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Research Article

The Role of Unknown Risk Factors in Myocardial Infarction

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Abstract

Background: Myocardial infarction (MI) also known as "heart attack", is the death of cardiac muscle resulting from ischemia.
Objectives: To evaluate risk factors in myocardial infarction like age, sex, smoking, diabetes mellitus, hyperlipidemia, hypertension, positive family history, high level of cholesterol, stress and poor physical activity.
Methods: This is a retrospective study on 163 myocardial infarction cases, conducted in the cardiology ward and CCU at a General Public Hospital, Baroda.
Results: The majority of our patients were old men in the age range of 60 - 69 years. Amongst all patients 36.7% were smokers, 61.3% were type A personality group, 18.5% were active, 81.5% were physically inactive, 28.9% had hypertension, 23.3% were diabetic, 17.5% had hyperlipidemia and 33.2% had positive family history of myocardial infarction.
Conclusions: Amongst people, to increase awareness regarding moderate physical activity, cessation of cigarette smoking, increased daily consumption of fruits and vegetables, as to tackle the problem and identifying the new risk factors for MI.
Keywords: Myocardial infarction, Risk factors, Atherosclerosis, Ischemic Heart Disease (IHD)

1. Introduction

MI, also known as "heart attack", is the death of cardiac muscle resulting from ischemia. It is by far the most important form of IHD and alone is the leading cause of death in the United States and industrialized nations[1].

MI, may occur at any age, but the frequency rises progressively with increasing age and when predispositions to atherosclerosis are present, such as hypertension, cigarette smoking, diabetes mellitus, genetic hypercholesterolemia, and other causes of hyperlipoproteinemia[1].

Atherosclerosis is characterized by intimal lesions called atheromas, or atheromatous or fibrofatty plaques, which protrude into and obstruct vascular lumens and weaken the underlying media. They may lead to serious complications. Atherosclerosis contributes approximately half of all deaths-and serious morbidity in the Western world than any other disorder. MI alone is responsible for 20% to 25% of all deaths in the United States[1].

Atherosclerosis of the coronary arteries commonly causes myocardial infarction and angina pectoris[3]. The prevalence and severity of the disease among individuals and groups-and therefore the age when it is likely to cause tissue or organ injury-are related to a number of factors, some constitutional but others acquired and potentially controllable. The

risk factoIrs that predispose to atherosclerosis and resultant IHD are:

i) Age- Death rates from IHD rise with each decade even into advanced age[1,2].

ii) Sex- Males are much more prone to atherosclerosis[1,2] and its consequences than are females. MI and other complications of atherosclerosis are uncommon in premenopausal women unless they are predisposed by diabetes, hyperlipidemia, or severe HT. After menopause, however the incidence of atherosclerosis-related diseases increases, probably owing to a decrease in natural oestrogen levels.

iii) Genetics- The well-established familial predisposition to atherosclerosis and IHD is most likely polygenic. Most commonly, the genetic propensity relates to familial clustering of other risk factors, such as HT or diabetes, while less commonly it involves well-defined hereditary genetic derangements in lipoprotein metabolism that result in very high lipid levels, such as familial hypercholesterolemia[1].

Other, nongenetic risk factors, particularly diet, lifestyle and personal habits, are to a large extent potentially reversible. The four major risk factors potentially responsive to change are hyperlipidemia, HT, cigarette smoking and diabetes[1].

Many studies have been conducted throughout the world to evaluate role of associated risk factors in myocardial infarction. But most of the studies differ from one another, as at some places cigarette smoking is the most common cause of MI[4], while at other places other risk factors are the leading cause of MI. Therefore, this study was conducted with the aim of evaluating unknown risk factors in MI at a General Public Hospital, Baroda.

Objectives: To evaluate risk factors in myocardial infarction like age, sex, smoking, diabetes mellitus, hyperlipidemia, hypertension, positive family history, high level of cholesterol, stress and poor physical activity[5].

2. Materials and Methods

The study was approved by the ethical committee of M.S. University, Baroda. This is a retrospective study of 163 acute MI patients conducted in the cardiology ward and CCU at a General Public Hospital, Baroda. Informed consent & enrolement of patients is taken priorly. The aim was the evaluation and identification of classic risk factors[6]. Patients were thus divided into different age groups, and age and sex distribution of MI was evaluated.

Classic risk factors included age, hyperlipidemia, hypertension, diabetes mellitus, smoking, physical activity, and family history of MI[6].

3. Results

Among the 163 MI patients, 65.7% were male and 35.6% were aged between 60 and 69 years (Table 1).

Table 1. Age and Sex Distribution in MI Cases

Age Group	Total N (%)	Female N (%)	Male N (%)
20 – 29	7 (4.3%)	3 (1.8%)	4 (2.5%)
30 – 39	3 (1.8%)	1 (0.6%)	2 (1.2%)
40 – 49	23 (14.1%)	10 (6.1%)	13 (8.0%)
50 – 59	48 (29.4%)	20 (12.3%)	28 (17.2%)
60 – 69	58 (35.6%)	18 (11.0%)	40 (24.5%)
70 – 79	24 (14.7%)	4 (2.5%)	20 (12.3%)
Total	163 (100%)	56 (34.3%)	107 (65.7%)

60 patients (36.7%) were smoker (Table 2) and Type A personality was seen in 100 patients (61.3%) (Table 3). Physical activity as daily exercise was seen only in 30 cases (18.5%) but poor physical activity was reported in 133 cases (81.5%) (Table 4).

Table 2. Smoking in Different Age Groups

Age Group	No. of patients with smoking	Percentage
20-29	1	0.6%
30-39	18	11.0%
40-49	11	6.7%
50-59	5	3.1%
60-69	15	9.2%
70-79	10	6.1%
Total	60	36.7%

Table 3. Frequency of Stress in Different Age Groups

Age Group	Number of Patients With Stress	Percentage
20 – 29	10	6.1
30 – 39	13	8.0
40 – 49	15	9.2
50 – 59	20	12.3
60 – 69	25	15.3
70 – 79	17	10.4
Total	100	61.3

Table 4. Physical Activity in Different Age Groups

Age Group	Number of Patients With Physical Activity	Percentage
20 – 29	0	0.0
30- 39	8	5.0
40 – 49	4	2.5
50 – 59	6	3.7
60 – 69	10	6.1
70 – 79	2	1.2
Total	30	18.5

Table 5. Frequency of DM in Different Age Groups

Age Group	Total No. of DM Cases	Percentage
20-29	0	0.0%
30-39	0	0.0%
40-49	3	1.8%
50-59	11	6.7%
60-69	19	11.7%
70-79	5	3.1%
Total	38	23.3%

Table 6. Frequency of Hypertension in Different Age Groups

Age Group	Number of Hypertensive Cases	Percentage
20 – 29	0	0.0
30 – 39	0	0.0
40 – 49	8	5.0
50 – 59	4	2.5
60 – 69	25	15.3
70 – 79	10	6.1
Total	47	28.9

Thirty-eight patients (23.3%) were diabetic and hypertension was seen in 28.9% (Table 5, 6).

Table 7. Cholesterol Level in Different Age Groups

Age Group	Cholesterol ≥ 200mg/dl (%)	Cholesterol < 200mg/dl (%)
20 – 29	0	100
30 – 39	0	100
40 – 49	17	83
50 – 59	17	83
60 – 69	15	85
70 – 79	10	90

Lipid profile in all patients with the age of 20 - 39 years was lower than 200 mg/dl but 14.8% of 40 - 79 year age group had higher than 200 mg/dl (Table 7).

Table 8. LDL Level in Different Age Groups

Age Group	LDL ≥ 160mg/dl (%)	LDL < 160mg/dl (%)
20 – 29	0	100
30 – 39	0	100
40 – 49	30	70
50 – 59	20	80
60 – 69	10	90
70 – 79	10	90

LDL level in all patients with the age of 20 - 39 years was lower than 160 mg/dl but 17.5% of 40 - 79 year age group had higher than 160 mg/dl (Table 8).

Table 9. Family History of IHD in Different Age Groups

Age Group	Frequency of Positive FH for IHD	Percentage
20 – 29	12	7.4
30 – 39	12	7.4
40 – 49	13	8.0
50 – 59	11	6.8
60 – 69	3	1.8
70 – 79	3	1.8
Total	54	33.2

Finally, positive family history was seen in 54 patients (33.2%) (Table 9).

Lipid profile showed normal LDL and total Cholesterol in 20 - 39 year age group, and normal cholesterol and LDL level were reported respectively in 85.3% and 82.5% among those patients who aged 40 - 79 years (Table 7, 8).

4. Discussion

In this study we did evaluation of atherosclerotic risk factors. Among the 163 MI patients, 65.7% were male and 35.6% were aged between 60-69 years. This shows that, the proportion of males was more than that of females[4.] This study shows that number of patients with poor physical activity are highest who have developed MI. This suggests that MI is very much common in people who have inactive lifestyle. After poor physical activity, in this study MI is common amongst Type A personality, followed by cigarette smoking, positive family history of MI, diabetes and hyperlipidemia. The most important acute myocardial risk factor in South Croatia is current smoking, followed by diabetes, abnormal apo B/ apo A-1 ratio, abdominal obesity and HT, which differs from our study.

5. Conclusions

To increase awareness regarding moderate physical activity, cessation of cigarette smoking, increased daily consumption of fruits vegetables. And also identification of new and less known factors to tackle the problem and reduce the prevalence of cardiovascular disease.

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