The Study of Clinical Profile, Risk Factors, Management and Outcome of Acute Myocardial Infarction in Women Admitted at Tertiary Care Teaching Hospital

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Abstract

Aims and Objectives: To study the clinical profile, risk factors, management and outcome of Acute Myocardial Infarction (AMI) in women admitted at Tertiary Care Hospital. **Materials and Methods:** It was a prospective observational study. After obtaining permission from the Institutional Ethics committee this study was carried out. 80 women with acute myocardial infarction admitted at tertiary health care center during a period of two years were recruited for the study. The data, consisting of detailed history, clinical features, risk factors, relevant investigations, management, course in the hospital and ultimate outcome was obtained and documented in a tabulated format. This data was carefully studied and statistically analyzed by applying appropriate statistical tests and inferences were drawn. **Results:** Study showed maximum number of women admitted with acute myocardial infarction (37.50%), were elderly, belonging to the age group of 61 to 70. Majority of the women (75%) were multiparous as compared to primiparous. Majority of these women also were postmenopausal (87.5%) as compared to premenopausal. 54 women (67.5%) presented to the hospital in less than 12 hours of onset of symptoms, out of it which 52(96.29%) women survived and 2(3.71%) died. 26 women (32.5%) presented to the hospital after the 12 hours of onset of symptoms, out of it 16 women (61.53%) survived and 10 succumbed (38.4%). **Conclusion:** The survival rate was higher when the time lag between onset of symptoms and starting the treatment was ≤12 hours.

Keywords: Acute Myocardial Infarction, Outcome, Risk Factors, Women

1. Introduction

Acute myocardial infarction is when there is myocardial necrosis present in a clinical setting consistent with acute myocardial ischemia. The criteria's of Myocardial Infarction are based on symptoms, cardiac enzymes, ST-T change on ECG, regional wall abnormality present on imaging and coronary angiography.

Ischemic Heart Disease (IHD) is the biggest killer of women globally. IHD causes 8.6 million deaths among women annually, a third of all deaths in women worldwide. Every year more women than men die due to Ischemic heart disease. Women in low and middle income countries have worse situation than men, experiencing higher proportion of IHD deaths than men[1]. Women continue to be under represented in research on

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heart disease. Most of the studies conducted on IHD are based on male population and whether we should implement the same guidelines on women counterparts is an unanswered question[2]. Women and men with heart disease tend to differ in their presenting symptoms, access to investigations, treatment and overall prognosis[3].

Women present with more atypical symptoms than men like back pain, shortness of breath, burning in the chest, nausea, or fatigue, which makes the diagnosis more difficult. Risk factors for IHD vary between males and females[4]. Diabetes mellitus is a stronger IHD risk factor in women than in men. Hypertension is associated with a two to threefold increased risk for IHD in women. In women, low levels of high density lipoprotein are strong predictors of higher IHD risk than high levels of low density lipoprotein[5]. Studies have shown complex relationship between IHD risk, estrogen, menopause and serum cholesterol in women[6,7]. Antiestrogenic effect of tobacco and smoking increases the risk of IHD in premenopausal women.

Studies have shown, in women cardiovascular risk profiles improve with increasing levels of physical activity. In women central obesity is observed as one of the major risk factor for IHD. Despite differences between the sexes in risk factors, presentation, and response to treatment, women in our country continue to receive similar treatments to men on the basis of trials that include mainly male participants.

As less data is available on IHD in females from our country, this study is conducted to identify the incidence and important risk factors contributing to the IHD in women, especially belonging to the middle and lower socio economic strata of the society, who seek medical treatment at our hospital.

2. Materials and Methods

This was prospective observational study carried out in tertiary care teaching hospital with 80 patients included over period of two years. All female patients admitted with Acute myocardial infarction were included in the study and Patients with valvular heart diseases, pericarditis, pericardial effusion, aortic aneurysm were excluded.

The data, consisting of detailed history, clinical features, risk factors, relevant investigations, management, course in the hospital and ultimate outcome was obtained and documented in a tabulated format. This data was carefully studied and statistically analyzed by applying appropriate statistical tests and inferences were drawn.

3. Results

Table 1. Distribution of patients according to age (n=80)

Sl. No.	Age groups (Years)	No. of cases	Percentage
1.	≤50	14	17.50 %
2.	51-60	24	30.00 %
3.	61-70	30	37.50 %
4.	>70	12	15.00 %
	Total	80	100.00 %

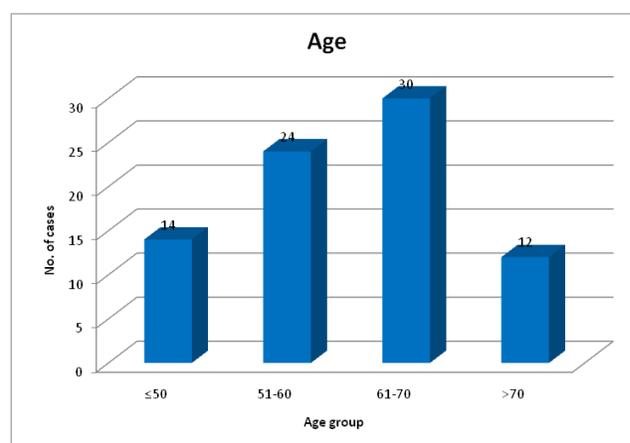Age   Mean ± SD   60.16 ± 10.69

Figure 1. Distribution of patients according to age (n=80).

Out of 80 patient 14 (17.50%) patient were in the age group of less than 50, 24 (30%) patient were in the age group of 51-60, 30 (37.50%) patient in the age group of 61-70 and 12 (15%) patient were in the age group of more than 70. Mean age of patient in the study was 60.16 ± 10.69. Out of 80 patients 10 (12.50%) patient were in the class 1 socioeconomic status, 26 (32.5%) patient were in the class 2,14 (17.50%) patient were in the class 3,18 (22.50%) patient were in the class 4 and 12 (15.00%) patient were in the class 5 socioeconomic status. Among the 80 patients in study, 4 (5.00%) patient were nullipara, 16 (20%) patient were primipara, and 60 (70%) patient were multipara. Out of 80 patients, 8 (10.00%) patients were BMI less than 18.50, 24 (30.00%) patients were BMI of 18.50_24.99, 20 (25.00%) patients were BMI of 25.00_29.99, 18 (22.50%) patients were

BMI of 30.00_34.99, 6 (7.50) patients were BMI of 35.00_39.99 and 4 (5.00%) patients were BMI of more than 40. Among the study population about 28 (35.00%) patients were history of tobacco, 52 (65.00%) patients were no history of tobacco. Among the study population about 10 (12.50%) patient were pre-menopausal, and 70(87.50%) patient were post-menopausal. Among the study population about 50 (62.50%) patient were OC pill user and 30 (37.50%) patient were Non user. Among the study population about 52 (65.00%) patient were diabetics and 28 (35.00%) patient were Non diabetics. Among the study population about 56 (70.00%) patient were hypertensive and 24 (30.00%) patient were Non hypertensive. Among the 80 patient in study, 54 (67.50%) patients were increased total cholesterol and 26 (32.50%) patient were normal cholesterol. Among the 80 patient in study, 38 (47.50%) patients were increased triglycerides level, and 42 (52.50%) patient were normal triglycerides level. Out of 80 patients in study, 48 (60.00%) patients were decreased level of HDL and 32 (40.00%) patients were normal HDL level. Out of the 80 patient in study, 44 (55.00%) patients were increased level of LDL and 36 (45.00%) patients were normal LDL level. Among study population 70 (87.50%) were presented with typical chest pain, breathlessness (shortness of breath) was present in 24 (30%) patient, associated sweating was present in 58 (72.50%) and palpitation in 12 (15%) patient. Out of the 80 patient in study, 44 (55.00%) patients were STEMI and 36 (45%) patients were NSTEMI. Among the 44 patient of STEMI, 26 patient received reperfusion therapy with streptokinase, and all 26 patients were survived and 18 patient were not received reperfusion therapy, among that 10 patients were survived and 8 patients were died. Among the 80 patient in study, 44 patients were STEMI, out of it 18 patient survived and 4 patients were died and 36 patients were NSTEMI, out of it 36 patients were survived and 4 patients were died. Among the 80 patient in study, 36 (45.00%) patients were of Single vessel disease, 6 (7.50%) patients were Double vessel disease and 20 (25.00%) patients were Triple vessel disease. In study among the 68 patients survived, 36 patient undergone coronary angioplasty and out of 32, 8 were normal angiography, 24 were referred for CABG. Among the 80 patient in study, 54 patient presented to hospital in less than 12 hour, out of it 52 patients were survived and 2 patients were died and 26 patient presented to hospital more than 12 hour out of it 16 patients were survived and 10 patients were died (Table 1 and Figure 1).

4. Discussion

Coronary artery disease is a leading cause of death in women in the India accounting for most of the death.

The epidemiological data on coronary artery disease in Indian women is inadequate as it has not been studied extensively.

In our study Maximum patients were from age group of 61-70, contributing about 37.50% of total. In study[8] majority of patients were from sixth decade with peak incidence in 61-70 years contributing 38% of total. Age group wise distribution was similar to present study.

Mean age for the study population was 60.16 ± 10.69 years in our study. While in study[9] mean age was 62.74 ± 13.6 years. And in study[10] mean age was 64.4 ± 11 years. So mean age of presentation matches with our study so, as age increase risk of myocardial infarction increases in woman.

In our study, 10 (12.50%) patient were in the class 1 socioeconomic status, 26 (32.50%) patient were in the class 2 socioeconomic status, 14 (17.5%) patient were in the class 3 socioeconomic status, 18 (22.50%) patient were in the class 4 socioeconomic status and 12 (15.00%) patient were in the class 5 socioeconomic status. In a study[8], 30% patient was in class 4 socioeconomic status and 26% patient was in the class 5 socioeconomic status. Difference in socioeconomic status compared to these studies is probably because more number of educated and higher income people in the area was our study conducted. Among the 12 patient see in the class 5 socioeconomic status, 8 patients died. Study[11] showing similar results with higher mortality in low socioeconomic status. So, in low socioeconomic status ignorance of symptom and late presentation at hospital causes higher mortality.

In our study, 4 (5.00%) patient were nullipara, 16 (20%) patient were primipara, and 60 (75%) patient were multipara. In a study[8] show 5% were nullipara, 10% were primipara and 85% were multipara. So multi-parity was the risk factor in both the study.

In our study, 8 (10.00%) patient were BMI less than 18.50, 24 (30.00%) patient were BMI of 18.50-24.99, 20 (25.00%) patient were BMI OF 25.00-29.99, 18 (22.50%) patient were BMI of 30.00-34.99, 6 (7.50%) patient were BMI of 35.00-39.99 and 4 (5.00%) patient were BMI of more than 40. Study[8] also shows maximum number of patient had BMI of more than 25. Obesity is the risk factor in both the study and obesity increases the risk of hypertension, diabetes, and dyslipidemia.

In our study about 10 (12.50%) patient were pre-menopausal, and 70 (87.50%) patient were post-menopausal. Study[8] show Pre-menopausal 12%, Post-menopausal 88%. In both the study most of the patient were postmenopausal and postmenopausal woman were higher incidence of myocardial infarction.

Among the study population about 50 (62.50%) patient were OC pill user and 30 (37.50%) patient were Non user. In a Study[12] the risk of myocardial infarction among users of any type of oral contraceptive was twice that of nonusers. Among the study population about 35% of patient was using tobacco. In a study 32.5%[9] of patient were tobacco user.

In our study, 48 (60.00%) patient had decreased level of HDL, and 32 (40.00%) patient had normal HDL level. Study[13] show 58% patient having decreased HDL.

In our study, 54 (67.50%) patient had hypercholesterolemia, 38 (47.50%) patient had hypertriglyceridemia and 44 (55%) patient had high level of low density lipoprotein. In a study[8] 60% patient had hypercholesterolemia, 50% had hypertriglyceridemia and 36% had low density lipoprotein. Dyslipidemia as a risk factor were matches with our study

Among the study population about 52(65%) patient are diabetics and 28(35%) patient are Non diabetics. In a Study[8] 50% of patient were diabetics and 50% were non diabetics. Study[10] show 60% of female were diabetics and 40% were non diabetics.

In a study population about 56 (70%) patient were hypertensive and 24 (30%) patient were Non hypertensive. Study[8] show that 73% were hypertensive and 27% were non hypertensive. Study[10] show 73% of female were hypertensive and 27% were non hypertensive.

In our study 70 (87.50%) had typical chest pain, breathlessness (shortness of breath) was present in 24 (30%) patient, associated sweating was present in 58 (72.50%) and palpitation in 12 (15%) of patient. In a Study[9], 93.75% had typical chest pain, breathlessness (shortness of breath) was present in 37.5% patient, associated sweating was present in 13.75%, and palpitation in 17.50% of patient. In a Study[8], 88% had typical chest pain, breathlessness (shortness of breath) was present in 16% patient, associated sweating was present in 38%, and palpitation in 10% of patient. So chest pain is the presenting symptom in most of the patient.

Among the 80 patient in study, 44 (55.00%) patient were STEMI and 36 (45%) patient were NSTEMI. Study[9] show 53.75% were STEMI and 46.25% were NSTEMI. So STEMI had equal incidence with NSTEMI in our study.

In our study, 36 (45%) patient shows single vessel disease, 6(%7.50%) patient shows double vessel and 20 (25%) shows triple vessel disease. In a study[14] the angiographically determined prevalence of Single Vessel Disease (SVD), Double Vessel Disease (DVD) and Triple Vessel Disease (TVD) are 41%, 10% and 12.5% respectively. So, single vessel disease was the most common angiographic finding in all studies.

Among the 44 patient of STEMI, 26 (59.09%) patient received reperfusion therapy with streptokinase, and all 26 (100%) patient who were received Thrombolytic therapy survived. Majority of patients are 18 (40.91%), patient who had not received reperfusion therapy due to late presentation. Among non thrombolysed patients, 10 patients survived and 8 patients died. The reason for less use of thrombolytic therapy in our study was due to the relatively longer pre-hospital delay making them ineligible for the thrombolysis. So, Thrombolysis is the highly effective treatment in STEMI myocardial infarction. In the study[9] in a patients with STEMI 32.55% were given thrombolytic therapy. 67.45% were not eligible for the thrombolytic therapy due to late presentation this finding were matches with our study.

In our study, 44 patient were STEMI, out of it 36 patient survived and 8 patient were died and 36 patient were NSTEMI, out of it 32 patient survived and 4 patient died. So, STEMI were higher mortality than NSTEMI. Study[15] show similar result.

Among the 80 in study, 54 (67.5%) patient presented to hospital in less than 12 hour, out of it 52 (96.29%) patient survived and 2 (3.71%) patient were died and 26 (32.5%) patient presented to hospital more than 12 hour, out of it 16 (61.53%) patient were survived and 10 (38.4%) patient were died. The survival rate was higher when the time lag between onset of symptoms and starting the treatment was ≤12 hours. Similar result found in the study[9] with 67.45% patient was not eligible for the thrombolytic therapy due to late presentation.

In our study, 85% of patient survived and 15% of patient died, which was comparable with study[9] showing 13.75% mortality and 86.25 % survival. Study[16] showed hospital mortality of 16.7% for women.

5. Conclusion

In our study Myocardial Infarction is more common in the age group of 61-70 with mean age of presentation is 60+_10.69. Low socioeconomic status has higher mortality

than high socio-economic status. Acute myocardial infarction is more common in multiparous women in our study. Myocardial infarction in women is commonly found in the post-menopausal age group. Hypertension and Diabetes Mellitus is the major risk factors for acute myocardial Infarction in women. Oral contraceptive pill is risk factor for acute Myocardial infarction. Presence of obesity is commonly seen in acute myocardial infarction patients in our study. Low HDL is risk factor for myocardial infarction in our study. Chest pain is the presenting symptom in most of the patient. Coronary angiography is useful for detection of presence or absence of coronary artery disease, and to locate the anatomic site of vessels. Single vessel involvement is commonly present in majority of patients. Thrombolysis is the highly effective treatment in STEMI myocardial infarction. The survival rate is higher when the time lag between onset of symptoms and starting the treatment is ≤12 hours.

6. References

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