

Frequency of In-Hospital Outcomes in patients with Acute Myocardial Infarction who have had a Premature Coronary Artery Disease - Single Center Experience

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ABSTRACT

Background: In underdeveloped nations like Pakistan, a recent estimate showed that the CVD deaths ratio is about 80%. This increasing prevalence of heart disease is partly due to industrial and technical advancements, which are linked to economic and social revolutions that have resulted in lifestyle changes and sedentary behavior.

Aim: To determine frequency of in-hospital outcomes in patients with AMI who have had a premature coronary artery disease.

Methodology; Study design; Descriptive case series. Setting; Department of Cardiology, D.G. Khan Medical College and teaching hospital, D.G.Khan. Duration; Six months. Results: The findings revealed that male patients made up 96 (66.2%) of the 145 research cases, while female patients made up 49 (33.8%). Our study participants were 47.67 ± 7.59 years old on average (minimum age 35 years and maximum 63 years). Before arriving at the hospital, the average time was 113.79 ± 54.36 minutes. In our research, 19(13.1%) of the individuals died, 36(24.8%) experienced post-MI angina, and 29(20%) had a cardiogenic shock.

Conclusion: According to our findings, patients with early coronary artery disease and acute myocardial infarction had a significantly higher likelihood of poor clinical outcomes.

Keywords: Acute myocardial infarction, mortality, and premature coronary artery disease.

INTRODUCTION

Ischemic heart disease is the most common cause of death and morbidity around the world. In middle-income countries, myocardial infarction is more common and commonly acknowledged that males are affected more than females. Atherosclerotic coronary artery diseases can present itself either as acute myocardial infarction or unstable angina. The life threatening manifestation is acute myocardial infarction and is one of the most common cause of admissions of hospital emergencies.

Over the last two decades, the rate of mortality after admission for MI has dropped about 30% but still remains high. The cardiovascular risk factors for the myocardial infarction are increasing in Pakistan. In Pakistan 18% of adults suffer from chronic hypertension while tobacco use in different forms and obesity are also increasing⁵.

Coronary artery disease at young age have upsetting effects on a patient, family, and society as well. The productive workforce aged 35–65 years may be influenced by premature coronary artery disease. Around the world, heart diseases are rising 5–10 years earlier in Asian countries than in other populations. In Indian population 53 years is the mean age for first presentation of acute myocardial infarction⁶. In Indians, the incidence of coronary artery disease in the young ones has been reported to be 12%–16%. In India, half of the CVD-related deaths (52%) occur below the age of 50, and about 25% of acute myocardial infarction (MI) occurs under age of 40⁶.

Cardiogenic shock has been recorded in 12% of young patients with early coronary artery disease. According to Khan et al, early coronary artery disease is associated with an 11.8% death rate, while post-MI angina is associated with a 10.46% mortality rate. It is the moral responsibility of the nation to prevent deaths, particularly among young people. Moreover, premature coronary artery disease affects productive workforce aged 35–65. So, we should plan for primary prevention of coronary artery disease rather to workout plans to treat full blown disease.

Because no such study has been undertaken in our population, this study has been planned to address the in-hospital

outcome of premature CAD in AMI patients. The findings of this study were compared to those of previously published literature from other countries, resulting in a baseline database of our local population. Once the prevalence of these adverse effects is determined, the results of this study will highlight the magnitude of the problem in our population and assist clinicians in managing these young patients. National economies benefit from lower morbidity and mortality rates in this age group.

MATERIAL AND METHODS

Design of study was descriptive case series conducted in the Department of Cardiology, D.G. Khan Medical college and teaching hospital, D.G.Khan for a period of study completion was six months. Sample size was calculated with help of formula: $n = z^2 p q/d^2$, where $z=1.96$, $p=10.46\%$ ³, (hypothesized frequency of post MI angina which is least proportion) with $d=5\%$. Thus sample size $n = 145$ patients. Consecutive non-probability sampling technique was used.

Criteria for Acceptance

➤ Both men and women of various age groupings (Male 25-55 years and female 25- 65 years).

➤ Patients of AMI

Exclusion Criteria;

➤ Patients who have had a past heart attack.

➤ Chronic kidney disease patients and cirrhotic liver disease (on the laboratory report and ultrasound).

➤ Advanced heart failure patients (assessed clinically).

➤ Previous history of coronary artery bypass surgery.

➤ Patients who refuse to participate in research.

Data collection procedure: This study's findings will be recorded using a specific proforma. Patients meeting the study's criteria of inclusion and exclusion at the Department of Cardiology of CPEIC, Multan. To perform this study, authorization was obtained from the Institutional Ethical Committee. The patients'/attendants' informed consent was obtained by describing the study's aims, assuring them of the confidentiality of the information submitted, and assuring them that there was no risk to the patient while participating in the study.

Data Analysis: Data analysis was done by SPSS-20. Calculation of mean and standard deviation were done for the age and the

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period preceding presentation. For categorical data such as age groups, gender, mortality, cardiogenic shocks, and post-MI angina, percentages and frequencies were tabulated.

RESULTS

The participants in this study were 145 persons with pre coronary artery disease who experienced an acute myocardial infarction and met the inclusion and exclusion criteria. The 145 individuals in the study were divided into 96(66.2%) male patients and female patients were 49(33.8%) (Table 1).

The average age of our study participants was 47.67 ± 7.59 years (with minimum age was 35 years while maximum was 63 years). Male patients had a mean age of 45.77 ± 5.98 years, while female patients had a mean age of 51.39 ± 8.99 years ($p = 0.000$). The bulk of our research cases, 77(53.1%), belonged to the age group of 25 to 45 years old, according to our findings (Table 2). Before arriving at the hospital, the average time was 113.79 ± 54.36 minutes. The minimum and maximum time duration before the presentation were around forty-five minutes and two forty minutes respectively. According to our findings, the majority of our research cases, 77(53.1%), took more than 90 minutes to arrive at the hospital (Table 3).

In our study, 48(33.1%) of the cases of diabetes, associated with hypertension were 58(40%), 39(26.7%) were smokers, 67(46.2%) were having a family history of IHD and obesity in 49(33.8%) of patients. In this research 19(13.1%) of the participants died, 36(24.8%) developed post-MI angina, and 29 had cardiogenic shock (20%). In-hospital outcomes were stratified based on gender, age, time prior presentation, diabetes, hypertension, family history of ischemic heart disease, smoking, and obesity (mortality, post-MI angina, and cardiogenic shock).

Table 1: Gender distribution among study cases (n=145)

Gender	n	%age
Male	96	66.2
Female	49	33.8
Total	145	100

Table 2: study cases according to age distribution (n=145)

Age groups (Year)	n	%age
25 – 45	77	53.1
46 – 65	68	46.9
Total	145	100

Table 3: Distribution of study cases by time taken before presentation (n=145)

Time taken	n	%age
Equal or less than 90 minutes	68	46.9
More than 90 minutes	77	53.1
Total	145	100

DISCUSSION

In both developed and underdeveloped countries, coronary artery disease (CAD) is the most common cause of mortality and morbidity. It is one of Pakistan's main causes of death, and its impact on young patients' mortality is growing. This increased incidence of coronary artery disease and its socio-economic effects on the productive aged of around 35–65 years is of concern to the Pakistani population. CVD has reached pandemic proportions in several emerging countries, according to projections. Heart disease is increasing 5–10 years earlier in Asian countries than in the rest of the world. Early-onset coronary artery disease (CAD) can have disastrous repercussions for an individual, their family, and society. The moral responsibility of a nation is to prevent these fatalities in young people. It will be more cost-effective to prevent CVDs long before they occur than to provide therapies once the condition is fully established⁶.

The study's exclusion and inclusion criteria were met by 145 patients. Our study participants were 47.67 ± 7.59 years old on average, min. and max. age of the patients was 35 and 63 yrs.

Respectively. The average age of male patients was 45.77 ± 5.98 years while for females it was 51.39 ± 8.99 years ($p=0.000$). According to our findings, the majority of our research patients, 77(53.1%), were between the ages of 25 and 45. Khan et al. 8 found that the average age was 49.70 years in 1994, then 47.38 years in 1995, which is similar to our findings. The amount of time spent before arriving at the hospital has an important role in the treatment of patients with myocardial infarction. In our society, this practice is disregarded and people tend to arrive late, resulting in complications and poor clinical outcomes. It took an average of 113.79 \pm 54.36 minutes to get to the hospital. According to our findings, more than 90 minutes are required for the majority of our research cases (77.3%) to get to the hospital.

In our analysis, 48 (33.1%) of the cases were discovered with diabetes. According to Ahmed et al., 31% of AMI patients with early CAD have diabetes, which is similar to our findings. Diabetes was shown to be prevalent in 29.5% of the population by Qadri et al., which is similar to our findings. In a study by Karim et al, diabetes prevalence was 46%, while Ertelt et al reported a diabetes rate of 17.5%.

58(40%) of the patients were identified as Hypertensive, while Ahmed et al discovered hypertension in 35% of premature CAD patients with AMI. These findings are remarkably similar to those we discovered during our investigation. Qadri et al discovered 45% hypertension in CAD patients, which is similar to our results, and Noeman et al found 51% hypertension in CAD patients, which is also similar as our results. Karim et al. found a 76% prevalence of hypertension, which is significantly higher than our findings.

Smoking is a substantial risk factor for CHD in the young population, and multiple studies have linked smoking to early coronary artery disease. In our investigation, smoking was discovered in 39(26.9%) of the cases. A high smoking rate of 79% was reported by Ahmed et al., which is much higher than our findings. Because all smokers in our study were male patients, the explanation for the gap could be attributed to their study's small sample size (n=52) and high male gender proportion (i.e. 87%). Qadri et al. reported a smoking rate of 49%, which is higher than the national average.

Another well-known risk factor for future coronary artery disease is a positive family history of coronary artery disease, (55 yrs for males in first-degree relatives while 65 years for females). Although 67 (46.2%) of the participants had a family history of IHD, Ahmed et al only reported 17%, which could be owing to their small sample size of 52 participants. 32% of respondents have a good family history by Qadri et al., which matches our findings. According to Karim et al., 34% of persons have a positive family history, which is consistent with our findings.

Obesity was observed in 49(33.8%) of the cases in our findings. In a study in Pakistan, Noeman et al described a 35% prevalence of obesity in patients with pre-mature CAD, similar to our results. Karim et al. described 44% obesity rate, matching our results.

There was mortality in 19(13%) of the cases we looked at. According to Khan et al⁸, the mortality rate was 10.65% in 1994 and 11.8% in 2004. These findings are comparable to the ones we found in our research. Karim et al. found a fatality rate of 12%, which is similar to our findings.

CONCLUSION

Patients with pre-existing coronary artery disease who experience AMI, are at a higher risk for poor clinical outcomes, according to the findings of our study. Result reveals that hypertension, positive family history, obesity, and diabetes are all high-risk factors. Heart disease can be prevented in our community through lifestyle adjustments and early screening of people with a favorable family history in first-degree relatives. A higher risk of death and cardiogenic shock has been associated with late admission to the hospital as well.

Conflict of interest: Nil

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