Original Article

Assessment of cases of myocardial infarction - A clinical study

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ABSTRACT:

Background: Acute myocardial infarction results in death of cardiomyocytes due to ischemia that is critical enough to progress to necrosis. The present study was conducted to assess the cases of myocardial infarction. **Materials & Methods:** The present study was conducted on 110 cases of myocardial infarction of both genders. Medical history of myocardial infarction, hypertension, diabetes mellitus and predisposing factors like pulmonary infection, physical inactivity, unstable mood, vomiting and urinary symptoms were recorded. **Results:** Out of 110 patients, males were 72 and females were 38. Medical history was hypertension seen in 57, diabetes mellitus in 23, renal dysfunction in 10 and previous coronary artery disease in 4. The difference was statistically significant (P< 0.05). Illiteracy was seen in 47, physical inactivity in 24 and emotional stress in 72. **Conclusion: M**ale predominance was observed. Common risk factors were hypertension, diabetes mellitus and past history of coronary artery disease.

Key words: diabetes mellitus, hypertension, myocardial infarction.

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INTRODUCTION

Myocardial infarction is the outcome of the process of necrosis of cardiomyocytes due to irreversible or critical ischemia. The WHO has noted that approximately 6 million people all over the world suffer myocardial infarction annually and one-fourth of these cases have a fatal outcome. In North America and many north and west European countries, the mortality rates for myocardial infarctions are going down, but in central and eastern Europe the mortality rates are still on the rise. Although some of the risk factors for coronary artery disease like smoking and dyslipidemia are declining over the last few decades, there are still many existent risks which are on an increase e.g. obesity and diabetes particularly in the younger population. It is estimated that in the developed countries, two-thirds of the decline in the myocardial infarction mortality rate are solely due to reduced risk exposure, while only one third is due to adequate treatment and improved survival.[1]

The changing profile of risk factors in different age groups and different populations, warrants an in-depth understanding of the physiological, psycho-social, age and gender specific changes across these differing categories. If there can be distinctly identifiable factors associated with these decline, they could serve as the basis for intervention with valuable and timely preventive measures.[2] The fatality of myocardial infarction is higher in patients with associated heart failure, arrhythmia, shock. Since acute myocardial infarctions frequently cause increased sympathetic tone which more often than not is detrimental in worsening the outcomes, so meticulous psychological counselling and reassurance are vital for allaying anxiety which is especially important in improving the survival rate of after an event of acute myocardial infarction.[3] We undertook the present study to assess the demographic profile and risk factors of myocardial infarction.

MATERIALS & METHODS

The present study was conducted in the departments of Casualty and General Medicine at Mayo Institute of Medical Sciences, Lucknow. It comprised of 110 cases of myocardial infarction of both genders. All subjects were informed about the study and written consent was obtained. Ethical clearance was taken prior to the study.

Information pertaining to the particulars of the subject such as name, age, gender etc. were recorded. The case history regarding myocardial infarction, hypertension, diabetes mellitus and predisposing factors like chest infection, sedentary lifestyle, mood swing and mood disturbances, vomiting and urinary symptoms were recorded. Results thus obtained were subjected to statistical analysis. P value less than 0.05 was considered significant.

RESULTS

Table I Distribution of patients

| Total- 110		
Gender	Males	Females
Number	72	38

Table I shows that out of 110 patients, males were 110 and females were 38.

Table II Medical history in patients

Medical history	Number	P value
Hypertension	57	0.04
Diabetes mellitus	23	
Renal dysfunction	10	
Previous coronary artery disease	4	

Table II, graph I shows that medical history was hypertension seen in 57, diabetes mellitus in 23, renal dysfunction in 10 and previous coronary artery disease in 4. The difference was significant (P< 0.05).

Graph I Medical history in patients
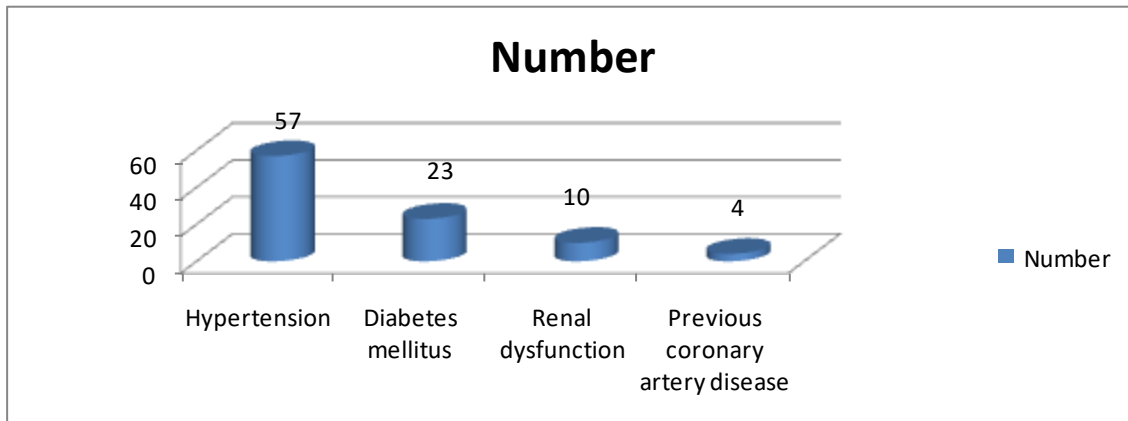
Graph II Demographic data
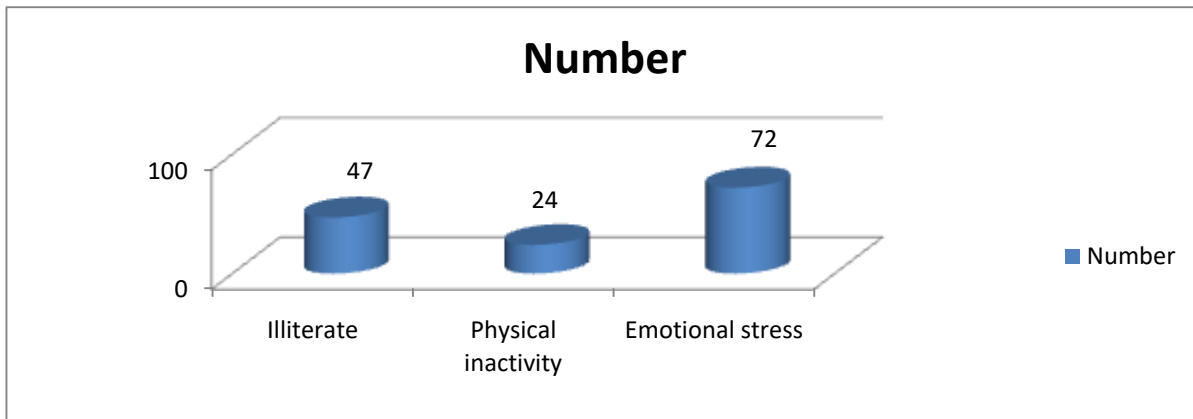
Graph II shows that illiteracy was seen in 47, physical inactivity in 24 and emotional stress in 72.

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DISCUSSION

It is commonly seen that senior citizens typically have vulnerable physical status, comorbid chronic diseases, poor treatment outcome and poor treatment tolerance. After an event of AMI in these patients, the poor capabilities of myocardial cells for compensation, regeneration and repair prevent a reduction in infarct size, thus deteriorating the condition. In addition, the elderly patients are usually immunocompromised and are susceptible to infections, especially that of the lower respiratory tract, which deteriorates the respiratory functions thereby worsening the work burden of heart. Such patients have poorer prognosis.[4]

The patients who are not well educated lack the knowledge and awareness necessary for adequate care of their health. Majority of such patients are from rural areas belonging to lower socioeconomic status who fail in recognizing the early symptoms of the disease leading to no or poor self-management.[5] The present study was conducted to assess the cases of myocardial infarction.

We found that out of 110 patients, males were 72 and females were 38. Davies et al[6] found that total of 68 patients were enrolled in observed group with 59 patients enrolled in control group. 48 (70.6%) and 43 (72.9%) subjects respectively in the observed and control group had complicated infections. The mortality in observed group was 17.65% which was lower than 33.90% for that of the control group (p=0.035). Multivariate logistic regression analysis was suggestive that lack of awareness, age ≥70 yrs., severe infections and associated conditions such as cardiogenic shock might be poor outcome factors in AMI-induced death.

We found that medical history of hypertension was seen in 57, diabetes mellitus in 23, renal dysfunction in 10 and previously diagnosed coronary artery disease in 4.

Dzayee et al[7] found that the history of alcohol intake in patients with acute myocardial infarction and their controls had no significant difference: the percentage of subjects who were taking alcohol was only slightly higher in cases (54.5%) than in controls (50.3%). The number of binging spells over the past twelve months were significantly higher in cases (25.1%) than in controls. Study of age trend, gender pattern and residence of the subjects who binged revealed that the increase in risk for acute myocardial infarction was associated with older males.

Chest pain is the most commonly encountered symptom of acute myocardial infarction. Vomiting, fatigue, and lack of rest can increase the cardiac work burden thereby increasing the myocardial oxygen demand and inducing myocardial ischemia which may consequently lead to an event of acute myocardial infarction. Since urgency of the treatment warrants immediate measures to be taken on admission, so it's not unlikely that the psychological aspect of nursing may remain unaddressed. Moreover, frequent investigations, frequent monitoring of vitals, visits by the friends and relatives and the complexity of the intensive care unit's environment due to the use of multiple electronic gadgets may cause lack of proper sleep and disruption of the normal sleep wake cycle. So, dedicated psychological counselling and the concept of sleep hygiene should not go unattended as they play a pivotal role in reducing the myocardial oxygen demand and may are likely to play a therapeutic role in improving the treatment outcome.[8]

Those patients who experience frequent chest pain should be administered intravenous nitroglycerin drip under close monitoring to avoid hypotension and shock. Nitrates having venodilator effect, can reduce the cardiac preload, left ventricular end-diastolic pressure and myocardial oxygen consumption thereby improving the left ventricular function both locally and globally. Stimulation of the vagus nerve by the necrotic myocardium causes nausea and vomiting in AMI patients and is associated with inadequate tissue perfusion due to decreased cardiac output. Small frequent meals and frequent snacking should be encouraged for the patients in order to keep the stomach warm. Metoclopramide can be administered for symptomatic management.[9]

CONCLUSION

There was male predominance. Common risk factors were hypertension and diabetes mellitus and previous history of coronary heart disease.

REFERENCES

1. Ives DG, Fitzpatrick AL, Bild DE, Crowley PM, Cruise RG, Theroux S. Surveillance of cardiovascular events: the Cardiovascular Health Study. Ann Epidemiol 1995;5: 278–285.
2. McGovern PG, Jacobs DR, Arnett KD, Folsom AR, Blackburn H, Luepker RV. Trends in acute coronary heart disease mortality, and medical care from 1985 through1997: the Minnesota Heart Survey. Circulation 2001;104:19–24.
3. Floyd KC, Yarzebski J, Spencer FA, Lessard D, Dalen JE, Alpert JS, Gore JM, Goldberg RJ. A 30-year perspective (1975–2005) into changing landscape of patients with initial myocardial infarction: Worcester heart attack study. Circ Cardiovasc Qual Outcomes 2009;2:88–95.
4. Ergin A, Muntner P, Sherwin H, He J. Secular trends in cardiovascular disease mortality, incidence, and case fatality in the United States. Am J Med 2004;117:219–227.
5. Schmidt M, Jacobsen JB, Lash TL, Bøtker HE, Sørensen HT. 25 year trends in first time myocardial infarction, subsequent short and long term mortality, and the prognostic impact of sex and comorbidity: A Danish nationwide cohort study. BMJ 2012;25:344–356.
6. Davies AR, Grundy E, Nitsch D, Smeeth L. Constituent country inequalities in myocardial infarction incidence and case fatality in men and women in the United Kingdom, 1996–2005. J Public Health (Oxf) 2011;33:131–138.
7. Dzayee DA, Beiki O, de Faire U, Alfredsson L, Moradi T. Incidence and case fatality after day 28 of first time myocardial infarction in Sweden 1987–2008. Eur J Prev Cardiol 2012;19:1304–1315.
8. Fox CS, Evans JC, Larson MG, Kannel WB, Levy D. Temporal trends in coronary heart disease mortality and sudden cardiac death from 1950 to 1999: the Framingham Heart Study. Circulation 2004;110:522–527.
9. Fox KA, Steg PG, Eagle KA, Goodman SG, Budaj A, Quill A, Gore JM., GRACE Investigators. Decline in rates of death and heart failure in acute coronary syndromes, 1999–2006. JAMA 2007;297:1892–1900.

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