Original Research Article

A prospective study of risk factors associated with young patients of myocardial infarction

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Received: 27-11-2021 / Revised: 12-12-2021 / Accepted: 09-01-2022

Abstract

Introduction: The prevalence of coronary artery disease (CAD) has progressively increased in India during the later half of the half century and is the major cause of morbidity and mortality burden in the world. Global burden of disease study estimate that by the year 2020, the burden of atheroembolic cardiovascular disease in India would surpass that in any other region in the world. **Materials and methods:** The study was conducted in Department of Medicine on 100 cases of acute myocardial infarction, if they satisfied the following selection criteria. From May 2020 to April 2021. Patients more than 18 years and less than 45 years of age presented with complaints of chest pain, palpitation (or) breathlessness (or) a combination of these were subjected primarily to electrocardiographic studies to confirm myocardial infarction. All patients having ST segment elevation (> 1 mm in inferior oriented leads (or) > 2 mm in anterior oriented leads) in at least two consecutive leads were considered to have myocardial infarction and then included in the study. **Results:** 100 young patients (18 – 45 yrs.) of acute myocardial infarction with average age of 36.24 ± 4.32 years were studied. Maximum (84%) were males. Youngest being 25 yrs. of age and the maximum incidence of the disease was found in 3rd decade. Prevalence of family history of coronary heart disease was 35%. No single patient had history of premature coronary artery disease in the family (i.e. CAD in male < 55 years, female < 65 years). Maximum patients belonged to lower class category (52%) followed by middle class (28%). Only 20% patients were from upper class; 55% of patients were smokers. **Conclusion:** The incidence of Myocardial Infarction is rising in young individuals owing to change in lifestyle pattern, eating habits, more stress and workload. Incidence remained highest in males as compared to females. Highly associated risk factor in young myocardial infarction patients are dyslipidaemia and smoking. Other traditional risk factors associated with myocardial infarction like diabetes, hypertension, obesity are also very much correlated and their incidence also seems to be increasing.

Key Words: coronary artery disease, palpitation, breathlessness, diabetes, hypertension.

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Introduction

The prevalence of coronary artery disease (CAD) has progressively increased in India during the later half of the half century and is the major cause of morbidity and mortality burden in the world. Global burden of disease study estimate that by the year 2020, the burden of atheroembolic cardiovascular disease in India would surpass that in any other region in the world[1].

Young patients with CAD are specific subset of population requiring attention. Although uncommon entity, it constitutes an important problem for the patient and the treating physician because of the devastating effect of this disease on the more active lifestyle of young adults. In addition, young patients have different risk factor profiles and prognosis than older patients[2].

Conventional risk factors are as important in determining the risk of CAD in Indian patients as they are in other population. In addition to these factors like S. Homocysteine, insulin level, S. fibrinogen, hsCRP lipoprotein (a) etc. which increase the prediction of Indians to develop premature and severe CAD[3].

The key to combat the increasing incidence of Coronary Artery Disease among Indians is the control of various risk factors by population-based strategy[4]. So by studying the role of risk factors, we can enhance our ability to institute effective preventive and control measures[5]. The present study is undertaken to find out the association of various risk factors and clinical profile of Acute Myocardial Infarction in Young Patients (18 - 45 years), which are the most productive part of total population presented to Maheswara Medical College, Hyderabad.

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Materials and methods

The study was conducted in Department of Medicine on 100 cases of acute myocardial infarction, if they satisfied the following selection criteria. From May 2020 to April 2021.

Patients more than 18 years and less than 45 years of age presented with complaints of chest pain, palpitation (or) breathlessness (or) a combination of these were subjected primarily to electrocardiographic studies to confirm myocardial infarction.

All patients having ST segment elevation (>1 mm in inferior oriented leads (or) > 2 mm in anterior oriented leads) in at least two consecutive leads were considered to have myocardial infarction and then included in the study.

Detailed history and clinical examination will be done in patients satisfying the selection criteria, special stress was laid in the history on Occupation, Socioeconomic status, History of DM, PVD, HT or IHD, History of smoking or alcohol consumption, personality and life style, Family history of premature CAD or CVA in any of the first degree family members (male < 55 years of age and female < 65 years of age). They were screened for obesity by body mass index (w/h2).

A detailed CVS examination included presence of gallop, pericardial rub and systolic murmur. RS examination was carried out for evidence of basal crepitations and rhonchi. Patients having associated congenital or valvular heart disease were excluded.

All patients will be subjected to the following laboratory investigations:- Complete haemogram, ESR, PCV, Urine for sugar, Renal Function Tests, Liver Function Tests, Fasting lipid profile for Dyslipidaemia, Fasting Blood Sugar and Postprandial Blood Sugar for

Diabetes Mellitus, ECG and chest x-ray PA view and 2D-Echocardiography for left ventricular function and evidence of CAD.

Statistical Analysis

The groups were compared for all variables using Student's t test to compare equality for means. The results are presented as percentage and mean ± SD.

Results

100 young patients (18 – 45 yrs.) of acute myocardial infarction with average age of 36.24 ± 4.32 years were studied. Maximum (84%) were males. Youngest being 25 yrs. of age and the maximum incidence of the disease was found in 3rd decade. Prevalence of family history of coronary heart disease was 35%. No single patient had history of premature coronary artery disease in the family (i.e. CAD in male < 55 years, female < 65 years). Maximum patients belonged to lower class category (52%) followed by middle class (28%). Only 20% patients were from upper class; 55% of patients were smokers. They were smoking beedies or cigarettes; 35% of patients smoked more than five pack years. No female was a smoker; 20% of patients were obese and all of them were male; 46% of patients lead sedentary lifestyle and 50% had type a personality. Dyslipidaemia was the most common risk factor in the present study (75% of patients). Combined dyslipidaemia was the most common phenotype (52% of patients); 58% had high LDL cholesterol, 36% had low HDL cholesterol and 40% had high triglycerides; 25% had history of hypertension and 20% were diabetic; 64% of patients in present study had anterior wall MI, while 24% had inferior wall MI and 12% had anteroseptal wall MI. In the present study 40% of patients had mild LV dysfunction, 50% had moderate LV dysfunction and 10% had severe LV dysfunction.

Table 1: Demographic Characteristics

S.No	Parameter	Value
1	Total Population Average age	36.24
2	Men's Average Age	37.2
3	Women's Average Age	35.3
4	Men : Women Ratio	5.25:1
5	Family History of C. A. D. (%)	36
6	Prevalence of smoking (%)	56

Table 2: Risk factors associated with Myocardial Infarction

	Parameter	Value
Dyslipidemia	High Total Cholesterol (%)	24
	High LDL (%)	40
	High Triglyceride (%)	40
	Low HDL (%)	36
	Prevalence of Hypertension (%)	24
	Prevalence of Diabetes (%)	20
Myocardial Infarction-Site	Anterior Wall (%)	64
	Inferior Wall (%)	24

Discussion

In the present study, maximum patients belonged to lower class category (52%) followed by middle class (28%). Only 20% patients were from upper class. This may be due to study was conducted in a hospital setup where maximum patients belonged to lower or middle socioeconomic class[6].

The prevalence of smoking is about 55% in the present study and it could be concluded that smoking is a significant risk factor for premature coronary artery diseases. The prevalence of obesity is 20% in the present study. The prevalence of sedentary habits in the present study is 46%. It may be because of modernization, change in feeding habits like preference to fast foods and oily items, faddism towards vegetables. Rapid urbanization has also changed the lifestyle of people from hard work to office work. Further, less availability of leisure hours and stress in day-to-day work prevented people from sparing time for performing physical exercise[7].

The prevalence of type A personality is 50% in present study. More number of type A personality patients was expected in the study, but paradoxically the number of type A and B personalities were equal. This may be due to the high prevalence of other risk factors in type B personality, which had influenced the result[8].

About 75% of patients were having dyslipidaemia in the present study. The high intake of fatty and oily feeds in the population of present study that could contribute to high incidence of dyslipidaemia in the present study. Moreover, the prevalence of diabetes mellitus was also high, which could again contribute to dyslipidaemia. In addition, in this study more stringent values are taken as cut-off to define dyslipidaemia (which is recommended now-a-days)[9].

Prevalence of hypertension in our study is 25%. Higher prevalence of other risk factors of hypertension like obesity, sedentary life habits, diabetes mellitus, dyslipidaemia, feeding habits in the present study group could be a contributing factor for the high prevalence. Also in general prevalence of hypertension is less in younger age group as compared to elderly[10].

A high prevalence of Diabetes Mellitus of 20% was noted in the present study. Feeding habits, higher incidence of obesity and sedentary lifestyle and probable genetic factors could contribute to the difference. 64% of patients in present study had anterior wall MI, while 24% had inferior wall MI and 12% had anteroseptal wall MI. Anterior wall MI is more common, because LAD coronary artery is the most frequent culprit for the development of atherosclerosis. In the present study 40% of patients had mild LV dysfunction, 50% had moderate LV dysfunction and 10% had severe LV dysfunction. The long-term prognosis of patients of myocardial infarction is much dependent upon LV function.

Conclusion

The incidence of Myocardial Infarction is rising in young individuals owing to change in lifestyle pattern, eating habits, more stress and workload. Incidence remained highest in males as compared to females. Highly associated risk factor in young myocardial infarction patients are dyslipidaemia and smoking. Other traditional risk factors associated with myocardial infarction like diabetes, hypertension, obesity are also very much correlated and their incidence also seems to be increasing.

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Conflict of Interest: Nil Source of support: Nil