

## Original Article

### Risk of Myocardial Infarction in young adults: A clinical study

Sachin Agarwal<sup>1</sup>, Anupam Sharma<sup>2</sup>, Ajay Agarwal<sup>2</sup>

<sup>1</sup>Assistant Professor, Department of General Medicine, <sup>2</sup>Assistant Professor, General Surgery, Rajshree Medical Research Institute, Bareilly, Uttar Pradesh

#### Corresponding Author:

Dr. Sachin Agarwal, Assistant Professor,  
Department of General Medicine,  
Rajshree Medical Research Institute,  
Bareilly, Uttar Pradesh India

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#### ABSTRACT:

**Background:** Coronary heart disease (CHD) has high morbidity and mortality rate in adults not only in India but worldwide. Myocardial infarction (MI) is the lethal manifestation of CHD and can present as sudden death. MI is mainly the disease of older individual, it can occur in also. Fortunately, its incidence is not common in patients younger than 45 years. The present study was carried out to estimate the risk of acute myocardial infarction among young adults visiting the department of general medicine. **Materials & methods:** This study was conducted in the department of general medicine. This study consisted of 50 patients (Males- 30, females- 20). Fasting blood glucose, fasting lipid profile, serial ECGs and the cardiac enzymes (CPK- MB) were evaluated. The risk factors which were studied were hypertension, diabetes mellitus, smoking habits, overweight (a BMI of > 25 kg/m<sup>2</sup>), the waist to hip ratio, (a WHR of >0.91cms was considered as a risk factor), hyperlipidaemia (serum cholesterol of 200 mg%), a past history of IHD (ischaemic heart disease), and a family history of ischaemic heart disease. **Results:** This study comprised of 30 males and 20 females who met the criteria. Maximum patients were seen in age group 36-40 years (males- 20, females- 10) followed by 31-35 years ((males- 7, females- 5), 26-30 years (males- 2, females- 3) and 21-25 years (males- 1, females- 2). The difference was seen in age group 36-40 years with P value <0.05. Most common risk factors seen was Smoking (70%), dyslipidemia (27%), diabetes (25%), family history of IHD (15%), hypertension (10%) and patients having BMI>25 kg/m<sup>2</sup> (8%). The difference was statistical significant (P-0.02). Q wave infarction was seen in 65%, Anterior wall MI in 50%, inferior wall MI in 20% and sub endocardial in 5% of patients. The difference was significant (P-0.04). Single vessel involvement was seen in 62%, double vessel in 12%, multiple vessel in 8% and normal coronary vessel was seen in 18% of patients. The difference was significant (P-0.01). **Conclusion:** MI is now becoming disease of young adults. Person has to quit smoking and a routine physical exercise is necessary to overcome the risk of MI. **Key words:** coronary heart disease, myocardial infarction, smoking

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#### INTRODUCTION

Coronary heart disease (CHD) has high morbidity and mortality rate in adults not only in India but worldwide. Myocardial infarction (MI) is the lethal manifestation of CHD and can present as sudden death. MI is mainly the disease of older individual, it can occur in also. Fortunately, its incidence is not common in patients younger than 45 years.<sup>1</sup>

This disease carries psychological effects and financial constraints for the person and the family

when it occurs at a young age. The prevalence of smoking, obesity, and lack of physical activity is increasing in young adults.<sup>2</sup>

The actual prevalence of the disease was found to be 0.5% in men and 0.18% in women between 35 and 44 years, 20.5% in men, and 17.1% in women over the age of 60 years. The increase in prevalence of heart disease among certain ethnic groups like people of Asian Indian origin has been of great interest and these people tend to get MI at a younger age in

addition to more complex coronary artery abnormalities.<sup>3</sup>

Smoking, in young adults has increased 9%. In the UK, the smoking burden was found to be more among girls who also continued to stay as smokers for longer in their life. This would have an impact on the cardio protection offered by hormones like oestrogen in young women.<sup>4</sup>

Obesity is another major factor which is now increasing among young adults and children. Insulin resistance, which by itself is a marker for CHD, has been found among 24% of school children in the USA. Metabolic syndrome and insulin resistance were found in two thirds of young people with MI.<sup>5</sup>

Cocaine use was found to be the commonest cause for the presentation of non-traumatic chest pain in the emergency department among young adults and can result in MI in the younger population. There is a fourfold increase in the number of cases in the past 10 years. In the UK, 45% of young adults have admitted use of recreational drugs, including cocaine, at least once. It becomes clear that the prevalence of CHD is bound to rise in patients aged less than 45 in the years to come.<sup>6</sup>

The causes for MI among patients aged less than 45 can be divided into four groups: Atheromatous CHD, Non-atheromatous CHD, Hypercoagulable states and MI related to substance misuse. The classic presentation of worsening angina culminating in MI is rare in younger patients. The first onset of angina that rapidly progresses to fully evolved MI is often the case in patients less than 45 years of age.<sup>7</sup>

The present study was carried out to estimate the risk of acute myocardial infarction among young adults visiting the department of general medicine.

### MATERIALS & METHODS

This study was conducted in the department of general medicine between January 2013 to June 2013. Those who fulfilled the WHO criteria with atleast 2 of 3 points such as a history of an ischaemic type of chest discomfort, evolutionary changes on the serially obtained ECG tracings and rise and fall of the serum

cardiac markers were included. Patients less than 18 years and more than 40 years of age were excluded from the study. This study consisted of 50 patients (Males- 30, females- 20)

Patient information such as age, sex, family history of CVDs, physical activity, smoking habits, weight, height and waist and hip circumference was recorded. Fasting blood glucose, fasting lipid profile, serial ECGs and the cardiac enzymes (CPK- MB) were evaluated. The risk factors which were studied were hypertension, diabetes mellitus, smoking habits, overweight (a BMI of > 25 kg/m<sup>2</sup>), the waist to hip ratio, (a WHR of >0.91cms was considered as a risk factor), hyperlipidaemia (serum cholesterol of 200 mg%), a past history of IHD (ischaemic heart disease), and a family history of ischaemic heart disease.

Results thus obtained were tabulated and subjected to statistical analysis using chi square test. P value<0.05 was considered significant.

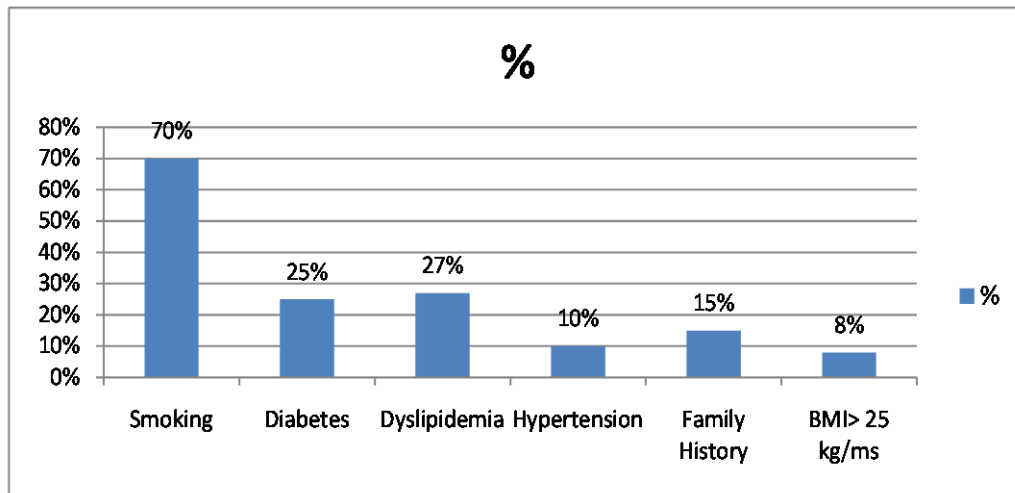
### RESULTS

Table I shows age and gender distribution of patients. This study comprised of 30 males and 20 females who met the criteria. Maximum patients were seen in age group 36-40 years (males- 20, females- 10) followed by 31-35 years ((males- 7, females- 5), 26-30 years (males- 2, females- 3) and 21-25 years (males- 1, females- 2). The difference was seen in age group 36-40 years with P value <0.05. Most common risk factors seen was Smoking (70%), dyslipidemia (27%), diabetes (25%), family history of IHD (15%), hypertension (10%) and patients having BMI>25 kg/m<sup>2</sup> (8%) (Graph I). The difference was statistical significant (P-0.02). Q wave infarction was seen in 65%, Anterior wall MI in 50%, inferior wall MI in 20% and sub endocardial in 5% of patients. The difference was significant (P-0.04) (Graph II). Graph III shows that Single vessel involvement was seen in 62%, double vessel in 12%, multiple vessel in 8% and normal coronary vessel was seen in 18% of patients. The difference was significant (P-0.01).

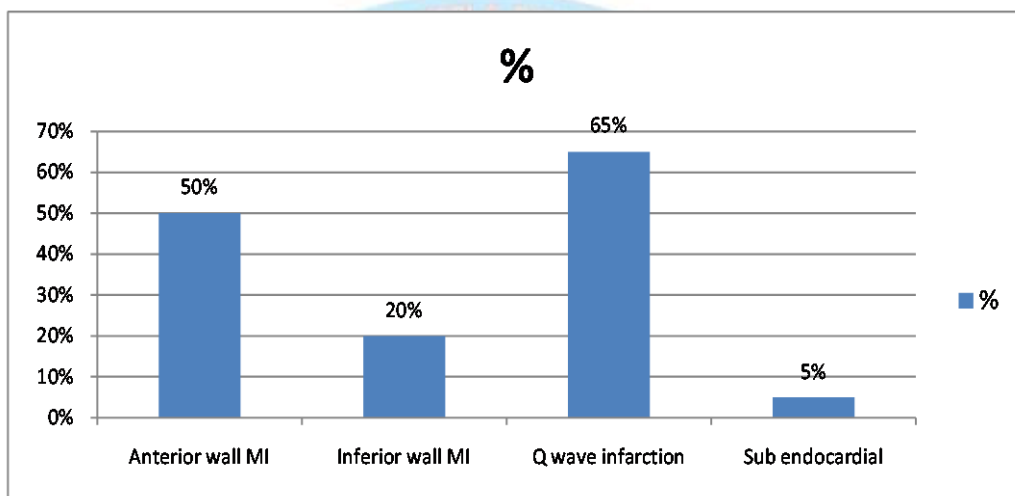
**Table I** Distribution of patients on the basis of age and gender

Age	Male	Female	P value
21-25	1	2	0.2
26-30	2	3	0.2
31-35	7	5	0.3
36-40	20	10	0.01
Total	30	20	

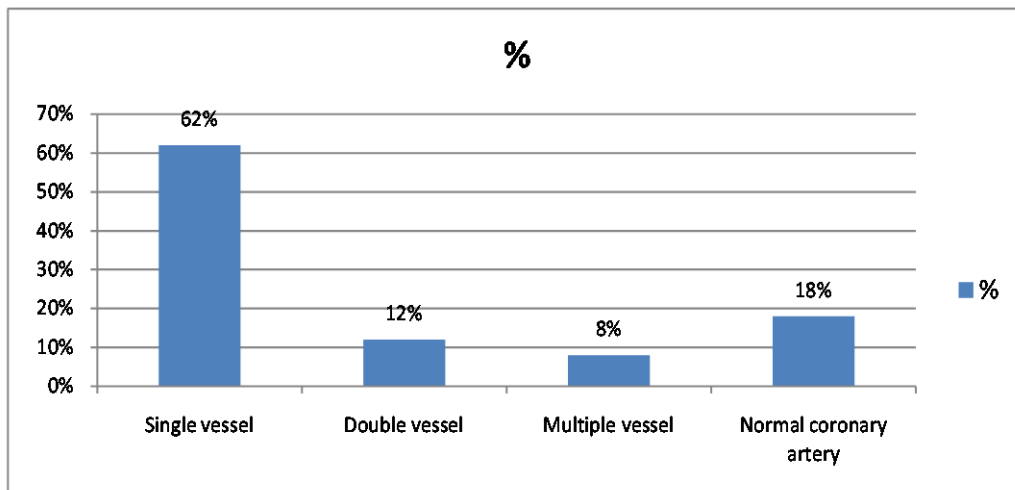
**Graph I** Risk factors in patients



**Graph II** ECG profile of patients



**Graph III** Vessel involvement on coronary angiography



## DISCUSSION

Myocardial infarction is disease of older person however number of cases of young adults is increasing day by day. Most common factor is smoking, limited physical exercise and hypertension. The increase in prevalence rate of childhood obesity is also one of the factors precipitating MI in young adults. The present study was conducted to estimate the risk of acute myocardial infarction among young adults visiting the department of general medicine.

This study was conducted in the department of general medicine between January 2013 to June 2013. Those who fulfilled the WHO criteria with atleast 2 of 3 points such as a history of an ischaemic type of chest discomfort, evolutionary changes on the serially obtained ECG tracings and rise and fall of the serum cardiac markers were included. Patient information such as age, sex, family history of CVDs, physical activity, smoking habits, weight, height and waist and hip circumference was recorded. This study consisted of 50 patients (Males- 30, females- 20). They were classified in different age groups. The maximum number of patients was seen in age group 36-40 years in both genders. It included 20 males and 10 females. The statistical difference was seen in age group 36-40 years with P value <0.05. Sricharan K.N. et al.<sup>8</sup>, in his study found that on 70% of patients were within the age group of 35-40 years and 90% were males. Another study by Goornavar S M et.al<sup>9</sup> in Karnataka found that half proportion of cases were in 36-40 years age group and 94.7% were males. Most common risk factors seen was Smoking, dyslipidemia, diabetes, family history of IHD, hypertension. Cigarette smoking accelerates CHD and increased atherosclerosis, which increase thrombus formation and this could contribute to MI at an earlier age. Most of the MI cases (80-90%) are mostly caused due to cigarette smoking. So, a reduction in smoking, which is one of the main causative factors, can reduce AMI in young adults.

Q wave infarction was seen in 65%, Anterior wall MI in 50%, inferior wall MI in 20% and sub endocardial in 5% of patients. Our results are in agreement with by Goornavar S M et.al<sup>9</sup> and Rey P.<sup>10</sup> We found that most of the cases were due to single wall involvement. Klein found similar results in his study.

## CONCLUSION

Author concluded that MI is now becoming disease of young adults. Person has to quit smoking and a routine physical exercise is necessary to overcome the risk of MI.

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