LEFT VENTRICULAR FAILURE IN CASES OF STEMI

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Abstract:

Objective; *To determine the frequency of left ventricular failure (LVF) in cases with acute ST elevation MI (STEMI).*

Methodology: *In this descriptive case series study conducted at Sheikh Zayed Hospital, Rahim Yar Khan, Jinnah Hospital, Lahore and Services Hospital, Lahore during July to December 2018. In this study there were total 80 cases of acute STEMI. The case of both genders having age between 35 to 75 years presenting within 24 hours of their clinical symptoms of MI were included. The diagnosis of LVF was made according to Killip classification of class II or more.*

Results: *In this study there were total 80 cases of STEMI out of which were 48 (67%) were males and 32 (33%) females. The mean age was 57.41±6.19 years and mean duration of MI was 5.81±1.28 hours. There were 10 (12.50%) cases of HTN, 15 (21.43%) with DM and 18 (22.50%) were obese. LVF was seen in 35 (43.75%) cases. The age group 56 to 75 years had a significant association with this where 26 (52%) out of 50 cases developed LVF as compared to 9 (30%) out of 30 cases with age 35 to 55 years (p=0.01) as in table 2. None of the co morbid conditions like DM, HTN and obesity found significant association with LVF; however the rate was high in every group with risk factors (table 3).*

Conclusion; *LVF is seen in almost half of the cases presenting with STEMI and it is significantly associated with age group 56 to 75 years.*

Key words. *ACS, STEMI, LVF.*

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INTRODUCTION:

Acute coronary syndrome (ACS) is a spectrum of disease characterized by the clinical features of chest pain; characteristic electrocardiographic (ECG) changes and rise in the cardiac enzymes. It can be subdivided into ST segment elevation myocardia infarction (STEMI), non ST segment elevation myocardia infarction (NSTEMI) and angina pectoris. Myocardial infarction leads to myocardial injury, dysfunction and arrhythmia development that lead to acute or chronic heart failure that can be left ventricular failure in milder form or overt cardiogenic shock in its severe form. The frequency of cardiogenic shock after acute MI is 5–15% and while that of LVF reaches up to 50% in various studies. [1-2]

The prevalence of various risk factors like Hypertension (HTN), diabetes mellitus (DM), obesity, smoking not only leads to increased risk of ischemic heart disease but also contribute to the overall factors leading to left ventricular failure as well. The left ventricular failure (LVF) is associated with clinical signs and symptoms of exertional dyspnea, cough, frothy sputum, palpitation, chest pain etc. depending upon the severity of the disease and presence of the co morbid conditions. [3-4]

Echocardiography is the most widely used investigation of choice for the detection of left ventricular function and there are also other clinical classification to dictate the presence and severity of LVF on clinical grounds i.e. KIilip class that subdivides the cases of LVF from class I to IV depending upon the severity. The early detection of LVF in cases after acute MI like STEMI is mandatory as it can not only warrant urgent treatment on certain prospective but also has impact over its outcome. [5-6]

OBJECTIVE OF THE STUDY:

The objective of this study was to determine the frequency of left ventricular failure (LVF) in cases of acute ST elevation MI (STEMI)

Material And Methods:
Study Design

- Descriptive case series study

Setting & Duration Of Study
Sheikh Zayed Hospital, Rahim Yar Khan, Jinnah Hospital, Lahore and Services Hospital, Lahore during July to December 2018.

Sampling Technique

- Non probability consecutive sampling.

MATERIAL AND METHODS:

In this study there were total 80 cases of acute STEMI. The case of both genders having age between 35 to 75 years presenting within 24 hours of their clinical symptoms of MI were included. The cases of MI other than STEMI, and those with COPD, liver cirrhosis or chronic kidney disease were excluded from this study. The detailed sociodemographic data and clinical data like DM, HTN, obesity was taken. The diagnosis of LVF was made according to Killip classification and those of class II or more were labelled as LVF in this study.

Statistical analysis:
The data was entered and analysed with the help of SPSS version 21. Qualitative and quantitative were presented as frequency and percentage and mean ± standard deviation respectively. Effect modifiers were controlled through stratification and post stratification chi square test was applied taking p value less than 0.05 as significant.

RESULTS:

In this study there were total 80 cases of STEMI out of which 48 (60%) were males and 32 (30%) females. The mean age was 57.41±6.19 years and mean duration of MI was 5.81±1.28 hours. There were 10 (12.50%) cases of HTN, 15 (21.43%) with DM and 18 (22.50%) obese. LVF was seen in 35 (43.75%) cases of STEMI. There was no significant difference in terms of gender regarding development of LVF with p= 0.79 as in table 1. The age group 56 to 75 years had a significant association with this where 26 (52%) out of 50 cases developed LVF as compared to 9 (30%) out of 30 cases with age 35 to 55 years (p=0.01) as in table 2. None of the co morbid conditions like DM, HTN and obesity found significant association with LVF; however the rate was high in every group with risk factors (table 3).

TABLE NO. 01

LVF WITH RESPECT TO GENDER

n= 80

Gender	LVF		Total
	Yes	**No**	**Total**
Male	22 (45.83%)	26 (54.17%)	48 (100%)
Female	13 (40.63%)	19 (59.37%)	32 (100%)
Total	**35 (43.75%)**	**45 (56.25%)**	**80 (100%)**

P Value = 0.79

TABLE NO. 02

LVF WITH RESPECT TO AGE GROUPS

n= 80

Age groups (years)	LVF		Total
	Yes	**No**	**Total**
35 to 55	26 (52%)	24 (48%)	50 (100%)
56 to 75	9 (30%)	21 (70%)	30 (100%)
Total	**16 (16%)**	**84 (84%)**	**100 (100%)**

P Value = 0.01

TABLE NO. 03

LVF WITH RESPECT TO TYPE OF CO-MORBID CONDTIONS

n= 80

COMORBID CONDTIONS		LVF		Total	Significance
		Yes	No		
DM	Yes	7 (46.67%)	8 (53.33%)	15 (100%)	p= 0.94
	No	28 (43.08%)	37 (56.92%)	65 (100%)	
HTN	Yes	5 (50%)	5 (50%)	10 (100%)	p= 0.34
	No	30 (42.86%)	40 (57.14%)	70 (100%)	
Obesity	Yes	8 (44.44%)	10 (55.56%)	18 (100%)	p= 0.96
	No	27 (43.55%)	35 (56.45%)	62 (100%)	

DISCUSSION:

In the present study LVF was seen in 35 (43.75%) out of 80 cases of STEMI. In a study conducted by Ahmad W et al, on 206 cases, LVF was seen in 56 (37.30%) cases. [7] Out of these 9 had grade 1, 32 had grade II, 13 had grade III and 2 had grade IV systolic dysfunction. This was also observed by other studies as well that the rate of LVF is high and almost affecting 40% of cases. [8] This rate was not only similar to our study, but they also assessed that this LVF has poor prognostic factor over long term. In a study by Velazquez J et al studied the frequency of LVF after acute STEMI and also the left atrial volume (LAV). [8] It was seen that cases that had LVF of Killip class II and with LAVI of more than 32 ml/m^2 later on had recurrent admissions due to heart failure.

There was no significant difference in terms of gender and neither of the co morbid conditions like DM, HTN and obesity regarding development of LVF. According to a study by Mateus PS et al, there was near significant association of LVF in cases of STEMI with p= 0.11 and significant difference was seen with dyslipidaemia with p= 0.01. They also found LVF after STEMI in 55.8% of cases. [9]

In our study the age group 56 to 75 years had a significant association with this where 26 (52%) out of 50 cases developed LVF as compared to 9 (30%) out of 30 cases with age 35 to 55 years (p=0.01). This was also seen by other studies as well in the past where the higher age groups had more cases of LVF but the cut off values used by them were not the same and also they did not find any significant association. [10-11] The reason of higher LVF in older age groups can be multifactorial due to arteriosclerosis atherosclerosis, DM, HTN.

CONCLUSION:

LVF is seen in almost half of the cases presenting with STEMI and it is significantly associated with age group 56 to 75 years.

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