Original Article

Mortality Comparison in Men and Women after Treatment of Myocardial Infarction at Tertiary Care Hospital

Mortality with Myocardial Infarction

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ABSTRACT

Objective: The objective of this study was to determine the 30 days mortality comparison in men and women after treatment of MI.

Study Design: Observational / descriptive study.

Place and Duration of Study: This study was conducted at the Department of Cardiology, Liaquat University Hospital Hyderabad from September 2015 to February 2016.

Materials and Methods: All the cases diagnosed of STEMI and NSTEMI, both genders and age between 25 to 85 years incorporated in this study.30 days mortality of patients was recorded at hospital or through contacts numbers of deceased's close relatives.

Results: The mean age of the cases was of 56 ± 12.2 years. Males were in the majority as compare to females 129 (69%) and 57 (31%) respectively. 43(23.4%) patients out of total 186 died within 30 days after acute myocardial infarction. On the gender wise comparison females mortality 21 (36.8%) was significantly high in the comparison of males 22 (17.05%) after treatment of myocardial infarction. P-value 0.001.

Conclusion: This study established that mortality higher in patient with acute myocardial infarction. Mortality was significantly elevated in females as contrasted to males.

Key Words: Acute myocardial infarction (AMI), Mortality, Gender

INTRODUCTION

Cardiovascular disease (CVD) is a predominant factor of mortality in males & females in US.[1] It is a definite matter of interest that he un-regulated hospitalized deaths due to AMI is significantly greater in females as compared to males.[1,2] The greater rate of deaths in females may be explained as increased age of women as well as the occurrence of more critical prognostic variables.[1] During 2005,out of 58,000,000 mortality rate around the world, 7,600,000 (i.e.,13%) mortality rate was due to coronary heart disease(CHD).[3]MI is a major manifestation of the coronary heart disease as well as its prevalence in a populace is frequently employed as a substitution for approximating the CHD load for that nation.[3] Each year, it is approximated that nearly 55 thousand individuals suffer from AMI, as well as 27peopledaily averagely. Notwithstanding, a number of reviews during the past 20 years propose that death

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caused by an initial AMI is progressively declining,[6] mainly as a result of novel technologies, further effective medications to regulate cardiac-associated stipulations, re-vascularization, and elevated prognosis of earlier indefinable AMI through high sensitive blood investigations. However, hospital mortality among hospitalized females due to MI is greater than males[4] which is frequently accredited to the rather older age of women than men on the diagnosis time. Though, variance sin hospitalized death after AMI have been predominantly noticed among young age females contrasted to their corresponding aged males correlative.[5,6] Gender-based inconsistencies have as well been accounted in the therapy of AMI, as well as it has been claimed that such variances could be correlated with sex preference in doctors' approach of the. Though, research outcomes are varying in terms of whether women having AMI are further expected to be under treated, together with the re-vascularizational implementation.[6,7] Several studies have observed the association between mortality and sex among cases admitted to hospitals with AMI, though these surveys have yielded conflicting results.[8,9] Moreover, the small numbers of studies that have been performed on gender based data from regional or nationwide registries, which do not essentially present the condition of attention to AMI in hospitals in which this condition is treated.[8] Therefore, purpose behind our study was the assessment of gender comparison regarding short-term mortality after treatment of AMI.

MATERIALS AND METHODS

This descriptive case series study was held in department of cardiology at Liaquat University hospital (LUH) Hyderabad. With six months of duration from September 2015 to February 2016. All the cases with diagnosis of STEMI and NSTEMI, both genders, age from 25 years to 85 years and willing to participate in study were incorporated. All the cases having history of bleeding disorders, pregnancy and lactation, intracranial hemorrhage, identified physical cerebral vascular lesion (such as arterio-venous deformity), ischemic stroke in 3 months, Identified malignant intracranial neoplasm, closed head injury, suspected aortic dissection, chronic liver or kidney disease were excluded from the study. Complete medical history, physical examination and routine laboratory investigation were carried out. Cardiac enzymes were acquired through the laboratory unit of Liaquat university hospital. Data on the electrocardiogram (ECG) was collected through history as well as progress notes of physician. Presenting symptoms were acquired through the history as well as progress notes of physician. Data on therapy received and therapeutics used were collected from patient's files and discharge cards. 30 days mortality of patients was recorded at hospital or through contacts numbers of deceased's close relatives.

Data Analysis Procedure: Data analysis was performed through a statistical software SPSS. 16. Standard deviation and Mean were contrasted for quantitative factors. Percentages and Frequency were considered for qualitative factors. Stratification with respect genders with mortality was done. Chi squire test were applied. $P \leq 0.05$ were taken significance.

RESULTS

Total 186 cases were selected for this study, mean age was of 56.8 ± 12.5 years of females and 55.6 ± 12.12 years of males, with range of minimum youngest one being 26 years old and maximum age was 84 years. Table No.1.

Males were comparatively more from females as: 129(69%) males and 57(31%) females Graph 1.

Hypertension and family history were the most common risk factors of acute myocardial infarction in our study, results shows in Table No.2.

Table No. 3 and 4 shows treatment given following acute myocardial infarction.

Table No.1: Descriptive statistics of age of the patients n=186

Gender	Mean $\pm$SD
Men	55.6 $\pm$12.12 years
Women	56.8$\pm$12.5years

Forty three patients (23.4%) cases were died out of total 186 cases within 30 days after acute myocardial infarction, out of them gender wise comparison of subjects showed that females had significantly higher mortality (N= 21, 36.8%) as compare to males (n = 22, 17.05%). P value 0.001. Table: 5

Table No.2: Frequency of risk factors n= 186

	Men n=129	**Women n=57**
Hypertension	71 (55 %)	32 56.1%
Diabetes	29 (22.4%)	6 10.5%
Family History	60(46.5%)	17 29.8%
Hyperlipidemia	13(10.0%)	7 12.3%

**Table No.3: Treatment given in STEMI n=146**

Treatment given in STEMI	Frequency			
	Men 101		Women 45	
	Count	%age	Count	%age
Oxygen	28	28.2	16	35.5
Aspirin	101	100	45	100
Clopidogrel	101	100	45	100
Morphine	24	24.2	13	28.8
Nitrates	63	63.6	33	73.3
ACE Inbiotrs	85	85.8	35	77.7
Beta Blockers	41	41.4	23	51.1
Statins	72	72.7	28	62.2
Heparin	101	100	45	100
Coronary Angiography	171	7.1	10	22.2
PTCA	9	9	5	11.1
CABG	0	0	1	2.2

Table No.4: Treatment given in NSTEMI n=40

Treatment given in NSTEMI	Frequency			
	Men 28		Women 12	
	Count	%age	Count	%age
Oxygen	4	14.2%	3	25%
Aspirin	28	100%	12	100%
Clopidogrel	28	100%	12	
Morphine	4	14.2%	1	8.3%
Nitrates	27	96.4%	10	83.3%
ACE Inbiotrs	17	60.7%	4	33.3%
Beta Blockers	20	71.4%	8	66.6%
Statins	28	100%	12	100%
Heparin	28	100%	12	100%
Coronary Angiography	9	32.1%	1	8.3%
PTCA	8	28.5%	0	0
CABG	1	3.5%	0	0

Table No.5: Frequency of mortality among men and women. CHI square test by gender n=186

Gender	Mortality N (%)		Level 0f Significance
Men n- 129	22(17.05%)	107(82.7%)	0.001
Women n- 57	21(36.8%)	36(63.2%)	
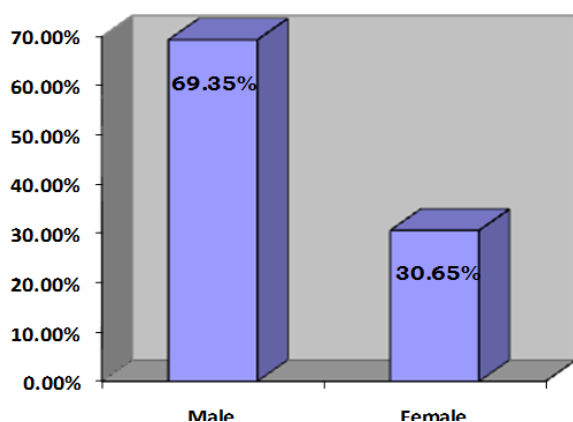
Graph No.1: Gender wise distribution of patients n=186

DISCUSSION

This study compared the mortality in men and women. In our study total number of patients was 186 who were admitted. Men were 129 and females were 57. Total number of STEMI was 146 and NSTEMI were 40, of which 101 males and 45 females had STEMI and in NSTEMI 28 males and 12 were females. Epidemiological surveys exhibited that CHD appears at an earlier age in males as contrasted to females.[10,11] We also found that mean age of men were 55.6 +12.2 and females were 56.6+12.5. Females were older as contrasted to males about 1½ years. Females were about 8 years older as contrasted to males and this can possibly be the effect of estrogen in females which protects from atherosclosis formation.[12] Until menopause, females have considerably less CHD than same age related men because of the effect of estrogen over plasma lipoproteins through escalating the HDL and reducing the LDL cholesterol. Men were higher in number than women in STEMI as well as NSTEMI in our study. The more frequent patients were in middle age group although no significant variance was found in age group.

Gender differences exist with regard to presentation and treatment in MI and also have been the issue of current cardiovascular research. Patients were appraised for the therapies suggested by the ACC–AHA recommendations for the therapy of MI since 1990. These included acute reperfusion therapy for subjects with STEMI with meantime of 12 hours of hospitalization, the administration of oxygen, morphine, aspirin, clopidogrel, nitrates, ACE inhibitors, statins as well as beta-blockers with meantime of 24 hours of hospitalization along with coronary angiography meantime of hospitalization. We also assessed the rate of CABG surgery in addition to PTCA during 30 days. Treatment variances with respect to gender continued without much difference from 1994 to 2002. Even though a number of studies considered time trends in administration of acute-MI, none appraised such variations according to subject's gender/race. Studies of

subjects who were recommended cardiovascular assessment found little difference in administration with respect to sex, along little variance over time. Compared with other studies.[13,14] In our findings female cases having AMI had significant variances receiving certain treatments as contrasted to male patients. The most treatment given aspirin, clopidogrel, statins in men and women and both types of MI i.e STEMI and NSTEMI. In STEMI treatment men received thrombolytic therapy more than women. Less women were eligible for thrombolytic therapy on arrival compared to men. As well as Jneid et al.[4] as well reported the underuse of evidence-based therapies as well as lower application of revascularization techniques for females. Thrombolytic were less used in females than in males in this study, perhaps females presented with the period from pain initiation to hospital arrival was extended more than 12 hours in duration due to severity of symptoms variations, which can possibly justify the delay in managing thrombolysis in women due to late arrival to hospital as compared to men. Beta blockers and ACE inhibitors were also given more to male this is because of women had low blood pressure and having more AMI complications as beta blockers and Ace inhibitors are contraindicated. Nitrates were also given more to males patients may be due to severity of symptoms. These results are similar with preceding research surveys on the variance in the therapy provided to males and females with MI.

Hypertension was most common risk factor in both genders although diabetes was common in females while smoking and hyperlipidemia were common in males. Similarly Shahab et al.[15] reports that females were older as well as had greater incidence of diabetes (DM), dyslipidemia, and hypertension. The correlation of current smoking, high risk diet, abnormal lipids, obesity, as well as psychosocial stress factors with Myocardial Infarction was similar in females and males. Estrogen appears as protector against the coronary atherosclerosis. Hence, when comparatively young females acquire an AMI after rupture of the vulnerable plaque, they possess less ever ecoronary stenosis as contrast to older ladies or males.[16] Due to the comparative paucity of advanced CS prior to their infarction, females can possibly not have earlier developed anis chemicresponse accomplished to protect them yocardiumin course of infarction by generating preconditioning and ortheprogress of collateral supply of the blood, as well as sex-associated variances in myocardial physiology as well as compliance can possibly as well be a factor of higher death among females.[1] As well as the general hospitalized death rates in our study on unselected patients were Forty three patients 43 (23.4%) out of total 186, died within 30 days after acute myocardial infarction. Gender wise comparison of female subjects showed significant higher mortality as compare to males' p-value 0.001.

Similarly in some other studies reported that females were another factor with higher death in subjects having Acute Myocardial Infarction.[9,12,13]

CONCLUSION

This study established that mortality higher in patient with acute myocardial infarction. Mortality was significantly elevated among females as compare to males. Further big sample size studies or meta-analysis researches are needed on gender bias or gender impact on outcomes of acute myocardial infarction.

Conflict of Interest: The study has no conflict of interest to declare by any author.

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