Success of PCI procedure, in-hospital MACE (Major Adverse Cardiovascular Events), Risk factors associated with poor outcomes for in-hospital complications and MACE. Inclusion criteria were: all patients diagnosed to have ACS [A spectrum of clinical conditions characterized by acute chest pain or myocardial ischemia. ACS includes myocardial infarction with ST-segment Elevation (STEMI), myocardial infarction in the absence of ST-Segment Elevation (NSTEMI) and unstable angina]. An initial clinical subdivision of ACS is made on the presence or absence of ECG ST-segment Elevation. All clinical events were reviewed and documented. The clinical end points were the in hospital MACE defined as the composite of death, myocardial infarction [ST elevation MI (STEMI) and non ST elevation MI (NSTEMI)], need for Revascularization: PCI or CABG for previously vascularized patients.

### 3.1. Statistical methods

Data were verified and coded prior to analysis; all quantitative data were expressed as mean  $\pm$  SD. All qualitative data were expressed as frequency tables. Chi-Square test was used to confirm the presence of association between different categorical data. Student- t test was used to compare between quantitative data.

To better understand the predictors of mortality, two analyses of multiple logistic regression models were performed: one to identify demographic factors and associated in-hospital interventions, and another to identify the influence of major complications on death. *P* value  $<$  0.05 was considered significant. Analysis has been performed using SPSS (statistical package for social science).

## 4. Results

### 4.1. Baseline demographic, clinical and laboratory data (Table 1)

A total number of 503 patients were enrolled in our registry. The study included 381 males (75.7%), 122 females (24.3%) with a mean age  $57.2 \pm 10.4$  years. Their mean chest pain duration was  $14 \pm 24.4$  h. Average length of stay was  $7 \pm 4.4$  days. Of the total number of patients, 301 patients were diagnosed as UA/NSTEMI (60%) [171 patients (34%) had UA and 130 patients (26%) had NSTEMI] and 202 patients as STEMI cases (40%).

Hypertension was the most prevalent risk factor (57.3%), followed by smoking (52.1%) then diabetes (49.9%) and dyslipidemia (23.7%). We did not find any statistically significant difference between the two study groups (STEMI&UA/NSTEMI) regarding the prevalence of Diabetes mellitus (*p* 0.27), family history of CAD (*p* 0.52) or dyslipidemia (*p* 0.32) yet there was a statistically significant difference between the 2 groups as regards the prevalence of Hypertension (*p*  $<$  0.001), incidence of smoking (*p*  $<$  0.001) & past history of CAD (*p*  $<$  0.001).

Concerning the baseline hemodynamic parameters, we found a statistically significant lower mean systolic blood pressure (SBP), lower mean diastolic blood pressure (DBP), lower mean arterial pressure (MAP) in the STEMI group when compared to UA/NSTEMI group, yet there was no statistically significant difference between the two groups regarding mean HR. There was a statistically significant higher Killip class in STEMI group compared to UA/NSTEMI group. ( $1.5 \pm 1.1$  vs.  $1.4 \pm 0.8$  *p* value 0.033).

### 4.2. Procedural data (Table 2)

Out of the 503 patients included in our registry, 259 (51.5%) patients were managed interventional and 244 (48.5%) patients were managed conservatively. Of those patients who were treated conservatively, thirty-nine patients were admitted with STEMI (16%) and 205 patients with UA/NSTEMI (84%). The thirty-nine STEMI patients didn't have interventional treatment during their icu stay due to one of the following causes: Successful thrombolytic therapy, delayed presentation, or death shortly after presentation. Thrombolytic therapy was used in 20 patients; seven out of them were diagnosed as thrombolytic therapy failed cases, so they were subjected to early coronary intervention. Primary intervention was done in the 1st day while delayed interventions were done within  $7.1 \pm 0.7$  days. Seventy patients were planned for CABG (13.9%). There were 905 vessels with 1216 affected segments in the studied patients & not all lesions were subjected to PCI trial. Untreated segments were either of small calibers,

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