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ORIGINAL ARTICLE

Assessment of risk factors of acute myocardial infarction among adults

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ABSTRACT:

Background: The incidence of myocardial infarction (MI) in the world varies greatly. The present study was conducted to assess risk factors of acute myocardial infarction among adults. **Materials & methods:** This study was conducted in the department of Internal Medicine. It comprised of 64 cases of MI. Patient information such as age, sex, family history of CVDs, physical activity, smoking habits, a past history of IHD (ischemic heart disease) was recorded. **Results:** Age group 21-25 years had 4 males and 2 females, 26-30 years had 2 males and 3 females. 31-35 years had 6 males and 9 females and >35 years had 28 males and 10 females. The difference was significant ($P<0.05$). Smoking was seen in 75%, diabetes in 34%, dyslipidemia in 31%, hypertension in 37%, positive family history in 20% and $BMI> 25 \text{ Kg}/\text{m}^2$ in 12% of cases. The difference was significant ($P< 0.05$). Anterior wall MI was seen in 30%, inferior wall MI in 12%, Q wave infarction in 50% and sub endocardial in 8% of cases. **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.

Key words: Myocardial Infarction, Ischemic Heart Disease, Endocardia.

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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.¹ 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.² The incidence of MI in India is 64.37/1000 people in men aged 29-69 years, alcohol intake led to 30% lower CHD incidence. Smoking is known to cause arterial thrombosis and MI, and is known to cause endothelial dysfunction. More than 80% of the cases of cardiovascular disease are in developing countries however studies on risk factors are mostly conducted in developed countries.³ 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 and smoking increases it. Smoking, Obesity etc. are considered to be the risk factors for MI.⁴ The present study was conducted to assess risk factors of acute myocardial infarction among adults.

MATERIALS & METHODS

This study was conducted in the department of Internal Medicine. It comprised of 64 cases of MI. The study protocol was approved from institutional ethical committee. Patient information such as age, sex, family history of CVDs, physical activity, smoking habits, a past history of IHD (ischaemic heart disease) was recorded. Results thus obtained were tabulated and subjected to statistical analysis using chi square test. P value <0.05 was considered significant.

RESULTS

Table I, graph I shows that age group 21-25 years had 4 males and 2 females, 26-30 years had 2 males and 3 females. 31-35 years

had 6 males and 9 females and >35 years had 28 males and 10 females. The difference was significant ($P<0.05$).

Table I Age and gender wise distribution

| Age | Male | Female | P value |
|-------|------|--------|---------|
| 21-25 | 4 | 2 | 0.05 |
| 26-30 | 2 | 3 | 0.9 |
| 31-35 | 6 | 9 | 0.01 |
| >35 | 28 | 10 | 0.001 |

Graph I Age and gender wise distribution

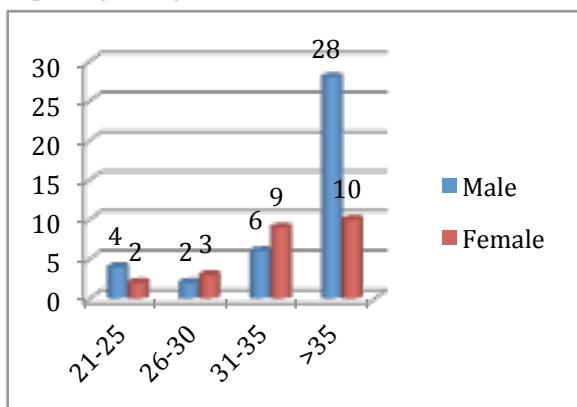
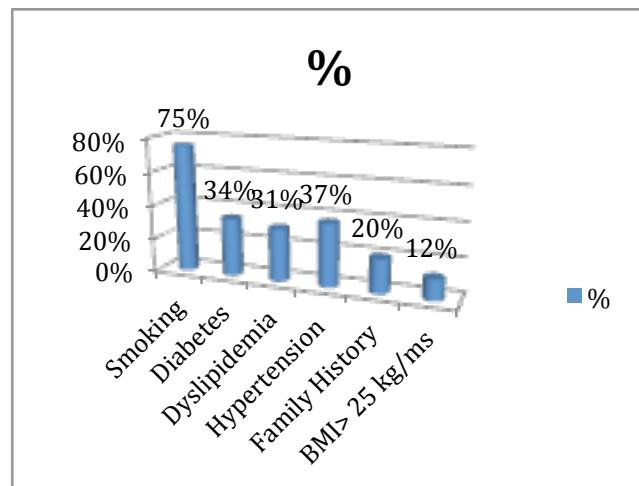


Table II Risk factors in patients

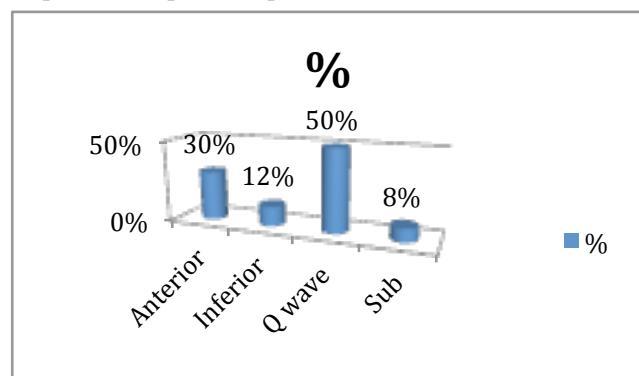
| Risk factors | Percentage | P value |
|---------------------------|------------|---------|
| Smoking | 75% | 0.01 |
| Diabetes | 34% | |
| Dyslipidemia | 31% | |
| Hypertension | 37% | |
| Family history | 20% | |
| BMI> 25Kg/ms ² | 12% | |

Table II, graph II shows that smoking was seen in 75%, diabetes in 34%, dyslipidemia in 31%, hypertension in 37%, positive family history in 20% and BMI> 25 Kg/ms² in 12% of cases. The difference was significant ($P<0.05$).

Graph II Risk factors in patients



Graph III ECG profile of patients



Graph III shows that anterior wall MI was seen in 30%, inferior wall MI in 12%, Q wave infarction in 50% and sub endocardial in 8% of cases.

DISCUSSION

CVD is the major contributor to NCD-related morbidity and mortality, and in 2016, it claimed 17.6 million lives globally. The majority of CVD-related deaths comes from ischaemic heart disease, which is composed of acute myocardial infarction (MI) and ischaemic heart failure.⁵ In 2016, ischaemic heart disease (IHD) claimed 9.5 million lives, a 19% increase over the prior decade, attributed to ageing and a growing population. The high burden of IHD, particularly among young adults, adversely affects personal and economic productivity, health of caregivers and increases healthcare costs. Reducing the burden of IHD is a key priority for all countries.⁶ Although premature mortality refers to mortality in the age group of 30–70 years, premature MI generally refers to MI in men ≤55 years or women ≤65 years. Although diagnosis, management and treatment of MI have improved, results on IHD mortality in young adults have been mixed. A US study showed that IHD mortality in young women (<55 years) has remained unchanged over a 20-year period from 1990 to 2011.⁷ Similarly, in countries including Australia, Canada and Scotland, young adults have shown minimal to no improvement, higher IHD mortality, or different IHD mortality for men versus women. The

reasons for suboptimal IHD mortality in young adults are incompletely understood and require further characterisation.⁸ The present study was conducted to assess risk factors of acute myocardial infarction among adults. We found that age group 21-25 years had 4 males and 2 females, 26-30 years had 2 males and 3 females. 31-35 years had 6 males and 9 females and >35 years had 28 males and 10 females. We found that smoking was seen in 75%, diabetes in 34%, dyslipidemia in 31%, hypertension in 37%, positive family history in 20% and $BMI > 25 \text{ Kg}/\text{m}^2$ in 12% of cases. 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.⁹ Rao et al¹⁰ included 100 cases and 100 age and sex-matched controls. Prevalence of the following risk factors for myocardial infarction: Age, sex, diet, smoking, alcohol consumption, history of hypertension, history of diabetes mellitus, and lipid profile were studied. The most important predictor of acute myocardial infarction (AMI) was high low-density lipoprotein (adjusted odds ratio [OR]: 4.124, confidence interval [CI]: 1.44-11.73, $P = 0.008$) history of hypertension and of overt diabetes mellitus were also independent risk factors (OR: 2, CI: 1.4-3 and OR: 2.29, CI: 1.5-3.5), respectively. Low high-density lipoprotein was found to have no significant association with AMI. Heavy drinkers were found to have a high-risk (OR: 68), while moderate drinkers were found to have protection. We found that anterior wall MI was seen in 30%, inferior wall MI in 12%, Q wave infarction in 50% and sub endocardial in 8% of cases. Hypertension is also frequently associated to metabolic disorders, such as insulin resistance with hyperinsulinemia and dyslipidemia, which are additional risk factors of atherosclerosis.

CONCLUSION

We found that risk factor for MI was smoking, diabetes, hypertension, positive family history etc.

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