A prospective study on incidence prevalance, risk factors of myocardial infarction

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ABSTRACT

Aim and Objectives: To monitor and assess the incidence, prevalence and risk factors of Myocardial Infarction. Materials and Methods: A prospective study was conducted in Meditrina Welcare Heart Centre, Palakkad from November 2016- April 2017. A total of 203 cases were collected. Patients of age between 31 and above with myocardial infarction were included in the study. Results and Discussion: The maximum number of patients belongs to 61 years and above. 76.35% patients are male. Risk factors of study population include diabetes + blood pressure + hyperlipidemia (31.52%), followed by hyperlipidemia, blood pressure, cardiovascular disease etc. 82.26% of patient's do not do regular exercise. Conclusion: From the study it shows that the prevalent age group is 61 years and above. Diabetes + blood pressure + hyperlipidemia are the major risk factor for MI. MI occurs more predominant in males and majority of subject do not do regular exercise.

Keywords: MI, Risk factors, Prevalence, Incidence.

1. INTRODUCTION

Survivors of myocardial infarction (MI) are at increased risk for subsequent fatal and nonfatal, L-, ischemic events. [1,2] Cardiovascular diseases (CVDs), especially coronary heart disease (CHD), have assumed epidemic proportions worldwide. Globally, CVD led to 17.5 million deaths in 2012. [3] More than 75% of these deaths occurred in developing countries. In contrast to developed countries, where mortality from CHD is rapidly declining, it is increasing in developing countries. [4]

The incidence of myocardial infarction (MI) in the world varies greatly. According to a Spanish study, the crude coronary heart disease (CHD) incidence rate was 300.6/100,000 person-years for men and 47.9/100,000 person-years for women. [5] The incidence of MI in India is 64.37/1000 people[11] in men aged 29-69 years, alcohol intake led to 30% lower CHD incidence.5 Smoking is known to cause arterial thrombosis and MI, and is known to cause endothelial dysfunction. [6] More than 80% of the cases of cardiovascular disease are in developing countries however studies on risk factors are mostly conducted in developed countries. [7] Hence, it is important to carry out relevant studies in a developing country such as ours, in order to study the risk factors and their influence. The association between substance abuse and CHD has been widely studied.

Many such studies have shown that moderate alcohol intake reduces the risk of CHD [8] and smoking increases it [6] as not many studies have been done to show the incidence of substance abuse in patients with MI in this region, this study aims to elicit a history of substance abuse among patients with MI and correlate the two. Consumption of small to moderate amounts of alcohol (2 or [59.2 ml] or less daily) is associated with lower incidence of coronary death. [8] This has been attributed to improved plasma lipid profiles, particularly an increase in high-density lipoprotein (HDL) cholesterol, increased adiponectin, reduced plasma fibrinogen, viscosity, platelet activity, C-reactive protein, and improved insulin sensitivity. [9] A negative

association between alcohol consumption and a first MI in 464 patients was found in a study.[10]

2. MATERIALS AND METHODS

A prospective observational study was conducted at Meditrina Welcare Heart Centre, Palakkad, for a period of 6 months duration (November 2016 - April 2017). After getting approval from the ethics committee of the institution, subjects were selected based on inclusion & exclusion criteria. This study population includes both inpatients and out patients with myocardial infarction with or without co - morbidities, Patients on both sex, Age greater than 30 years and exclude population are physically inactive patients, mentally retarded patients and patients who are not willing to participate in the study. The patients inform consent was obtained from all participants prior to the study. Questionnaire survey was conducted to assess the prevalence and risk factors of myocardial infarction. Other relevant information on the disease, prevalence, associated symptoms, diagnosis were collected on a data entry form. The descriptive statistical analysis was carried out by using graph pad prism (Version 6.0) software.

3. RESULT AND DISCUSSION

Table - 1: Gender distribution

Gender	No: of Patients	Percentage (%)
Males	155	76.35
Females	48	23.64

The sample (n=203) consisted of 76.35% (n=155) of patients are in male and 23.64% (n=48) of patients were in female. In this study, majority of male populations are affected in myocardial infarction.
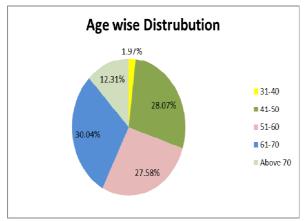

Figure - 1: Age wise distribution.

Among the total study population (n=203), The majority of patients (86 patients, 42.36%) diagnosed for Myocardial infarction belongs to the age group of above 61 years,

followed by 57 patients (28%) in the age group of 41-50 years and 56 patients (27.58%) belongs to the age group of 51-60 years. Among the study population, we observed that 1.97% (4patients) was in the age grouping of 31 – 40 years.

Table - 2: Family History

Family history	No of patients	Percentage (%)
Father	31	15.27
Mother	13	6.40
Brother	23	22.33
Sister	5	2.46
Father and mother	2	0.98
Father and brother	14	6.89
Mother and sister	3	1.47
Mother and brother	4	1.97
Both parents and siblings	5	2.46
No family history	103	50.73

Family history of myocardial infarction (MI) is an independent risk factor for MI. Several genetic variants are associated with increased risk of MI and family history of MI in a first-degree relative doubles MI risk. However, although family history of MI is not a simple dichotomous risk factor, the impact of specific, detailed family histories has not received much attention, despite its high clinical relevance. We examined risk of MI in first- and second-degree relatives and by number and age of affected relatives. A total number of study population (203), 50.73% (n=103) of patients are not having any family history of MI. 24.79% (n=28) of patients having MI with the relation either brother or sister. Followed by 15.27% (n=31) of father and 6.40% (n=13) of mother having MI. In our study shows that the 49.22% patients having the family history of myocardial infarction.

Table - 3: Dietary habits

Dietary habits	No. of patients	Percentage (%)
Vegetarian	41	20.19
Non-vegetarian	62	30.54
Mixed food	100	49.26

Among the total study population (203), majority of patients (100, 49.26%) have mixed diet either vegetarian or non-vegetarian, followed

by 62 patients (30.54%) have non-vegetarian and 41 patients (20.19%) have vegetarian. A healthy diet will help you prevent, control, and a few will even reverse MI. Taking steps to prevent and management MI doesn't mean living in deprivation; it suggests that eating a tasty, balanced diet that may also boost your energy and improve patient's mood. Many risk factors are modifiable, and making simple changes to your diet or lifestyle can drastically reduce your risk for a heart attack. The risk factors you do have control over include tobacco smoke, high blood cholesterol, high blood pressure, physical inactivity, obesity and diabetes mellitus. Making changes to your diet can have a big effect on your risk factors, and can reduce your cholesterol and blood pressure, and can help you achieve a normal weight.

Table - 4: Co-Morbidity disease conditions

Co-morbid disease	No of patients	Percentage (%)
Hypertension	21	10.34
Diabetes	17	8.37
Hypothyroidism	20	9.85
Hyperlipidemia	36	17.73
Hypertension + Diabetes	10	4.92
Diabetes + Hyperlipidemia	8	3.94
Hypertension + Hyperlipidemia	7	3.44
Hypertension + DM +Hyperlipidemia	64	31.52
Cardiovascular disease	23	11.33

Co - morbidities in the present study were defined as those chronic conditions that were previously diagnosed, and had been documented, in the medical history section of reviewed hospital charts, and did not include any conditions that may have been newly diagnosed during the patient's hospital admission. Thus, there were no clinical or laboratory criteria that were used to make the final diagnoses for these conditions. In our study population majority of patients affected with Hypertension + DM +Hyperlipidemia, followed by 23 (11.33%) patents are affected with CVD and 10.34% (n=21) of patients were affected hypertension alone, followed by 8.37% (n=17) of patients were affected with diabetes alone.

Smoking increased the risk while alcohol consumption was associated with a protective effect. Associations with both risk factors were stronger for MI [12]. Lifestyle factors such as smoking, physical inactivity, and alcohol consumption plays an important role in the etiology of coronary heart diseases (CHD) [13]. Although these factors are well-known risk factors for CHD, only few studies investigated the associations between the risk of (unstable) angina pectoris and smoking status, alcohol consumption, or physical inactivity. In contrast, the influence of these lifestyle factors on the risk of total CHD or acute myocardial infarction is thoroughly investigated although patients with unstable angina pectoris have better survival rates than patients with AMI, their cardiac re - hospitalization rates and quality of life scores are similar or even worse. [14] In our study subjects, 50 respondents having a smoking habits, followed by 36 respondents (17.73%) having both smoking and alcoholic, only 5 respondents (2.46%) having alcohol alone social habit and 112 respondents (55.17%) are clean habit.

Table - 5: Social habits

Social habits	No of patients	Percentage (%)
Alcoholic	5	2.46
Smoker	50	24.63
Both alcoholic and smoker	36	17.73
No social habits	112	55.17

Table - 6: Physical activity

Exercise	No: of patients	Percentage (%)
YES	36	17.73
NO	167	82.26

In these study population 167 respondents (82.26%) were physically inactive and 36 respondents (17.73%) having physically active. Exercise can both prevent and cause acute myocardial infarction and sudden cardiac death. One of the most effective and least expensive therapies for cardiovascular disease is exercise. Clinical studies generally show a benefit of exercise training and a reduction of cardiac mortality after MI by 26%. The question remains of how soon to start exercising, especially after a large MI.

Table - 7: Clinical investigation

Clinical test	No. of patients	Percentage (%)
Trop T positive	97	47.72
TMT positive	24	11.82
TMT negative	2	0.98

The troponins are specific to cardiac muscle, rise fairly early in cardiac injury, and stay elevated longer than some of the other cardiac biomarkers such as CK-MB and myoglobin. As the clinical investigation of our study population (n=203), 47.72% (n=97) of patients having elevated level of Troponine and 11.82% (n=24) of patients having the TMT positive and 098% (2) of patients have TMT negative. As the result shows that the patients having acute myocardial infarction and not having any physical activities. Life style modification should be included like diet and exercise. This will help to prevent further complications

4. DISCUSSION

For MI events, the incidence rises steeply with age. In this prospective study it was observed that the maximum number of MI patients of age belongs to 61 years and above (42.36%). In this study males (76.35%) are predominant than females (23.64%) [15]. A study conducted by Channamma et al., prevalent age group is 60 & above and males are dominant than females. The study reveals that 50.73% do not have any family history and 46.30% show family history. A study conducted by Maria Carla Roncaglioni [16] et al., show that family history is an independent risk factor for MI. In the group showing family history brothers (22.33%) have MI. In this study population about 31.52% have DM + BP + Hyperlipidemia and 17.73% has hyperlipidemia. The distribution of food habits show that 49.26% are mixed food and 30.54% are non vegetarian. About 81.28% of patients drink tea daily and 55.17% do not have any social habits,24.36% are smokers.82.26% of patients do not do exercise. This study also reveals that about 47.72% patients have TMT positive.

5. CONCLUSION

From the study it was clear that the prevalence of MI belongs to age group between 61years and above, and BP+DM + Hyperlipidemia is the major risk factor (31.52%) for MI. The current study show that males are at high risk as compared to females. Life style modification should be included like diet and exercise,. This will help to prevent further complications

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