

Original article:

Study of patterns of ECG presentations, their evolution and various complications of acute myocardial infarction

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Abstract:

Introduction: There is Significant differences in the prevalence of coronary artery disease exist with respect to gender, age and ethnicity. Cardiovascular disease has emerged as a major health burden in developing countries¹. Cardiovascular risk factors for ischemic heart disease and acute coronary syndrome (ACS) are on the rise in people of Indian origin have a high burden of coronary artery disease and the latter is now the leading cause of death.^{3,4} The purpose of this study is to collect data of patients presenting with ACS in a tertiary care hospital

Material & Methods: The descriptive present study was carried out at tertiary care hospital . Intensive care unit & Medicine wards & Cardiology Department of tertiary care hospital. 300 cases of acute coronary syndrome were included in the present study.

Results: Mean age of presentation for Non ST – Elevation myocardial infarction was 55.67 ± 7.28 years in males and 61.32 ± 9.17 years in females with age range of 48 to 92 years. This again shows that age at presentation for Non ST – Elevation myocardial infarction was higher for females than males.

Conclusion: Hence it is concluded that complications of AMI develop significantly more commonly in females than males. This may be because of delay in admission of female patients after the onset of symptoms of AMI. Similarly they have more profound risk profile including DM, HT, hyperlipidemia and obesity than males.

Introduction:

There is Significant differences in the prevalence of coronary artery disease exist with respect to gender, age and ethnicity. Cardiovascular disease has emerged as a major health burden in developing countries . Cardiovascular risk factors for ischemic heart disease and acute coronary syndrome (ACS) are on the rise in people of Indian origin have a high burden of coronary artery disease and the latter is now the leading cause of death.^{3,4} The purpose of this study is to collect data of patients presenting with ACS in a tertiary care hospital.¹

This increase in CVDs could be attributable to (i) increase in the population size due to natural growth, (ii) ageing of the population which makes people more vulnerable to chronic diseases at older ages, and (iii) increased vulnerability due to lifestyle changes.²

Coronary heart disease is more prevalent in Indian urban populations and there is a clear declining gradient in its prevalence from semi-urban to rural populations. Epidemiological studies show a sizeable burden of CHD in adult rural (3-5%) and urban (7-10%) populations. Thus, of the 30 million patients with CHD in India, there would be 14

million of whom are in urban and 16 million in rural areas. In India about 50 per cent of CHD-related deaths occur in people younger than 70 yr compared with only 22 per cent in the West. Extrapolation of these numbers estimates the burden of CHD in India to be more than 32 million patients.³

This study examines clinical profile, evolution and various complications of Acute myocardial infarction, subsequent evaluation and treatment modalities applied to them and in hospital course of Acute myocardial infarction as a whole.

Material & Methods

The descriptive present study was carried out at tertiary care hospital . Intensive care unit & Medicine wards & Cardiology Department of tertiary care hospital.

SAMPLE SIZE: 300 cases of acute coronary syndrome were included in the present study.

INCLUSION CRITERIA: Patients suffering from acute myocardial infarction were included in this study.

WHO has led down the following criteria as guidelines for diagnosis of acute myocardial infarction. There should be presence of at least two of following three criteria for diagnosis of acute myocardial infarction (AMI)¹⁰

1. A history of ischemic chest discomfort.
2. Evolutionary changes on serially obtained ECG tracings as:
 - a. ST segment elevation more than or equal to 2mm in two or more contiguous chest leads.
 - b. ST segment elevation more than or equal to 1mm in two or more limb leads.
3. A rise and fall in serum cardiac markers.

Results:

Table 1: Baseline characteristics among males and females with Non ST–segment elevation myocardial infarction (NSTEMI) & Unstable Angina (UA)

Variables	Males (n=54)	Females (n=92)
< 6 hrs	38(70.37%)	16(17.39%)
7-12 hrs	14(25.92%)	54(58.69%)
13-24 hrs	2(3.7%)	22(23.91%)
Mean duration of symptoms Before hospitalization (Hrs)	5.18±2.94	9.46±2.96

Mean age of presentation for Non ST – Elevation myocardial infarction was 55.67 ± 7.28 years in males and 61.32 ± 9.17 years in females with age range of 48 to 92 years. This again shows that age at presentation for Non ST – Elevation myocardial infarction was higher for females than males. Mean duration before hospitalization was 5.18 ± 2.94 hours in males and 9.46 ± 2.96 hours in females and the difference is not statistically significant. 38(70.37%) males and 16(17.39%) females presented within 6 hours of symptom onset. This difference was statistically significant. This may be because of negligence by females towards their symptoms.

Discussion:

In this study out of total 140 females, 48(34.28%) had ST elevation MI and remaining 92(65.71%) had Non-ST elevation MI and Unstable angina. Out of total 160 males, 106(66.25%) had STEMI and remainder 54(33.75%) had NSTEMI/UA. Thus in ST-elevation myocardial infarction more case of males were reported and difference was statistically significant (p value 0.001).

In Non-ST-elevation myocardial infarction and unstable angina group females were more and this difference was statistically significant. Xavier et al³ (2008) found that In females with ACS, NSTEMI/ UA outnumbered STEMI (56.7% Vs 43.3%; $p < 0.001$); whereas in males STEMI outnumbered NSTEMI/UA (60.7% Vs 39.3%; $p < 0.001$).

Vaccarino et al⁴ (1999) found that younger females but not older females were less likely than males to have 'ST' elevation MI. In this study in cases with ST-elevation myocardial infarction cardiogenic shock was present in 18(37.5%) females and 18(16.98%) of males. This difference was statistically significant ($p = 0.0448$). Congestive cardiac failure was present in 18(37.5%) females and 18(16.98%) males. This difference was statistically significant ($p = 0.0448$). Post infarct angina following STEMI occurred in 12(25%) females and 22(20.75%) males. This difference was not statistically significant ($p = 0.6774$). After STEMI 32(66.67%) females and 60(56.60%) males developed arrhythmia as a complication. This difference was not statistically significant ($p = 0.4043$). 20(62.5%) females and 22(36.67%) males had tachyarrhythmia, while 12(37.5%) females and 38(63.33%) males had bradyarrhythmia. In NSTEMI/UA cardiogenic shock was present in 20(21.73%) females and 2(3.7%) male. This difference was statistically significant ($p = 0.0376$). Congestive heart failure was present in 16(17.39%) females and 2(3.7%) male but this difference was not statistically significant (p value 0.0859). Arrhythmia was present in 28(30.43%) females and 14(25.92%) males but this difference was not statistically significant (p value 0.6812). Chiriboga et al⁵ (1993), Becker al⁵(1994) and Kudenchuk et al⁶ (1996) found that females were more likely to present with congestive cardiac failure and cardiogenic shock during acute hospitalization.

Vaccarino et al⁶ (1999) found that females were more likely to have hospital complications than males except ventricular tachycardia and fibrillation. Rosengren et al⁷ (2004) found that in younger age no difference was noted but in older females complication rate was higher than males of the same age. Misiriya et al³ (2009) found similar results that complication was higher in females.

Conclusion:

Hence it is concluded that complications of AMI develop significantly more commonly in females than males. This may be because of delay in admission of female patients after the onset of symptoms of AMI. Similarly they have more profound risk profile including DM, HT, hyperlipidemia and obesity than males.

References:

1. Chapter 225. Epidemiology of Cardiovascular Disease, Global Trends in Cardiovascular Disease, Harrison's Internal. Med 18th ed. 1811p.
2. Chapter 243. Ischemic Heart Disease. Harrison's Internal Medicine 18th ed. 1998p.
3. Murray CJL, Lopez AD. Mortality by cause for eight regions of the world: Global burden of disease study. Lancet 1997; 349: 1269-76.
4. Burden of disease in India, Background papers for the National Commission on Macroeconomics. New Delhi: Ministry of Health and Family Welfare, Government of India; 2005.
5. Reddy KS, Yusuf S. Emerging epidemic of cardiovascular disease in developing countries. Circulation 1998; 97; 596-601.
6. Yadav P, Joseph D, Joshi P, Sakhi P, Jha RK, Gupta J. Clinical Profile & Risk Factors In Acute Coronary Syndrome. National Journal of Community Medicine 2010; 1(2):150-152.
7. Shah B & Mathur P. Surveillance of cardiovascular disease risk factors in India: The need & scope. Indian J Med Res November 2010;132 : pp 634-642.
