

## **Clinical profile of patients presenting with acute ST elevation myocardial infarction**

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### **Abstract**

**Objective:** To identify risk factors and clinical profile of the patients presenting with acute ST Elevation Myocardial Infarction (STEMI).

**Methods:** This prospective observational study was carried out from April to September 2005. The 300 consecutive patients presenting with typical electrocardiographic changes of acute ST elevation myocardial infarction to the Emergency Department of our hospital were recruited in the study. The physician (a fellow) on duty assessed the patients and documented the predefined independent variable and patients characteristics. The clinical history revealed information about age, gender, risk factors, modes of presentation and duration of symptoms. The details of physical examination including anthropometric data, vital signs and complete systemic evaluation were recorded. The regions of infarction and rhythm disturbances were also documented.

**Results:** This study was predominantly male dominated 234 (78%) patients, with a mean age of  $58 \pm 11$  years. Cigarette smoking was identified as a major risk factor in 138 (46%) patients. The least common risk factor i.e. obesity (BMI>25) was present in 12 (4%) patients.

Majority of the patients, 282 (94%) presented with typical chest pain and within first six hours of onset of symptoms 216 (72%). Most of the patients 240 (80%) had normal examination at presentation and 60 (20%) had signs of Left Ventricle Failure.

Isolated inferior and anterior myocardial infarction was noted in 138 (46%) and 48 (16%) patients respectively. Normal electrocardiographic rhythms at presentation were observed in 282 (94%) patients.

**Conclusion:** Acute myocardial infarction was more common in adult males with smoking being the major risk factor. Most of the patients presented with typical chest pain and within six hours of onset of symptoms. The majority of patients demonstrated normal physical examination and cardiac rhythm. Inferior myocardial infarction was the most common lesion (JPMA 60:190; 2010).

## Introduction

Significant differences in the prevalence of coronary artery disease exist with respect to gender, age and ethnicity. Cardiovascular diseases have emerged as a major health burden in developing countries.<sup>1</sup> Cardiovascular risk factors for ischaemic heart disease and acute myocardial infarction are on the rise in Pakistan. People of Indo-Asian origin have a high burden of coronary artery disease and the latter is now the leading cause of death in the Indo-Pakistan subcontinent.<sup>2,3</sup> The data regarding risk factors and clinical profile of the patients presenting with acute STEMI in Pakistan Armed Forces hospitals is lacking. This formed the impetus to perform this study.

## Patients and Methods

This prospective observational study was conducted in our tertiary care cardiac hospital from April to September 2005. The 300 consecutive cases presenting with typical electrocardiographic changes of acute ST Elevation Myocardial Infarction were recruited. A formal written informed consent of the patients was obtained for participation in the study. The final diagnosis of acute myocardial infarction was based on the presence of the followings criteria: ischaemic chest pain for at least 30 minutes, electrocardiographic evidence of ST elevation myocardial infarction and an increase in serum creatine kinase level to more than two standard deviations above the upper limit of the normal range, and muscle-brain (MB) isoenzyme fraction of more than 4%.<sup>4</sup>

We recorded the demographic data including age, gender, anthropometric measures and the following independent variables of the patients in a predefined performa. The traditional cardiovascular risk factors (smoking, hypertension, and diabetes mellitus) were noted. The two modes of presentations (typical- chest pain, sweating and atypical- epigastric/neck/shoulder pain, painless) and duration of symptoms onset (0-6, 6-12, 12-24 and > 24 hours) were documented. Clinically the patients were categorized into having normal physical examination and signs of Left Ventricle Failure (S3/gallop rhythm and basal crackles). The regions of infarction (anterior, inferior and combination), rhythm disturbances (sinus vs. atrioventricular block) were also documented. Statistical analyses were performed by the use of a commercial software package. Descriptive analysis was mainly used.

## Results

The 300 consecutive patients presenting with acute STEMI were studied. This study was predominantly male dominated (approximately 78%), with a mean age of  $58 \pm 11$  years. The ages ranged between 42 to 82 years. The major risk factors are shown in the Figure-1.

Most of the patients (94%) presented with typical

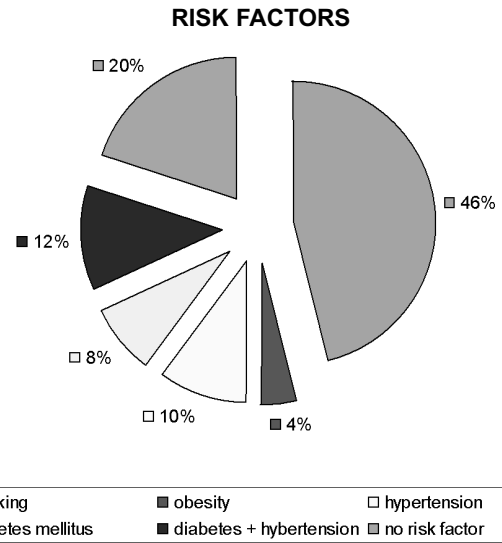


Figure-1: Major risk factors.

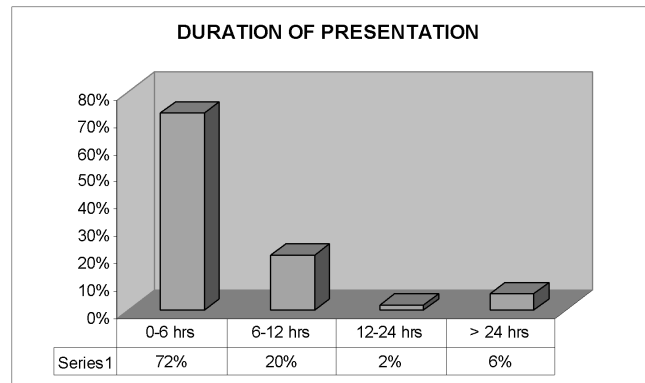


Figure-2: Duration of symptoms.

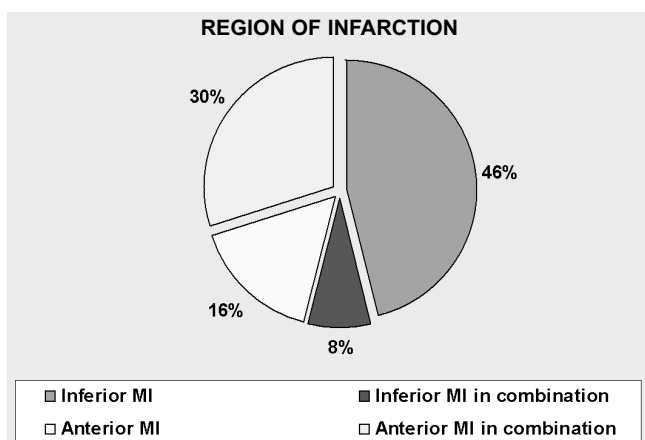


Figure-3: Regions of infarction.

symptoms of myocardial infarction, whereas only (6%) had atypical symptoms. The duration of presentation after symptom onset is shown in the Figure-2.

Majority of the patients 240(80%) had normal systemic examination at presentation and signs of Left Ventricle Failure (S3/gallop rhythm and basal crackles) were present in 60(20%) patients. The regions of infarction are shown in figures 3.

At presentation only 18 patients (6%) had AV blocks and 282 patients (94%) had normal ECG rhythms.

## Discussion

The relative importance of coronary heart disease varies across regions and from country to country.<sup>5</sup> The disease is very common in westernized populations, affecting the majority of adults over the age of 60 years, but it is on rise in developing countries as well. The mean age of the patients in this study was  $58 \pm 11$  years as compared to  $52 \pm 10.8$  in a study reported by Maqbool Jafary et al<sup>6</sup> and  $62 \pm 5$  in COURAGE trial<sup>7</sup> conducted in USA. This signifies that Pakistani patients are relatively younger as compared to the West. Gender differences in coronary heart disease risk are also important.<sup>8</sup> Middle-aged men have a 2 to 5 times higher risk than women, but this risk ratio differs between populations.<sup>9</sup>

There was a clear male preponderance (78%) in our study, which is in agreement with previous studies, suggesting that it is predominantly a disease of men.<sup>10,11</sup> Females represented only 22% of patients. Although this is a much higher frequency compared with data from India i.e. 5%.<sup>12</sup> All reported data show that smoking is the commonest risk factor encountered in young patients with acute myocardial infarction.<sup>13-16</sup> Our study is not an exception, as smoking was indeed the leading risk factor present in 46% of the patients. The male preponderance and smoking being the major risk factors has been well documented in many local studies.<sup>17-20</sup> However in contrast to our study smoking is not a major risk factor in the COURAGE trial (29% vs. 46%).<sup>7</sup>

Diabetes mellitus alone was a risk factor in 8% patients and combined hypertension and diabetes mellitus were seen in 12% patients. Diabetes mellitus is well known to have an adverse influence on the prognosis of patients with acute myocardial infarction.<sup>21</sup> Similar to Western studies,<sup>13,22</sup> we also found that inferior wall myocardial infarction was the most common factor. The majority of patients (94%) presented with typical symptoms of chest pain in accordance with another study (98%) conducted by Khan et al.<sup>23</sup> Over one third of patients presented beyond six hours of onset of symptoms as compared to 28% in our study.<sup>23</sup>

There are several limitations of the study. Medium and longer term outcomes of these patients are not available as are the details of angiographic studies which were done subsequently in some patients as a part of investigations.

## Conclusion

In spite of the limitations highlighted above, it seems still reasonable to draw some conclusions about the emerging profile of the patients presenting with acute STEMI. Amongst the Pakistani population, the most common sufferers of acute myocardial infarction are adult males. Cigarette smoking is the major risk factor. Inferior myocardial infarction is the most common site. The most important aspect that can be inferred is that majority of the patients present with typical symptoms of chest pain in a reasonably early time period (six hours) after onset of symptom, having stable haemodynamic status. Hence efforts should be made at national level to offer primary percutaneous coronary intervention to majority of patients presenting with acute STEMI.

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