

FREQUENCY OF CONVENTIONAL RISK FACTORS OF MYOCARDIAL INFARCTION IN GULAB DEVI CHEST HOSPITAL

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ABSTRACT

Background: Acute myocardial infarction (M.I) is potentially critical and the most common cardiac emergency presenting to a hospital. Having significant mortality and morbidity cardiovascular risk factors are on the rise in Pakistan. In view of the associated lower survival ischemic heart diseases thus represent an important public health problem.

Aim and Objective: The objective of the study was to determine the frequency of various conventional risk factors in the patients presenting with myocardial infarction, so as to guide our planning for primary and secondary prevention of this disease in our community.

Methodology: A total of 100 consecutive patients from 20 – 80 years of age presenting with MI were included in the study. Their detailed history was taken including symptoms at presentation and their risk factors were assessed with the help of history and laboratory investigations. Following common risk factors were studied namely, gender, smoking, hypertension, diabetes, hyperlipidemia, family history and obesity.

Results: Frequency wise risk factors were lined up as male sex (74%), smoking (70%), hypertension (62%), diabetes mellitus (60%), hyperlipidemia (44%), family history (40%) and obesity (14%). Out of these risk factors, 48% patients were presented with at least one major risk factor, 23% with two major risk factors and 29% were presented with three or more major risk factors.

Conclusion: Smoking, hypertension, diabetes and hyperlipidemia were the major modifiable risk factors in our patients, which require a better control. The awareness of risk factors amongst the general public is low. Thus there is an urgent need to create more and more awareness about the preventive aspects and healthier life style in our community.

Key Words: Ischemic heart diseases, Risk factors, Morbidity, Coronary artery disease.

INTRODUCTION

Risk factors for cardiovascular diseases (CVD) are on the rise in Pakistan. There is a definite change in life style and sedentary habits are increasing day by day with increasing facilities. Exercise and outdoor activities seems to have decreased. As a result, cardiovascular diseases like myocardial infarction and stroke are increasing.¹ India, Pakistan, Sri Lanka, Bangladesh and Nepal, not only represent a quarter of the world's population but also contribute to the highest proportion of CVD burden when compared with any other regions globally.²

Among CVD ischaemic heart disease (IHD) is the leading cause of morbidity and mortality all over the world and is likely to become the most common cause of death worldwide including Pakistan by the year 2020.^{3,4} The most life threatening manifestation of IHD is Acute Myocardial Infarction (AMI) and the incidence of AMI is increasing in our population.⁵

Myocardial infarction (MI) preeminently results from atherosclerotic disease of coronary artery and/or vessel obstruction due to thrombus formation.⁶ In patients of MI there are multiple risk factors for IHD associated with development of coronary artery disease (CAD).⁷ Of these some factors like age, gender, race and family history cannot be changed and are called 'fixed factors' while other major risk factors, such as serum cholesterol, smoking habit, diabetes and hypertension, can be modified.⁸ Hypertension, diabetes mellitus, smoking, and hypercholesterolemia are called the conventional or major risk factors for coronary heart disease (CHD). They are called conventional because majority of patients with CHD have one or more of these risk factors.⁹ A recent cohort study found that development of more than 80% of myocardial infarction in general population is attributable to these conventional factors and physical inactivity.¹⁰

In this study we examined the frequency of con-

ventional risk factors in patients with myocardial infarction. Our study will contribute to a better understanding of frequency of risk factors that exist in patients with myocardial infarction so we can guide our planning for primary and secondary prevention of this disease in our community.

MATERIALS AND METHODS

This was a cross sectional survey of 100 patients with myocardial infarction presented in CCU of Gulab Devi chest hospital. Study was completed in six months. Using non probability (purposive) sampling technique all Pakistani patients with ages between 20 to 80 years, including both males and females, with myocardial infarction confirmed through clinical investigations and other diagnostic procedures (like ECG and cardiac enzyme assay) were included in the study. Foreigner patients and those having any other comorbid pathology (such as brain, lungs, kidneys or any other vital organ disease) were excluded.

A short structured questionnaire was prepared and patients were interviewed in ward after taking verbal consent. In addition to collecting basic demographic details, patients were asked about the presence of chronic hypertension and diabetes mellitus. Information was also obtained regarding smoking habits and history of ischemic heart disease in first degree relatives. Blood samples for lipids and glucose levels were obtained in the morning after ten hours fast. Brachial venous blood samples were collected into EDTA tubes and were immediately sent to laboratory where they were centrifuged at 4°C for 15 minutes. Then the sera were analyzed for lipid profiles and Blood glucose levels. All data was entered in a proforma. Patients were disposed off according to existing hospital regulations. There was no follow up. Both descriptive and inferential statistical analyses were done in Statistical Package for Social Sciences (SPSS) version 16.0. Categorical data were presented as percentages and in form of graphs while descriptive and frequency distribution was used for quantitative analyses.

RESULTS

The results thus obtained showed that out of 100 patients there were more number of males (74%) than females (24%). The mean age observed was 50.8 (S.D \pm 9.6) and majority of the patients were more than 40 years of age. Over all the most common risk factor was smoking. About 70% of the subjects were smoker but none of females had ever smoked. Hypertension was the second most common risk factor in our patients; about 62% of them were hypertensive. 60% of the subjects were observed as diabetics and more females were diabetic than males. The serum levels (in mg/dl) of total cholesterol and triacylglycerides were recorded. Mean cholesterol concentration was 186 mg/dl (SD \pm 44.84), mean triglyceride concentration 251 mg/

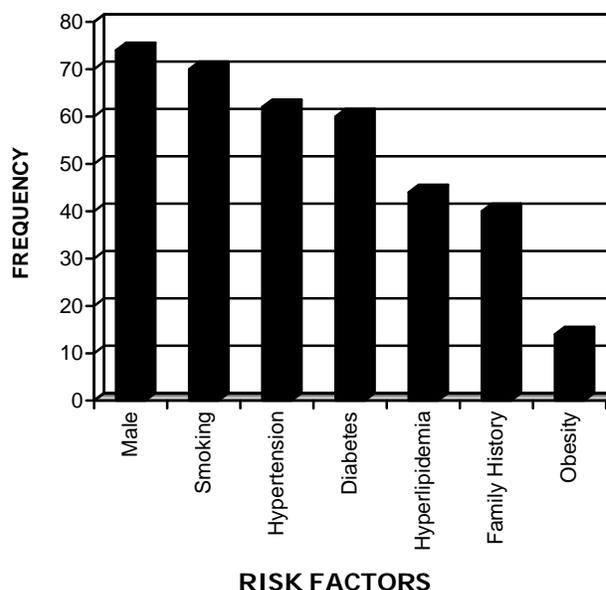


Fig. 1: Frequency of Risk Factors of MI.

Table 1: Descriptive statistics of associated Risk factors of myocardial infarction (MI).

Variables	N = 100	Relative Frequency
Males	74	0.74
Females	26	0.26
> 40 years age	80	0.80
Smokers ^a	70	0.70
Hypertensives ^b	62	0.62
Diabetics ^c	60	0.60
Hyperlipidemics ^d	44	0.44
+ve Family History ^e	40	0.40
Obesity ^f	14	0.14
1 major risk factor	48	0.48
2 major risk factors	23	0.23
\geq 3 risk factors	29	0.29

^aSmoking is defined as smoking at least 100 cigarettes during one's life time

^bHypertensive if SBP >140 mmHg or taking antihypertensive treatment

^cDiabetics if blood sugar levels > 120/mg at fasting or > 160 mg/dl at random.

^dThe serum levels (in mg/dl) of total cholesterol and triacylglycerol (TAG) were recorded, hyperlipidemia is defined as serum TAG levels of \geq 150 mg/dl based on guidelines of American Heart Association.

^eA positive family history defined as premature incidence of overt IHD in first degree relative.

^fObesity defined as BMI of more than 30kg/m²

dl ($SD \pm 33.9$). Hyperlipidemia is defined as serum triglyceride levels of ≥ 150 mg/dl based on guidelines of American Heart Association, so we found 44% of our subjects as hyperlipidemics. Positive family history was observed in 40% subjects and was more prominent in females. Obesity was not that much significant, only 14% of the patients were found obese in our study i.e. they had BMI of more than 30 kg/m².

This aggregation of risk factors is further illustrated in table below which shows that most of the patients, i.e. 48 patients were reported to have at least 1 major risk factor, 2 major risk factors were present in 23 patients and 29 patients presented with ≥ 3 major risk factors.

DISCUSSIONS

Coronary artery disease remains a leading cause of death and exerts a heavy social and economical toll. The IHD has been reported to be more frequent in recent years in younger age group, but the risk definitely increases with the increasing age.¹¹ According to the results of Faisal *et al*¹² there is a linear relation between age and IHD risk; these results are similar to our study as 80% of the patients were more than 40 years of age.

Lloyd – Jones *et al*¹³ reported that lifetime risk of developing CAD at 40 years of age is 50% for men and 33% for women. In our study 74% of patients were male. Our finding of male predominance is consistent with previous studies.^{12,14,15}

Family history of CAD has an increased risk of premature coronary events. Recent results indicated that this risk might be higher in women compared to men.¹³ Our study showed that 40% of patients had positive family history, these results were close to those of Faisal *et al*¹² who showed 32% of their patients with positive family history whereas Akhtar *et al*¹⁴ showed 57% of their patients to have positive family history of coronary artery disease. The difference between the results may be due to the difference between the age group selected.

Over half of young Pakistani males with IHD are smokers.¹⁴ Our study showed a very high percentage (70%) of smokers. These results were similar to the previous studies^{12,14,16-18} conducted in Pakistan and India respectively. As smoking is the most important preventable cause of CAD.¹⁹ So we support the conclusion that following myocardial infarction, educate all patients regarding the critical role of smoking in the development of coronary artery disease. Smoking cessation classes should be offered to help patients avoid smoking after their myocardial infarction.

Hypertension is a well established risk factor for adverse cardiovascular outcomes, IHD related mortality, stroke and sudden death.²⁰ We reported 62% of patients as hypertensive. These results were close to the results of Butt *et al*⁶ who reported 54% of their patients

to be hypertensive.

Diabetes mellitus is also a major IHD risk factor. Early onset of CAD in south Asian men with glucose intolerance is reported by McKeigue *et al*.²¹ We found 60% of the patients to be diabetic in our study. These results were slightly higher than the previous studies of Faisal *et al*,¹² Akhtar *et al*¹⁴ and Gandapur *et al*²² who reported 28%, 14% and 35.7% of their patients to be diabetics respectively. The results of our study were different, because in those studies mostly young patients i.e. less than 40 years of age were selected and our patients belonged to poor socioeconomic status (most of them) so they didn't receive a proper treatment and medication due to their socioeconomic problems.

Dyslipidemia is one of the major modifiable IHD risk factor. Akhtar *et al*¹⁴ and Faisal *et al*¹² reported dyslipidemia in their 63.2% and 62% of patients respectively. In our study 44% patients had dyslipidemia. Similar results were reported by Gandapur *et al*.²² The reason for increased prevalence of dyslipidemia is not known, however genetic factors and dietary habits (high ghee intake) seem to be important.

Obesity is an independent risk factor for CAD in both men and women.²³ Weight reduction is associated with favourable changes in lipid profile and blood pressure and hence reduces the risk of IHD.²⁴ In our study only 14% of patients were found obese. These results are similar to those of Faisal *et al*¹² who reported 17% obese patient in their study.

Our study had some limitations. First, the sample size was small but even with this sample size we were able to demonstrate the same prevalence of major risk factors in Pakistani patients that were observed in western countries using very large sample sizes.

Second, except for hyperlipidemia, the decision of whether or not a patient had hypertension, diabetes, and history of ever smoking was based on self report of the patient. Although it is not the best method but it is reliable. We assumed that using self reporting for measuring these variables would not generate results much different from those obtained using more sophisticated techniques e.g. physical examination and laboratory studies.

It is **concluded** that smoking was observed as most common risk factors in our patients followed by hypertension, diabetes, hyperlipidemia, positive family history and obesity. Twenty nine percent of patients in our study had 3 or more risk factors. It seems that these risk factors are responsible for a major disease burden for MI. These require a better control. The awareness of risk factors amongst the general public is low. Thus there is an urgent need to create more awareness about the preventive aspects and healthier life style in the community.

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