

ORIGINAL ARTICLE

Frequency of Modifiable and Non-Modifiable Risk Factors of ST elevation Myocardial Infarction at Tertiary Care Hospital

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ABSTRACT

Objective: To determine the frequency of modifiable and non-modifiable risk factors of acute ST elevation myocardial infarction at tertiary care Hospital.

Methods: This study was conducted in the department of Cardiology, Liaquat University Hospital Jamshoro, from July 2019 to January 2020. All the patients those presented with myocardial infarction and either of gender were included in the study. After taking complete clinical examination and diagnosis, patients were interviewed regarding family history, hypertension, diabetes, smoking, alcohol consumption, dietary habits and life style activities. Non modifiable predisposing risk factors were defined as age, gender and family history. Modifiable risk factors were defined as elevated serum cholesterol, presence of type II DM, cigarette smoking, obesity, a sedentary lifestyle and hypertension. All the data was recorded in self-made proforma. Data analysis was done by SPSS version 21

Results: Total 100 patients were studied; most common age group was 41-50 years (45.0%), and 51-60 years (35.0%). According to the types of myocardial infarction, Acute anterior wall MI was in 25.0%, Acute inferior MI was in 20.0%, EXT ANT WALL MI was in 16.0% and Acute inferior +RV MI was in 15.0% of patients. Elevated age in 70.0% and male gender in 69% of cases were found to be most common non-modifiable risk factors, while frequently seen Modifiable risk factors were smoking, type II diabetes, hypercholesteremia, hypertension, and physical activities.

Conclusion: It was observed that elevated age, male gender, smoking, diabetes and hypertension are frequent risk factors for ST elevation myocardial infarction.

Keywords: Modifiable, non-modifiable, risk factors, MI

INTRODUCTION

Acute myocardial infarction (AMI) remains the most frequent medical condition among underdeveloped nations.^{1,2} Myocardial infarction (MI) results from a pathological process because of severely compromised blood supply to myocardium resulting in inadequate oxygen supply even following prolonged rest.³ This pathological process leads of cardiovascular medical conditions (CVDs) including stroke and myocardial infarction. In comparison to any other region in the world, Pakistan, India, Sri Lanka, Nepal, and Bangladesh account for 25% of the world's population and also bear the greatest share of CVD burden.^{4,5} The most common clinical manifestation is atherosclerotic/coronary heart disease (CHD), which is linked to a higher death and morbidity rate. CHD is the leading cause of death globally. CVD affects 17.7 million individuals per year, accounting for 31% of all global deaths. Stroke and heart attacks account for 80% of all CVD-associated deaths. Middle-income and low-income nations account for over 75 % of deaths associated with CAD.^{6,7} Risk factors are confident characteristics or exposure of a person that can raise the chances of developing a disease. The CHD associated risk factors are usually classified into two categories as modifiable and non-modifiable risk factors. Age and gender are the non-modifiable risk factors. Type II diabetes, elevated blood cholesterol, sedentary lifestyle, obesity, cigarette smoking, and hypertension are all modifiable risk

variables.^{6,8} In our demographic, there is virtually little care about lifestyle. Psychosocial factors, inadequate exercise, uncontrolled hypertension and diabetes, alcohol use, smoking exposure and poor genetic counseling all raise the likelihood of having CVD. These habits are also quite common in less industrialized nations. Modification and prevention of these risky behaviors, however, can reduce CVD burden and, as a result, can reduce death rate. According to research, minimum 80% of cerebrovascular diseases may be prevented by leading a healthy lifestyle.⁹ There is also a less concern to modifiable and non-modifiable predisposing factors of cardiovascular disease. However, this study has been conducted to determine the frequency of modifiable and non-modifiable risk factors of ST-elevation myocardial infarction to show the current knowledge regarding role of these factors in developing cardiovascular events.

PATIENTS AND METHODS

This cross-sectional study was performed at the department of Cardiology, Liaquat University Hospital Jamshoro. Study duration was six months from July 2019 to January 2020. All the patients presenting with myocardial infarction and either of gender were included in the study. Patients those disagreed to partake in this study were excluded. Informed written consent was received from all the study subjects. After taking complete clinical examination and diagnosis patients were interviewed

regarding family history, hypertension, diabetes, smoking, alcohol consumption, dietary habits and life style activities. Non modifiable predisposing risk factors were defined as family history, age and gender. Modifiable risk factors were defined as elevated blood cholesterol, type II diabetes, sedentary lifestyle, obesity, cigarette smoking and hypertension. All the data was recorded in self-made proforma. Data analysis was done by the software SPSS version 21. The quantitative data for continuous variables like age was summarized by statics (mean, median & standard deviations) and graphs. Simple frequency and percentage were computed for categorical variables. Chi square test was applied and P-value ≤ 0.05 was taken as significant.

RESULTS

Total 100 patients were studied, most common age group was 41-50 years 45.0%, followed by 51-60 years 35.0%, 12% were more than 60 years old, 7% patients were between 31-40 years and one patient was under 30 years of the age. Table.N.1

According to the types of myocardial infarction Acute anterior wall MI was 25.0%, Acute inferior MI was 20.0%, EXT ANT WALL MI was in 16.0% patients and Acute inferior

+RV MI was in 15.05 patients, followed by Acute A/S MI 4%, Acute inferior +POST MI 6%, Acute inferior +LATERAL MI 2%, Acute AVR MI 1% and Acute post wall MI was 1%. Table. N.2

Table 1. Patients' distribution according to age and gender n=100

Age (Years)	No. of patients	(%)
18-30 years	01	01.0%
31-40 years	07	07.0%
41-50 years	45	45.0%
51-60 years	35	35.0%
>60 years	12	12.0%
Gender		
Male	69	69.0%
Female	31	31.0%

Table 2. Patients' distribution according Type of myocardial Infarction n=100

Type of MI	Frequency	%
Acute anterior wall MI	25	25.0%
Acute inferior MI	20	20.0%
EXT ANT WALL MI	16	16.0%
Acute inferior +RV MI	15	15.0%
Acute A/S MI	04	04.0%
Acute AVR MI	01	01.0%
Acute inferior +POST MI	06	06.0%
Acute inferior +LATERAL MI	02	02.0%
Acute POST WALL MI	01	01.0%

Table 3. Predisposing risk factors n=100

Predisposing factors	No. of patients	(%)
Non- modifiable risk factors		
Age	70	70.0%
Gender	69	69.0%
Family history	30	30.0%
Modifiable risk factors		
Elevated serum cholesterol	25	25.0%
Type II DM	30	30.0%
Cigarette smoking	41	41.0%
Obesity	19	19.0%
Hypertension	49	49.0%
Physical activities	55	55.0%

According to the predisposing risk factors non-modifiable risk factors found as elevated age 70.0%, male gender 69% and family history was 30.0%. Modifiable risk factors were seen as smoking 41%, type II diabetes 30%, hypercholesteremia 25%, hypertension 49%, obesity 19%, and physical activities 55%. Table. N.3

DISCUSSION

Acute myocardial infarction (AMI) is a serious health issue that affects people all over the world.¹⁰ In Pakistan, cardiovascular medical conditions (CVDs) such as stroke and myocardial infarction (MI) are the main causes of death and morbidity. Not only is there a lack of comprehensive statistics on the characteristics and profile of AMI cases in Pakistan, but major survey studies have also not been reported.¹¹ Males, who are afflicted at an earlier age than females, are more likely to develop AMI. In this study, non-modifiable risk factors found elevated as age 70.0% and male gender 69%. The pre-season of lower rate of risk factors among women at earlier ages than in males needs to be investigated further. Tobacco usage is highly impacted by Cultural norms and community history, and females have historically smoked less than males in most cultures. Tobacco usage accounts for a portion of the decreased MI rate among younger females compared to males. Premature cardiovascular events are more likely in families with a history of CHD. According to recent findings, this risk may be greater in women than in males.¹² In our study, 30% of individuals had a premature CAD family history, while Akhtar et al¹³ found that 57% of study subjects were positive for CAD family history. The discrepancy in findings might be related to the age groups that were chosen. As in the research of Akhtar et al., age group was below 40 years, but age group in my research was 45 years. According to Millett ER et al¹⁴, elevated blood pressure indicators, body mass index, smoking intensity, and the incidence of diabetes were all linked to an elevated risk of MI in both males and females, although the correlations faded with age. In comparison to males, women had higher relative risk for MI due to hypertension and systolic blood pressure, and diabetes and smoking intensity: systolic blood pressure 1.09 (95% CI 1.02-1.16), current smoking 1.55 (1.32 to 1.83), T1 diabetes 2.91 (1.56 to 5.45), and T2 diabetes 1.47 (1.16 to 1.87). Several risk variables were more significantly linked with MI among females than in males, despite the fact that the prevalence of MI was greater among men. Although the sex-specific correlations between risk variables and MI faded with age, the greater relative risk among females persisted. The prevalence of MI among females will likely rise comparable to that in males with growing age of population and the rising frequency of lifestyle-related risk factors.

In present study, modifiable risk factors were seen as type II diabetes 30%, hypercholesteremia 25%, hypertension 49%, obesity 19%, and physical activities 55%. Study conducted by Bahall M et al¹⁵ reported that MI was linked to a stressful life, DM, hypertension, CHD, hypercholesterolemia, and CHD family history (p 0.001), alcohol use (p = 0.013), and smoking (p = 0.007). According to Teo KK et al¹⁶, psychosocial factors and diabetes (DM) and have substantial correlations with

the incidence of MI among Chinese population. According to a study done by Chen JL¹⁷, inadequate exercise and an elevated BMI are linked to an raised risk of CVD. According to Malik R et al¹⁸, Hypertension remained the most prevalent risk factor (55.4%), followed by smoking and DM (43.8% and 27% respectively). The least frequent risk factor (23.2%) was shown to be the dyslipidemia. Traditional risk factors for MI include hypertension, DM, CHD, CHD family history, alcohol intake, and smoking. In another research done by Du H et al¹⁹, unhealthy eating habits (seafood consumption along with drinking beer), current smokers, hypertension, DM, self-perceived stress, sleep insufficiency, obesity, hypercholesterolemia, and fatigue were all found to be independent risk factors for first AMI (P 0.05).

In this study, 41% patients with myocardial infarction were smokers. In terms of the link between cardiovascular system and smoking, in the study of Nicita MV et al²⁰ found that smokers had higher values of mean systolic blood pressure (BP) as compared to non-smokers, and also that smokers do not experience the normal nocturnal drop in BP. However, by using the calcium-antagonist nifedipine as a preventative measure, the post-smoking rise in arterial BP can be avoided. Weight management, smoking cessation, regular exercise, and BP control are all related with not just a longer life expectancy in males, but also better health and function till old age. Because of the proven health benefits of quitting smoking, all practitioners, particularly geriatricians, should encourage quitting smoking as a behavioral standard for a healthy lifestyle.

CONCLUSION

As per study conclusion old age, male gender, smoking, diabetes and hypertension were observed to be the frequent risk factors for myocardial infarction.

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