

**RISK FACTORS ANALYSIS OF MYOCARDIAL INFARCTION IN YOUNG PATIENTS
AND ITS COMPARISON WITH OLDER ONES: A STUDY IN A TERTIARY CARE
CENTRE IN EASTERN INDIA.**

Dr. Biswajit Majumder^{1*} and Dr. Sharmistha Chatterjee²

^{1*}Associate Professor Department of Cardiology, R G KAR Medical college, Kolkata, India.

²Assistant Professor Department of Biochemistry College of Medicine and Sagore Dutta Hospital, Kamarhati, Kolkata, India.

Corresponding Author: Dr. Biswajit Majumder

Associate Professor Department of Cardiology, R G KAR Medical college, Kolkata, India.

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INTRODUCTION

Cardiovascular disease is a major cause of death in the world. Coronary artery disease in India has shown an increase in incidence and prevalence over the last thirty years. Coronary artery disease in the young, (below 40 years) is recognized with increasing frequency and is as high as 12% in India.^[1,2] Myocardial infarction occurring in the patients below 40years of age is severe form of premature coronary artery disease and is usually massive resulting in high mortality and morbidity. Because most of these young myocardial infarction patients have premature atherosclerosis, they are ideal subjects to study the relative importance of various risk factors in the etiopathogenesis of myocardial infarction. The reason for this increased risk of myocardial infarction among young Indians is unclear. Prevalence of common risk factors is not higher in Indians than in other ethnic groups. High triglyceride concentrations, low concentration of high density lipoprotein cholesterol, increased visceral fat and insulin resistance are more common in Indians. Since most studies are based on migrants to western countries, these findings may not necessarily apply to the vast majority of Indians living in their own countries. So risk factors evaluation in Indian context may give added information for this increased risk. Keeping this idea in mind, we did a small retrospective comparative, hospital based case control study to evaluate the risk factors in this part of the country, so that an appropriate well designed preventive programme can be launched.

KEYWORDS: Myocardial infarction, Young, Risk factors.

AIMS AND OBJECTIVES

- 1.To detect prevalence of important risk factors of myocardial infarction below 40 years of age attending this hospital.
2. To compare these values with apparently healthy people to see any significant statistical difference.
3. To set an idea about risk factors of myocardial infarction in young below 40 years of age, so that an effective preventive programme can be initiated.

MATERIALS AND METHODS

The present study was a case control retrospective comparative study. In this study, we included 30 patients

of myocardial infarction less than 40 years, 30 patients of MI (myocardial infarction) above 40 years and 30 healthy controls less than 40 years of age. The study was performed in the Department of Cardiology, R G Kar Medical college, Kolkata, West Bengal. Patient with myocardial infarction were selected on the basis of typical pain chest, typical electrocardiographic changes and diagnostic enzyme changes. Patients with liver, thyroid and renal disease were excluded. The following risk factors were analyzed among the cases and controls: age, family history, smoking, hypertension, diabetes mellitus, obesity and lipid profile.

RESULT AND ANALYSIS

Age distribution	Patients with MI below 40 years	Patients without MI below 40 years	Patients with MI above 40 years
20-30	6(20%)	8(26.66%)	
30-40	24(80%)	22(73.33%)	
40-50	-	-	4(13.33%)
50-60	-	-	14(46.66%)
60-70	-	-	9(30%)

70-80	-	-	3(10%)
Total	30 (100%)	30(100%)	30(100%)

Mean age of patients with MI below 40 was 34.1+3.89. Mean age of patients without MI below 40 was 33.03+4.16 and mean age of patients with MI above 40 was 59.23+8.58.

96.66% of young MI patients were male and only 3.3% are female. 93.33% of older MI patients were male and only 6.6% are female. Positive family history was found in 46.6% of below 40MI patients and 26.6% of above 40MI patients and only 10% of controls. Hypertension was present in 40% of patients with MI below 40, 56.6% of patients with MI above 40 and 13.3% patients without MI below 40. 70% of MI below 40, 53.33% of MI above 40 and 20% healthy control were smoker. 23.33% of young MI, 36.66% of older MI were diabetic compared to 3.3% of young non MI controls. 23.33% of young MI and 30% of older MI patient and 6.66% of young non MI patient were obese. 33.3% of young MI patients and 26.6% older MI patients have central obesity. 40% of young MI patients and 6.66% of young non MI controls have raised LDL and total cholesterol and this is significant statistically. 26.66% of young MI and 3.33% of young healthy control have reduced HDL and raised triglyceride and this is also statistically significant. Young MI patients have higher raised cholesterol, LDL and triglyceride and low HDL compared to older MI patients but this difference is not statistically significant. 50% of young MI patients and 30% of older MI patients have 3 or more risk factors. 30% of young MI patients and 63.33% of older MI patients have 2 or less risk factors. 20% of young MI patients and 6.6% of older MI patients have no risk factors.

DISCUSSION

Among younger and older MI patients preponderance of male sex was significant. The preponderance of male sex was also observed by Gupta et al and Wasir et al. In our study 46.6% of MI below 40 years have positive family history compared to 10% of healthy controls and this difference is statistically significant. Garg et al and Uhl et al^[3] have also shown positive family history in young patients with MI in 30% and 69% respectively. Family history of CAD is a strong risk factor for development of MI in both younger and older patients but this familial tendency is most striking in patients who suffered MI before the age of 40. In our study 56.67% of older MI patients, 40% of young MI patients and 13.3% of healthy controls were hypertensive. Similar statistically non significant higher frequency of hypertension was reported by Garg et al among older MI patients compared to young MI patients. (23% vs 13%). So hypertension is an important risk factor for myocardial infarction but appears to be less important in younger MI patient compared to older patient. Our data showed that smoking is the most common and important risk factor in young MI patients. Similar results were also obtained by Garg et al and Uhl et al. However Wasir et al^[4] reported

a much lower incidence of smoking in young patient. So it can be said from our study that smoking is definitely an important risk factor for MI in both young and older patients and young patients smoke more than older. Our data showed that prevalence of Diabetes mellitus were higher in older MI patients compared to younger counter parts. Similar result was obtained from AIIMS where older patients were found to be diabetic more frequently than younger.^[5,6,7,8] Central obesity is an important risk factor for CAD.^[9,10,11] Our study showed that obesity is not that frequent in young MI cases rather central obesity is much more frequent and significant predictor of MI and association is most apparent in patient age below 40. Mean cholesterol and LDL value in young MI patients were significantly higher than healthy counterpart. Similar results were also obtained by Jaychandran R et al.^[12,13,14] Mean LDL cholesterol in young MI patient was significantly higher than older patients. However mean cholesterol and LDL cholesterol is found to be much lower compared to western data in both case and control.^[15,16,17] So low cholesterol and LDL cholesterol compared to western data may be hazardous in Indians. This needs further study. In our study although mean HDL cholesterol in young MI patients was low and significantly different from healthy controls, the difference of mean HDL between young and older patients was not significant statistically. Though triglyceride level was significantly higher in young MI patient compared to healthy controls, there was no difference between older and young MI patients. Mean level of triglyceride was low contrary to the studies on Indian populations in the west.^[18,19,20] In our study, majority of young MI patient have 3 or more risk factors compared to most of the older patients who have 2 or less risk factors.

SUMMARY AND CONCLUSION

This was a retrospective comparative study. So it is difficult to comment definitely, but this can be said that young MI patients in this part of country have high prevalence of positive family history, smoking, central obesity, compared to older patients. Diabetes, hypertension, raised cholesterol and LDL cholesterol, may also be important risk factors in the genesis of MI in young. Mean cholesterol, mean LDL cholesterol and mean triglyceride level were lower than the western data. Guidelines developed for pharmacologic treatment of Caucasians may not be appropriate for this population. Aggressive modification of life style and careful evaluation of all lipoproteins before adolescence seem justified in view of the malignant nature of atherosclerosis in this population.

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