

Gender Risk Profile In Acute Myocardial Infarction- A Prospective Study in Indian Population

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Abstract- Acute myocardial infarction is a leading cause of death throughout the world. Very limited data is available regarding the prevalence of various risk factors in different genders which is why this study was planned. Objectives of the study were to look for the risk factors most prevalent in both the genders. 305 consecutive patients in Cardiology OPD presenting with acute MI were studied. Risk factors associated with acute MI were studied like - family history of premature CAD, previous history of CAD, smoking hypertension, diabetes. Patients were divided into two groups. Group A -patients were male and group B patients were female. Risk factors were compared in both the groups. Out of 305 patients diagnosed with AMI, 274 were males and 30 females. Smoking was main risk factor in both the groups (72.62% in male and 53.53% in female), where as previous history of CAD was less frequent in both the groups (12.04% in male and 26.66% in female). Diabetes was more frequent in females (43.33%) as compared to males 25.91%). Smoking, hypertension and diabetes are the major modifiable risk factors in our study. A male who is smoker or a female who is diabetic, presenting with chest pain, can always be suspected of coronary artery disease.

Index Terms- Acute myocardial infarction, coronary artery disease, diabetes.

I. INTRODUCTION

Myocardial infarction (MI) due to coronary artery disease is a leading cause of death in the United States, where more than 1 million people have acute myocardial infarctions (AMIs) each year [1]. The term myocardial infarction reflects death of cardiac myocytes caused by prolonged ischaemia [2]. It can be defined from a number of different perspectives related to clinical, electrocardiographic (ECG), biochemical and pathologic characteristics. Myocardial infarction caused by complete coronary artery occlusion begins to develop after 15–30 min of severe ischaemia (no forward or collateral flow) and progresses from the subendocardium to the subepicardium in a time-dependent fashion (the wave-front phenomenon) [3].

Review literatures suggest that certain factors were predictive of death in patients admitted to hospital with myocardial infarction [4]. Chief among these were age, previous medical history (diabetes, previous infarction), indicators of large infarct size, including site of infarction (anterior vs inferior), low initial blood pressure, Killip class on admission and the extent of

ischaemia as expressed by ST segment elevation and/or depression on the electrocardiogram. These factors remain operative today [5]. Very limited data is available regarding the prevalence of various risk factor for MI. Keeping in view these facts, a study of risk factors in different gender of patients with acute MI was planned.

II. MATERIAL AND METHODS

305 patients with acute myocardial infarction admitted to the intensive care unit of Department of Cardiology, King George's Medical University were investigated. Diagnoses of acute myocardial infarction of the patients were established in the presence of at least two of the following criteria: a) clinical: pain in the anterior thoracic location, b) electrocardiographic c) enzymatic criteria: high levels troponin T. Electrocardiograms were performed on hospital admission, after the initial treatment, at the emergency department. Patients with at least one of the following conditions were excluded: 1. The patients with cardio embolic stroke, cerebral venous sinus thrombosis, CNS vasculitis and hemorrhage due to trauma, tumor, vascular malformation and coagulopathy. 2. Subjects having bacterial and viral infections, inflammatory diseases, thyroid, liver or kidney diseases and suffering with any kind of cancer. 3. Pregnancy

A standardized questionnaire was filled at the time of admission acquire information regarding previous medical history, clinical presentation at hospital admission, in-hospital management, and in-hospital prognosis. Cardiovascular risk factors were defined as follows: dyslipidemia, hypertension and/or diabetes was considered present, if the patient was treated for dyslipidemia, hypertension and/or diabetes or if it was previously diagnosed by a primary care physician according to guidelines [6],[7]. A family history of coronary artery disease (CAD) was considered present, if a first-degree relative younger than 60 years had CAD.

III. RESULT

305 patients who were diagnosed with AMI were investigated. Baseline demographics and clinical characteristics of patients are demonstrated in Table 1. The number of patients in the male group was 274. Their ages ranged from 26 to 89 years with a mean age of 56 ± 12.15 years. In all these patients 89 (32.48%) were hypertensive, 71 (25.91%) were diabetic and 199 (72.62%) were smoker. And in female group total numbers

of patients were 30. The age ranges of were 31-75 with a mean age of 62.58±10.69 (Table-1). In female patients hypertensive were 14 (46.66%), diabetic were 13 (43.33%) and smoker were 16 (53.33%).

Table 1
various risk factors for AMI

Variables	Male N= 274	Female N= 30
Mean age	56.04±12.15	62±10.69
Diabetes	34 (12.40%)	7 (23.33%)
Smoking	160 (58.39%)	14 (46.66%)
Hypertension	29 (10.58%)	3 (10.00%)
Family history of CAD	38 (13.86%)	4 (13.33%)
Previous history of CAD	13 (4.74%)	2 (6.66%)

In both the groups previous history of CAD was least frequent (33, 12.04% in male and 8, 26.66% in female). When comparing diabetes as a risk factors female patients were more in number (male vs female, 13 (43.33% vs 71 (25.91%)). (Table-1)

When comparing the electrographic location of AMI in both groups, AAMI is the frequent in both sexes (130, 47.44% in male and 14, 46.66% in female). Whereas there were only 6 (2.18%) number of patients of LWMI and 3 (10%) number of patients of IWMI+RVMI, which was least in both the sexes. (Figure-2)

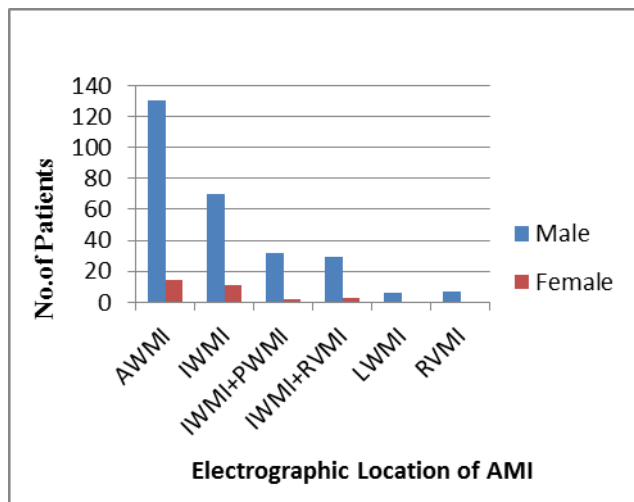


Figure 1- Electrographic Location of AMI

†AAMI- Anterior wall myocardial infarction, IWMI- Inferior wall myocardial infarction, PWMI- Posterior wall myocardial infarction, RVMI- Right ventricular myocardial infarction, LWMI- Lateral wall myocardial infarction

IV. DISCUSSION

In the case series studied, significant differences in risk factor between males and females presenting with AMI was observed. In acute myocardial infarction, in both sexes, smoking and

family history of CAD were the most prevalent risk factors, while previous history of CAD is least.

In the present study smoking is the prominent risk factor in both the sexes. Evidence linking smoking to increased risk of myocardial infarction and death is incontrovertible, but the precise mechanisms responsible remain elusive. Morbidity and mortality in coronary artery disease is a consequence of a complex interplay between coronary atherosclerosis (fixed component) and superimposed factors such as vasomotor tone, platelet aggregation and intraluminal thrombosis (dynamic component). It is the dynamic components of this equation that contribute to abrupt or semiabrupt, transient or permanent coronary occlusion leading to acute myocardial infarction and possibly ischemic sudden cardiac death [8],[9] Smoking may thus contribute to increased coronary artery disease morbidity and mortality by directly or indirectly influencing the atherosclerotic lesion per se and/or by promoting coronary occlusive phenomena through an interaction with dynamic factors.

Some authors have reported a low prevalence of systemic arterial hypertension in young patients with acute myocardial infarction [10],[11] our data are not in accordance with these results, because approximately half of our patients, males and females, had a history of systemic arterial hypertension One of the factors that may have contributed to the higher prevalence of systemic arterial hypertension in our study was the criterion used for diagnosing hypertension (systolic blood pressure ≥ 140 mmHg or diastolic blood pressure m 90 mmHg) [12],[13] because in the studies cited, the definition of systemic arterial hypertension requires more elevated blood pressure levels [10],[11]. Confirming our observations, Mansur et al [14] reported that systemic arterial hypertension was the major risk factor of coronary artery disease in 321 females, both in premenopause and postmenopause. Although HDLcholesterol levels were significantly lower in males when the low HDL variable was tested, no significant difference occurred between males and females.

Diabetes mellitus was not a prominent risk factors for AMI in both groups in our study although the female were more diabetic as compared to male. Finally, approximately half of the males and females in our study had a familial history of early coronary artery disease. Our results have shown that a familial history of coronary artery disease is an important cardiovascular risk factor in young patients of both sexes.

V. CONCLUSION

Smoking, hypertensions, family history of CAD were the major modifiable risk factors in both the sexes. If a male who is smoker or a female who is diabetic, presents in emergency room with chest pain, they can always be suspected of coronary artery disease. Other conventional risk factors are also prevalent but diabetes and hypertension are not a major health problem.

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