ORIGINAL ARTICLE

Risk Factors of Acute Coronary Syndrome in Patients Presenting To Emergency Department of Mayo Hospital Lahore- A Cross Sectional Survey

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ABSTRACT

Aim: To assess the prevalence various risk factors among patients of coronary syndrome presenting to Emergency Department of Mayo Hospital, Lahore.

Methods:A total of 115 patients admitted in Cardiology ward with diagnosis of acute coronary syndrome were included, using non-probability, consecutive sampling. All cases of acute myocardial infarction and unstable angina were considered as acute coronary syndrome (ACS). A written informed consent was taken from all these patients.A questionnaire was designed which includes demographic profile of the patient, symptoms experienced and risk factors known to contribute to ACS. This questionnaire was filled by all patients who were diagnosed with ACS for the first time.

Results: Out of 115 patients, 93 (80.9%) were male and 22 (19.1%) were females. Mean age was53.16 ± 10.87 years. A total of 55.7% were smokers. Out of which 89.1% were current smokers. A total of 51.3% were hypertensive while 32.2% were diabetic. A total of 47.4% had positive family history. Only 8.8% had history of lack of physical exercise. Mean waist-hip ratio calculated was 0.99 ± 0.09. Mean BMI calculated was 28.02 ± 6.04 kg/m^2.

Keywords: Risk factors, Acute coronary syndrome, Mayo Hospital Lahore

INTRODUCTION

Diseases of cardiovascular system are one of the most important causes of morbidity and death throughout the world and they are a serious public health issue[1]. According to the WHO, in terms of referable deaths, the main risk factor of cardiovascular diseases is hypertension followed by cigarette use, hyperglycemia or diabetes, lack of physical activity, overweight and obesity[2].

There is a great need to reduce these risk factors and to prevent acute coronary syndrome and reduce its load on our population[2].For the purpose of applying preventive measures effectively, we should analyze the frequency of cardiovascular factors which are of great risk in our community[2]. Among the risk factors which are non-modifiable for the growth and establishment of cardiovascular diseases, male or female of age above 55 years, previous history of CVD in family, male and family history is documented. Few of the documented risk factors for growth and establishment of cardiovascular diseaseswhich are modifiable are deranged lipid profile, tobacco smoking, systemic arterial hypertension (HTN), obesity or over weight and diabetes mellitus[1].

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Cardiovascular risk factors for ischemic heart disease are rising in Pakistan also. A total of 18% of our adult people suffers from increased systemic blood pressure. Smoking use has increased and obesity is also increasing day by day. As a result, diseases of cardiovascular system like MI and stroke have become the important causing factors of morbidity and mortality in Pakistan.Deranged lipid profile, tobacco smoking, increased systemic blood pressure and diabetes were the most frequent risk factors documented[3]. This study is planned to evaluate the risk factors of acute coronary syndrome in patients presenting to cardiology ward of Mayo Hospital, Lahore.

METHODS

This study was of descriptive cross-sectional type study and was organized in the Cardiology Department of Mayo Hospital, Lahore from 10th November, 2016 to 1st March, 2017. A total of 115 patients admitted in Cardiology ward with diagnosis of acute coronary syndrome were included, using non-probability, consecutive sampling. All cases of acute MI and unstable angina were considered as ACS. Diagnosis of acute myocardial infarction was made as having typical chest pain and ECG changes having ST segment elevation myocardial infarction

(STEMI or new LBBB) or Non-ST elevation myocardial infarction (Depression of ST segment or abnormalities of T wave) and Trop T positive by kit method. Diagnosis of unstable angina was made as having typical chest pain and ECG changes having depression of ST segment or abnormalities of T wave with Trop T negative by kit method. Patients who presented with previous history of MI, some heart disease involving valves and severe mental illness were eliminated from this study.

A written informed consent was taken from all these patients. A questionnaire was designed from previous literature on this topic. Questionnaire was later validated by distributing this to subject specialist for content validity. First part of the questionnaire comprised of the demographic profile. Second part covered presenting symptoms like shortness of breath; chest pain; chest tightness; cold sweats; vomiting; nausea and pain radiating to left arm, neck or jaw. Site of infarction covers myocardial infarction of anterior wall, myocardial infarction of inferior wall, myocardial infarction of lateral wall, myocardial infarction of posterior wall, changes involving septum or nonspecific changes. This part also assessed different risk factors of acute coronary syndrome like hypertension, diabetes, family history, tobacco smoking, smokingstatus of a smoker, obesity and lack of physical exercise. Fasting lipid profile of all patients was also assessed. Interviews were conducted once the patients were stabilized and pain free. All interviews were conducted by the same research team member, trained for interviewing.

All the collected information was entered into SPSS version 22. Risk factors noted were age, gender, smoking, dyslipidemia, hypertension, diabetes, obesity, family history and lack of physical exercise. Patient was labelled as smoker if patient was smoking at that time or had been in the past. Current smoker was the individual who smoked tobacco in any form in the past 1 year or one who had quit smoking or tobacco use within the past year. Former smoker was considered as one who had quit smoking or tobacco use more than a year earlier. Waist Hip Ratio (WHR) was measured by dividing circumference of abdomen by the maximum circumference of hip. Circumference of abdomen was measured at the umbilicus level and iliac processes. Body Mass Index (BMI) was calculated by dividing weight of the patient in kilograms by his height in meter squares. Hypertension was labelled in the presence of systolic BP ≥140 mmHg or diastolic BP ≥90 mmHg or current use of antihypertensive drugs. Patients were declared as diabetics if patients had been receiving treatment for diabetes mellitus or fasting blood sugar levels of > 126mg/dl. Family history was considered positive if any of his first degree relatives suffered from coronary artery disease (CAD) before age of 55 years in male population and before age of 65 years in female population. Anything less than physical activity of at least continuous 30 minutes every day or 5 days in a week was considered as lack of physical exercise.

RESULTS

Out of 115 patients, 93(80.9%) were male and 22 (19.1%) were females. Mean age was 53.16±10.87 years. Demography is shown in table 1.

Table 1: Demographic Variables

Variable	n= 115	Percentage
Gender		
Male	93	80.9
Female	22	19.1
Profession		
Labourer	34	29.6
Teacher	5	4.3
Salesman	28	24.3
Officeman	11	9.6
Retired	37	32.2
Education Level		
Illiterate	57	49.6
Primary	23	20
Matric	23	20
Graduation	12	10.4
Marital Status		
Single	3	2.6
Married	97	84.3
Widowed/Divorced	15	13

The most common presentation was cold sweats (87.8%) followed by chest pain (81.7%). Shortness of breath (37.4%) and chest tightness (24.3%) were also seen. A total of 33.9% people experienced pain radiating to left arm, neck or jaw. While 20% of the patients experienced vomiting as well.as small number of patients also experienced nausea (4%). Most common site of infarction was anterior wall myocardial infarction (38.3%) followed by inferior wall (33%). Lateral wall myocardial infarction was only 13.95% followed by posterior wall (7.8%) and septum involvement (7%) respectively. A total of 27.8% patients showed non-specific changes in ECG. Risk factors noted are shown in table 2.

Fasting lipid profile of all patients was also assessed. Mean cholesterol levels obtained were 186.62±38.86 mg/dl. Mean HDL levels obtained were 40.27±7.16 mg/dl. Mean LDL and triglycerides levels obtained were 120.48±28.14 mg/dl and 173.44±58.25 mg/dl respectively.

Obesity was also assessed in patients by using waist-hip ratio and BMI. Mean waist-hip ratio

calculated was 0.99±0.09. Mean BMI calculated was 28.02±6.04 kg/m2.

Table2: Risk factors

Risk factors	n= 115 (%)
Smoker	
Yes	64 (55.7%)
No	51 (44.3%)
Smoking Status	
Current Smoker	57 (89.1%)
Former Smoker	7 (10.9%)
Hypertension	
Yes	59 (51.3%)
No	56 (48.7%)
Diabetes Mellitus	
Yes	37 (32.2%)
No	78 (67.8%)
Family History	
Yes	54 (47.4%)
No	60 (52.6%)
Lack of physical exercise	
Yes	10 (8.8%)
No	104 (91.2%)

DISCUSSION

CAD is a complex and multifarious process that reveals itself as stable angina, unstable angina or myocardial infarction collectively known as ACS. CAD is the leading cause of death in both men and women[4].

One study conducted at ShriAurobindo Institute of Medical Science Indore, showed a notable male preponderance with mean of 56 years of age. In that study, tobacco was discovered as the major risk factor (65%) and obesity as least common risk factor (13%). Their study also showed anterior wall myocardial infarction as common site of presentation (54%). The clinical presentation of that study showed that chest pain as predominant symptom (94%) followed by sweating (78%) breathlessness (67%)[1].

Another study was conducted in the Department of Cardiology of the Lithuanian University of Health Sciences Hospital. In their study patients of young age group were more likely to be of male gender, tobacco smokers, having increased weight or were obese and had deranged lipid profile. More than 50% of young patients of ACShad four risk factors. There was no difference in preponderance of hypertension between different age groups. They did not find any relationship of overweight or obesity with ACS[2].

In one study organized at UP Rural Institute of Medical, Sciences & Research, Saifai, Etawah, Bundelkhand, Uttar Pradesh, 200 consecutive patients of acute coronary syndrome were studied. These patients were predominantly male (75%) with male to female ratio being 3:1. The age range was between 31 to 81 years and the average age calculated was 55 years. Tobacco consumption was the major risk factor in their study (65%) followed by hypertension (33%), diabetes mellitus (16%), family history of coronary artery disease (14%), obesity (13%), and dyslipidemia (12%) respectively. The commonest presenting symptom was chest pain (90%), followed by sweating (75%) and breathlessness (60%)[5].

In our study more males (80.9%) as compared to females (19.1%) were diagnosed as ACS. The average age calculated in our study was 53.The most common presenting symptom was cold sweats (87.8%) followed by chest pain (81.7%) and shortness of breath. The most common wall involved is anterior wall (38.3%) followed by inferior wall (33%). The most common risk factor involved in our study was smoking (55.7%) followed by hypertension (51.3), family history (47.4%), diabetes (32.2%) and lack of physical exercise (8.8%) respectively. Most of the patients were obese and strong association was seen between obesity and ACS with the mean BMI calculated as 28. Our study thus shows that smoking is a major risk factor of ACS.

According to one study the proportion of patients presenting with ACS having diabetes was 31% [6]. Our study shows that 32.2% patients had diabetes.

According to one previous research done on an Iranian population shows that out of all patients 35.8% were of female gender, 30% were those having diabetes 42% were tobacco smokers and 91% were those having hypertension[7].

In one population of Denmark overweight (BMI 25 to 29.9kg/m2) and obesity (BMI30kg/m2) were strongly related with risk of acute coronary syndrome regardless of smoking status. .The median BMI was 24.8kg/m2 for females and 26.1kg/m2 for males. Lack of physical activity was associated with a higher risk of in both healthy individuals of normal weight and obese individuals[8]. In our study Mean BMI calculated was 28.02 ± 6.04 kg/m2.

One previous study conducted at Medical ICU in Zagazig University Hospital, Egypt showed that regarding prevalence and pattern of dyslipidemia, high levels of total cholesterol were found in 60.67% of patients (217.87 mg/dl±43.61). High levels of low density lipoproteins were found in 58% of patients (139.25 mg/dl±38.43). Low levels of high density lipoproteins were found in 66% of patients (37.88 mg/dl±4.79). High levels of triglycerides were found in 63.33% of patients (174.41 mg/dl±61.42). But in this study prevalence of different risk factors differ with that of ours. Their study showed that hypertension was the most frequent risk factor of ACS (62.67%) after that diabetes (52.67%), cigarette smoking was the last (47.33%)[9].

In our patients mean triglycerides level was 173.44±58.25mg/dl and triglycerides levels were slightly or moderately raised in most patients. Mean cholesterol levels obtained were 186.62±38.86mg/dl. Mean HDL levels obtained were 40.27 ± 7.16 mg/dl. Mean LDL obtained were 120.48 ± 28.14 mg/dl.

In another study of cross-sectional type, information was collected from the coronary care unit of the National Institute of Cardiology in Mexico City from October 2005 to June 2012. In that population, the most common risk factor was history of smoking whether current or past (69.1%), it was followed by hypertension (57.8%), deranged lipid profile (47.5%), and diabetes (37.7%) [10].

Our study and all the previous studies indicate that there are certain modifiable risk factors of acute coronary syndrome which can be prevented by adopting healthy lifestyle. Our study shows that more men as compared to women presented with ACS. Most of the patients interviewed were short heighted and obese. Most of the patients gave history of cold sweats followed by chest pain. Half of the patients were totally illiterate. Mean age was Age 53.16 ± 10.87 years. Anterior wall is the most commonly involved wall according to our study. 32.2% patients were retired or doing no work at all. 29.6% were laborers. According to their marital status 84.3% were married.

Different presenting characteristics of ACS are related to identification of different levels of risk and they are the important in deciding the level of care which should be offered to patients and to decide better interventional and medical therapies [11].

American and European guidelines for cardiovascular risk reduction include aims for refining the following risk factors that are related to behavior like an unhealthy diet, tobacco smoking, and a sedentary lifestyle [8]. Thus there is a need to prevent modifiable risk factors and to adopt healthy lifestyle. This will definitely decrease rate of ACS and morbidity and mortality rate in Pakistan due to ACS.

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