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FREQUENCY, RISK FACTORS AND IN-HOSPITAL OUTCOMES OF ST-ELEVATED MYOCARDIAL INFARCTION IN PATIENT PRESENTING WITH ACUTE CORONARY SYNDROME

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ABSTRACT

Introduction: Cardiovascular disease (CVD) is a global health problem reaching epidemic proportions in both developed and developing countries and it is the leading cause of mortality and morbidity worldwide. The South Asian countries have among the highest incidences of CVD globally. Estimates from the global burden of disease study suggest that by the year 2020 this part of the world will have more individuals with atherosclerotic CVD than any other region. Data on risk factors and in-hospital outcomes for STEMI patients are limited in our local population. **Objectives:** To determine the frequency of ST elevated myocardial infarction in patient presenting with acute coronary syndrome and to determine the associated factors and in-hospital outcomes in patient with ST elevated myocardial infarction. **Study design:** Descriptive study. **Settings:** Department of Cardiology, Bolan Medical College/Hospital Quetta. **Study duration:** 28th January 2023 to 27th January 2024. **Methods:** A total of 179 patients presenting with acute coronary syndrome between 18 to 65 years of either gender were included. Patients with previous history of myocardial infarction, history of PCI/CABG and known history of

chronic renal disease or liver disease were excluded. Patient electrocardiogram was done for confirmation of ACS and its type as per criteria mention in operational definition. All patient were undergone treatment either PCI or conservative management as per hospital protocol. All Patients were followed till discharge for assessment of in-hospital outcomes such as stroke, acute heart failure, oliguria and mortality. **Results:** In our study, frequency of ST elevated myocardial infarction in patient presenting with acute coronary syndrome was found in 95 (53.04%) patients. In our study, frequency of in-hospital outcomes in patient with ST elevated myocardial infarction was found to be as follows; acute heart failure in 44 (24.58%), stroke in 19 (10.61%), oliguria in 08 (4.45%) and mortality in 12 (6.70%) patients. **Conclusion:** This study concluded that frequency of ST elevated myocardial infarction in patient presenting with acute coronary syndrome was found in 53.04% patients with acute heart failure in 24.58%, stroke in 10.61%, oliguria in 4.45% and mortality in 6.70% patients.

KEYWORDS: ST-elevated myocardial infarction, acute heart failure, stroke.

INTRODUCTION

Cardiovascular disease (CVD) is a global health problem reaching epidemic proportions in both developed and developing countries and it is the leading cause of mortality and morbidity worldwide.[1,2] The South Asian countries have among the highest incidences of CVD globally.[3] Estimates from the global burden of disease study suggest that by the year 2020 this part of the world will have more individuals with atherosclerotic CVD than any other region.[3,4] South Asian populations have an increased risk and 5–10 years earlier onset for acute myocardial infarction (AMI) compared to Western populations. In recent years, the frequency of AMI in the younger population is increasing.[3,5,6]

The standard modifiable cardiovascular risk factors (SMuRFs) of diabetes mellitus, hyperlipidemia, hypertension, and cigarette smoking are central elements of the well established Framingham cardiovascular risk score and many subsequent validated risk scores.[7-9] However, CHD remains a leading cause of death in all regions of the world.[10-12] ST segment elevation myocardial infarction (STEMI) has a higher in hospital mortality rate than non–ST segment elevation acute coronary syndromes.[13,14] In a recent large, single center cohort study, reported that 25% of first presentation STEMI patients, confirmed to be a result of atherosclerosis, had no known SMuRFs at the time of their event.

Furthermore, the proportion of the STEMI cohort that was SMuRF less increased significantly during the study period (2006-2014).[15]

Study by Ching Hui Sia et al[16] reported the frequency of STEMI in patient with acute myocardial infarction was 60.52%. Among 12399 patient with STEMI, 11,821 (95.3%) STEMI patients had at least one risk factor, while 578 (4.7%) STEMI patients did not have any of the five risk factors, only 4.7% of the STEMI population were SMuRF less. Similarly, 7,854 (97.1%) and 233 (2.9%) NSTEMI patients were SMuRF positive and SMuRF less, respectively. For STEMI, smoking was the most common risk factor, followed by hyperlipidemia, hypertension, diabetes, and obesity. Another study conducted in Peshawar reported the frequency of STEMI in patient with AMI was 78.85%.[17] Study by Yunyun et al reported that male sex (OR = 5.891), smoking (OR=3.500), family history of early CAD (OR=3.194), Fib (OR=2.414) and HbA1c (OR = 1.515) are associated with STEMI.[18] Another study reported that STEMI was most prevalent (n=2723, 67%) type of MI. Out of 560 patients who were followed up, cardiogenic shock was frequent (n=293, 52.3%) adverse outcome followed by heart failure (n=114, 20.4%), atrial fibrillation (n=78, 13.9%) and stroke (n=75, 13.4%).[19]

Several studies have documented the classical risk factors for ischemic heart disease (IHD). However, the role of these risk factors in the pathogenesis of STEMI in Pakistan is still not yet convincingly established. Data on risk factors and in hospital outcomes for STEMI patients are limited in our local population. We therefore were conducting this study to determine the frequency, associated factor and in-hospital outcome of STEMI in patients with AMI in tertiary care hospital of Quetta. Findings of our study will help the cardiologist in risk stratification of patient and also help in developing preventing strategies in order to reduce the burden of STEMI. Furthermore, study results will also provide an insight to the cardiologist for modification of management strategies in order to improve in- hospital outcomes.

METHODOLOGY

Data collection was started after taking approval from ethical review committee of the institute BMC. All patient presenting with ACS and fulfilling the inclusion criteria (patient of age 18-65 years, male and female, Patient presenting with acute coronary syndrome, patient presenting within 3 hours of development of symptoms) were enrolled in the study from emergency department of Bolan Medical College/Hospital Quetta. Before

enrollment written inform consent was taken from every patient. After taking consent baseline demographic and clinical details such as age, gender, residence, family monthly income, height, weight, BMI, comorbid, smoking and duration of symptoms were taken and noted in a predesigned performa.

Patient electrocardiogram was done for confirmation of ACS and its type asper criteria mention in operational definition. All patient were undergone treatment either PCI or conservative management as per hospital protocol. All Patient were followed till discharge for assessment of in-hospital outcomes such as stroke, acute heart failure, oliguria and mortality. All the details of study variables were noted in a predesigned performa.

Data was analyze by using SPSS version 25. Mean and standard deviation or median (interquartile range) were reported for quantitative variables such as age, height, weight, BMI, family monthly income, duration of symptoms and duration of hospital stay. However, qualitative variables such as gender, residence, diabetes, hypertension, dyslipidemia, obesity, smoking, family history of CVD, type of myocardial infarction, acute heart failure, stroke, oliguria and mortality were reported as frequency and percentage. Shapiro Wilk test was applied to assess the normality of data. Logistic Regression analysis was performed to determine the associated factors. First of all univariate analysis was done, all variables having p-value <0.25 were included in multivariable model. However in multivariable model, variables were retained in model if p-value <0.1 or biologically important. Furthermore, in-hospital outcomes and frequency of ST elevation infarction were stratified for age, gender, residence, family monthly income, duration of symptoms, diabetes, hypertension, dyslipidemia, obesity, and smoking, family history of CVD, type of myocardial infarction and duration of hospital stay. Post stratification chi-square/fisher exact test was applied taking p-value <0.05 as significant.

RESULT

Age range in this study was from 18 to 65 years with mean age of 49.77 ± 6.24 years. Majority of the patients 162 (90.50%) were between 41 to 65 years of age as shown in Table I.

Out of 179 patients, 103 (57.54%) were male and 76 (42.46%) were females with male to female ratio 1.4:1 as shown in Figure I. Mean height was 158.44 ± 12.35 cm. Mean

weight was 89.67±9.84 kg. Mean BMI was 28.54±3.77 kg/m^2 (TableII). Mean duration of symptoms was 2.29 ± 0.65 hours. Distribution of patients according to different confounding variables is shown in Table II.

In our study, frequency of ST elevated myocardial infarction in patient presenting with acute coronary syndrome was found in 95 (53.04%) patients as shown in Table III. In our study, frequency of in-hospital outcomes in patient with ST elevated myocardial infarction was found to be as follows; acute heart failure in 44 (24.58%), stroke in 19 (10.61%), oliguria in 08 (4.45%) and mortality in 12 (6.70%) patients (Table IV).

Stratification of frequency of ST elevated myocardial infarction with respect to age, gender, residence, family monthly income, duration of symptoms, diabetes, hypertension, dyslipidemia, obesity, smoking, family history of CVD and duration of hospital stay is shown in Table V. Stratification of acute heart failure and stroke with respect to age, gender, residence, family monthly income, duration of symptoms, diabetes, hypertension, dyslipidemia, obesity, smoking, family history of CVD and duration of hospital stay is shown in Table VI & VII respectively.

Stratification of oliguria and mortality with respect to age, gender, residence, family monthly income, duration of symptoms, diabetes, hypertension, dyslipidemia, obesity, smoking, family history of CVD and duration of hospital stay is shown in Table VIII & IX respectively.

Table I: Distribution of patients according to Age (n=179).

Age (in years)	No. of Patients	%age	**Mean ± SD**
18-40	17	9.50	**49.77 ± 6.24 years**
41-60	162	90.50	
Total	179	100.0	

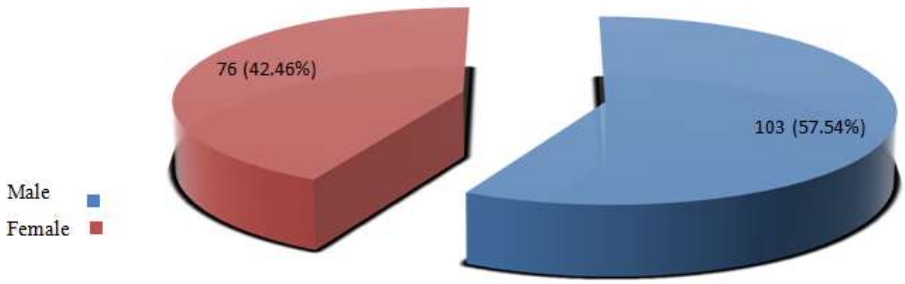

Figure I: Distribution of patients according to gender (n=179).

Table II: Distribution of patients according to different confounding variables (n=179)

Confounding variables		Frequency	%age
Duration of symptoms (hours)	≤2	108	60.34
	3	71	39.66
Hypertension	Yes	67	37.43
	No	112	62.57
Diabetes mellitus	Yes	70	39.11
	No	109	60.79
BMI (kg/m^2)	≤30	116	64.80
	>30	63	35.20
Dyslipidemia	Yes	52	29.05
	No	127	70.95
Smoking	Yes	80	44.69
	No	99	55.31
Family h/o CVD	Yes	50	27.93
	No	129	72.07
Place of living	Rural	66	36.87
	Urban	113	63.13
Family monthly income	Poor	21	11.73
	Middle	94	52.51
	Upper	64	35.75
Duration of hospital stay (days)	≤7	108	60.34
	>7	71	39.66

Table III: Frequency of ST elevated myocardial infarction in patient presenting with acute coronary syndrome (n=179).

ST elevated myocardial infarction	No. of Patients	%age
Yes	95	53.07
No	84	46.93

Table IV: In-hospital outcomes in patient with ST elevated myocardial infarction.

In-hospital outcome	Yes	No
Acute heart failure	44 (24.58%)	135 (75.43%)
Stroke	19 (10.61%)	160 (79.39%)
Oliguria	08 (4.45%)	171 (95.53%)
Mortality	12 (6.70%)	167 (93.30%)

Table V: Stratification of frequency of ST elevated myocardial infarction with respect to age, gender, residence, family monthly income, duration of symptoms, diabetes, hypertension, dyslipidemia, obesity, smoking, family history of CVD and duration of hospital stay.

Frequency		Yes (n=95)	No (n=84)	P-value
Age (years)	18-40	05 (29.411%)	12 (70.59%)	**0.039**
	41-65	90 (55.56%)	72 (44.44%)	
Gender	Male	63 (61.17%)	40 (38.83%)	**0.012**
	Female	32 (42.11%)	44 (57.89%)	
Duration of symptoms(hrs)	≤2	62 (57.41%)	46 (42.59%)	**0.152**
	3	33 (46.48%)	38 (53.52%)	
BMI (kg/m^2)	≤30	62 (53.45%)	54 (46.55%)	**0.891**
	>30	33 (52.38%)	30 (47.62%)	
DM	Yes	34 (48.57%)	36 (51.43%)	**0.336**
	No	61 (55.96%)	48 (44.04%)	
HTN	Yes	37 (55.22%)	30 (44.78%)	**0.656**
	No	58 (51.79%)	54 (48.21%)	
Dyslipidemia	Yes	43 (82.69%)	09 (17.31%)	**0.0001**
	No	52 (40.94%)	75 (59.06%)	
Smoking	Yes	40 (50.0%)	40 (50.0%)	**0.549**
	No	55 (55.56%)	44 (44.44%)	
Family h/o CVD	Yes	34 (68.0%)	16 (32.0%)	**0.013**
	No	61 (47.29%)	68 (52.71%)	
Residence	Rural	38 (57.58%)	28 (42.42%)	**0.356**
	Urban	57 (50.44%)	56 (49.56%)	
Monthly income	Poor	12 (57.14%)	09 (42.86%)	**0.905**
	Middle	50 (53.19%)	44 (46.81%)	
	Upper	33 (51.56%)	31 (48.44%)	
Duration of hospitalstay (days)	≤7	62 (57.41%)	46 (42.59%)	**0.039**
	>7	33 (46.48%)	38 (53.52%)	

Table VI: Stratification of acute heart failure with respect to age, gender, residence, family monthly income, duration of symptoms, diabetes, hypertension, dyslipidemia, obesity, smoking, family history of CVD and duration of hospital stay.

		Yes (n=44)	No (n=135)	P-value
Age (years)	18-40	02 (11.76%)	15 (88.24%)	**0.197**
	41-65	42 (25.93%)	120 (74.07%)	
Gender	Male	25 (24.27%)	78 (75.73%)	**0.911**
	Female	19 (25.0%)	57 (75.0%)	
Duration of symptoms(hrs)	≤2	23 (21.30%)	85 (78.70%)	**0.208**

	3	21 (29.58%)	50 (70.42%)	
BMI (kg/m^2)	≤30	29 (25.0%)	87 (75.0%)	**0.859**
	>30	15 (23.81%)	48 (76.19%)	
DM	Yes	19 (27.14%)	51 (72.86%)	**0.524**
	No	25 (22.94%)	84 (77.06%)	
HTN	Yes	17 (25.37%)	50 (74.63%)	**0.849**
	No	27 (24.11%)	85 (75.89%)	
Dyslipidemia	Yes	06 (11.54%)	46 (88.46%)	**0.009**
	No	38 (29.92%)	89 (70.08%)	
Smoking	Yes	20 (25.0%)	60 (75.0%)	**0.907**
	No	24 (24.24%)	75 (75.76%)	
Family h/o CVD	Yes	13 (26.0%)	37 (74.0%)	**0.784**
	No	31 (24.03%)	98 (75.97%)	
Residence	Rural	17 (25.76%)	49 (76.24%)	**0.779**
	Urban	27 (23.89%)	86 (76.11%)	
Monthly income	Poor	06 (28.57%)	15 (71.43%)	**0.230**
	Middle	27 (28.72%)	67 (71.28%)	
	Upper	11 (17.19%)	53 (812.81%)	
Duration of hospitalstay (days)	≤7	23 (21.30%)	85 (78.70%)	**0.208**
	>7	21 (29.58%)	50 (70.42%)	
Type of MI	STEMI	21 (22.11%)	74 (77.89%)	**0.413**
	NSTEMI	23 (27.38%)	61 (72.62%)	

Table VII: Stratification of stroke with respect to age, gender, residence, family monthly income, duration of symptoms, diabetes, hypertension, dyslipidemia, obesity, smoking, family history of CVD and duration of hospital stay.

Frequency		Yes (n=19)	No (n=160)	P-value
Age (years)	18-40	04 (23.53%)	13 (76.47%)	**0.069**
	41-65	15 (9.26%)	147 (90.74%)	
Gender	Male	09 (8.74%)	94 (91.26%)	**0.343**
	Female	10 (13.16%)	66 (86.84%)	
Duration of symptoms(hrs)	≤2	10 (9.26%)	98 (90.74%)	**0.478**
	3	09 (12.68%)	62 (87.32%)	
BMI (kg/m^2)	≤30	11 (9.48%)	105 (90.52%)	**0.505**
	>30	08 (12.70%)	55 (87.30%)	
DM	Yes	07 (10.0%)	63 (90.0%)	**0.831**
	No	12 (11.01%)	97 (88.99%)	
HTN	Yes	06 (8.96%)	61 (91.04%)	**0.577**
	No	13 (11.61%)	99 (88.39%)	
Dyslipidemia	Yes	09 (17.31%)	43 (82.69%)	**0.063**
	No	10 (7.87%)	117 (92.13%)	
Smoking	Yes	08 (10.0%)	72 (90.0%)	**0.810**
	No	11 (11.11%)	88 (88.89%)	
Family h/o CVD	Yes	05 (10.0%)	45 (90.0%)	**0.868**
	No	14 (10.85%)	115 (89.15%)	
Residence	Rural	08 (12.12%)	58 (87.88%)	**0.617**
	Urban	11 (9.73%)	102 (90.27%)	
Monthly income	Poor	00 (0.0%)	21 (100.0%)	**0.054**
	Middle	08 (8.51%)	86 (91.49%)	
	Upper	11 (17.19%)	53 (82.81%)	
Duration of hospitalstay (days)	≤7	10 (9.26%)	98 (90.74%)	**0.478**
	>7	09 (12.68%)	62 (87.32%)	
Type of MI	STEMI	08 (8.42%)	87 (91.58%)	**0.311**
	NSTEMI	11 (13.10%)	73 (86.90%)	

Table VIII: Stratification of oliguria with respect to age, gender, residence, family monthly income, duration of symptoms, diabetes, hypertension, dyslipidemia, obesity, smoking, family history of CVD and duration of hospital stay.

Frequency		Yes (n=08)	No (n=171)	P-value
Age (years)	18-40	01 (5.88%)	16 (94.12%)	**0.767**
	41-65	07 (4.32%)	155 (95.68%)	
Gender	Male	02 (1.94%)	101 (98.06%)	**0.057**
	Female	06 (7.89%)	70 (92.11%)	
Duration of symptoms(hrs)	≤2	00 (0.0%)	108 (100.0%)	**0.0004**
	3	08 (11.27%)	63 (88.73%)	
BMI (kg/m^2)	≤30	05 (4.31%)	111 (95.69%)	**0.889**
	>30	03 (4.76%)	60 (95.24%)	
DM	Yes	03 (4.29%)	67 (95.71%)	**0.924**

	No	05 (4.59%)	104 (95.41%)	
HTN	Yes	03 (4.48%)	64 (95.52%)	**0.997**
	No	05 (4.46%)	107 (95.54%)	
Dyslipidemia	Yes	02 (3.85%)	50 (96.15%)	**0.796**
	No	06 (4.72%)	121 (95.28%)	
Smoking	Yes	04 (5.0%)	76 (95.0%)	**0.757**
	No	04 (4.04%)	95 (95.96%)	
Family h/o CVD	Yes	02 (4.0%)	48 (96.0%)	**0.850**
	No	06 (4.65%)	123 (95.35%)	
Residence	Rural	08 (12.12%)	58 (87.88%)	**0.0002**
	Urban	00 (0.0%)	113 (100.0%)	
Monthly income	Poor	00 (0.0%)	21 (100.0%)	**0.023**
	Middle	08 (8.51%)	86 (91.49%)	
	Upper	00 (0.0%)	64 (100.0%)	
Duration of hospital stay (days)	≤7	00 (0.0%)	108 (100.0%)	**0.0004**
	>7	08 (11.27%)	63 (88.73%)	
Type of MI	STEMI	04 (4.21%)	91 (95.79%)	**0.859**
	NSTEMI	04 (4.76%)	80 (95.24%)	

Table IX: Stratification of mortality with respect to age, gender, residence, family monthly income, duration of symptoms, diabetes, hypertension, dyslipidemia, obesity, smoking, family history of CVD and duration of hospital stay.

Frequency		**Yes (n=12)**	**No (n=167)**	**P-value**
Age (years)	18-40	01 (5.88%)	16 (94.12%)	**0.887**
	41-65	11 (6.79%)	151 (93.21%)	
Gender	Male	08 (7.77%)	95 (92.23%)	**0.508**
	Female	04 (5.26%)	72 (94.74%)	
Duration of symptoms(hrs)	≤2	05 (4.63%)	103 (95.37%)	**0.171**
	3	07 (9.86%)	64 (90.14%)	
BMI (kg/m^2)	≤30	09 (7.76%)	107 (92.24%)	**0.444**
	>30	03 (4.76%)	60 (95.24%)	
DM	Yes	04 (5.71%)	66 (94.29%)	**0.671**
	No	08 (7.34%)	101 (92.66%)	
HTN	Yes	06 (8.96%)	61 (91.04%)	**0.352**
	No	06 (5.36%)	106 (94.64%)	
Dyslipidemia	Yes	08 (15.38%)	44 (84.62%)	**0.003**
	No	04 (3.15%)	123 (96.85%)	
Smoking	Yes	08 (10.0%)	72 (90.0%)	**0.113**
	No	04 (4.04%)	95 (95.96%)	
Family h/o CVD	Yes	04 (8.0%)	46 (92.0%)	**0.666**
	No	08 (6.20%)	121 (93.80%)	
Residence	Rural	07 (10.61%)	59 (89.39%)	**0.111**
	Urban	05 (4.42%)	108 (95.58%)	
Monthly income	Poor	01 (4.76%)	20 (95.24%)	**0.891**
	Middle	07 (7.45%)	87 (92.55%)	
	Upper	04 (6.25%)	60 (93.75%)	

Duration of hospitalstay (days)	≤7	05 (4.63%)	103 (95.37%)	**0.171**
	>7	07 (9.86%)	64 (90.14%)	
Type of MI	STEMI	09 (9.47%)	86 (90.53%)	**0.115**
	NSTEMI	03 (3.57%)	81 (96.43%)	

DISCUSSION

Coronary artery disease (CAD) is becoming an epidemic in the developing countries of the Arab Gulf region, where it affects younger persons at greater rates.[20,21] A number of studies have compared risk factors, clinical presentation, and in-hospital outcomes between young and older acute ST-elevatoin myocardial infarction (STEMI) patients.[22,23] Risk factors such as male sex, smoking, family history, dyslipidemia, hypertension, and diabetes milletus (DM) are associated with STEMI. These studies have often grouped younger and older patients together.[24-26]

I have conducted this study to determine the frequency of ST elevated myocardial infarction in patient presenting with acute coronary syndrome and to determine the associated factors and in-hospital outcomes in patient with ST elevated myocardial infarction. In our study, frequency of ST elevated myocardial infarction in patient presenting with acute coronary syndrome was found in 95 (53.04%) patients. In our study, frequency of in-hospital outcomes in patient with ST elevated myocardial infarction was found to be as follows; acute heart failure in 44 (24.58%), stroke in 19 (10.61%), oliguria in 08 (4.45%) and mortality in 12 (6.70%) patients. Study by Ching-Hui Sia et al[16] reported the frequency of STEMI in patient with acute myocardial infarction was 60.52%. Among 12399 patient with STEMI, 11,821 (95.3%) STEMI patients had at least one risk factor, while 578 (4.7%) STEMI patients did not have any of the five risk factors, only 4.7% of the STEMI population was SMuRF less. Similarly, 7,854 (97.1%) and 233 (2.9%) NSTEMI patients were SMuRF-positive and SMuRF-less, respectively. For STEMI, smoking was the most common risk factor, followed by hyperlipidemia, hypertension, diabetes, and obesity. Another study conducted in Peshawar reported the frequency of STEMI in patient with AMI was 78.85%.[17] Study by Yunyun et al reported that male sex (OR = 5.891), smoking (OR = 3.500), family history of early CAD (OR = 3.194), Fib (OR = 2.414) and HbA1c (OR = 1.515) are associated with STEMI.[18] Another study reported that STEMI was most prevalent (n = 2723, 67%) type of MI. Out of 560 patients who were followed up, cardiogenic shock was frequent (n = 293, 52.3%) adverse outcome followed by heart failure (n = 114, 20.4%), atrial fibrillation (n = 78, 13.9%) and stroke (n = 75,

13.4%).[19]

In a Japanese study enrolling 5429 STEMI patients from 2005 to 2007, HF hospitalization incidence was 4.4% per year during the first year after the index STEMI and approximately 1.0% per year beyond 1 year to 5 years (median follow- up 1956 days).[24] In the Framingham Heart Study, Velagaleti et al[25] found that 14.8% (21/142) of patients surviving 30 days after index MI developed congestive HF during 5-year follow-up from 1990 to 1999. In a different Canadian study between 1994 and 2000, among patients with MI 65 years or older without HF during their index hospitalisation, 71% (3040/4291) developed HF by 5 years.[26]

Data of Torabi et al showed an HF incidence of 33% after discharge from hospital admission for index MI.[27] In a study by Najafi et al, 22.4% developed HF within 28 days of index admission (after exclusion of patients who died within 28 days), and from these patients, 12.4% had at least one subsequent admission with HF after 10-year follow-up.[28] Epidemiological research in Olmsted County (Minnesota, USA) found an HF incidence of 41% during a median follow-up of years after MI.[92] In a Norwegian electronic record study (2001–2009), of 69 372 hospitalised patients with MI, 17.1% developed in-hospital HF and another 5.4% developed postdischarge HF within 1 year.[30] A more recent Danish study found a 90-day HF incidence of 19.6% in 2009–2010.[31]

HF after MI was first described as an adverse prognostic feature by Killip in the 1960s.[32] HF was associated with large infarcts and multivessel disease, and the presence of impaired ventricular function was linked to worsening mortality.[33,34] Prior to thrombolysis, the incidence of in-hospital HF after ST- elevation myocardial infarction (STEMI) was approximately 40%.[35] This appeared to reduce after the introduction of thrombolysis, with HF present in approximately 3% of patients at presentation and 17% during admission.[36] Successful reperfusion was associated with improved LV function and long-term survival.[37] HF during admission remained an adverse prognostic feature, with 1 - year mortality rates approximately 5 fold higher in those with HF.[38]

More recent studies have suggested a further reduction in HF rates with useof primary PCI. In an Italian cohort of 2089 MI patients treated exclusively by PPCI between 1995 and 2005, 17% presented in HF, but only a further 1% developed new onset HF during the hospital admission.[39] Similarly, in an analysis from the HORIZONS-AMI

cohort of 3602 patients recruited between 2005-2007 treated with PPCI, 8.0% of patients were in Killip class II-IV at presentation. At 30 d, only 4.6% of patients had developed a clinical HF syndrome (defined by NYHA/Killip class), rising to 5.1% at 2 years.[40]

These studies are not directly comparable, and reflect selected trial cohorts with a short duration of follow-up and differing methods of HF ascertainment. Several dedicated time trend analyses have now been performed. In Olmsted County, 1537 patients with an index MI between 1979 and 1994 were identified, spanning the introduction of thrombolysis in the late 1980s.[41] Over the study period the 5-year incidence of HF decreased from 40% to 33%. In a later study of 2596 MI patients between 1990 and 2010, there was increasing use of PPCI and a reduced risk of both early (0-7 d; HR = 0.67, 95%CI: 0.54-0.85) and late (8 d-5 years; HR = 0.63, 95%CI: 0.45-0.88) HF over time.[42] In patients with HF, mortality was higher for those with delayed vs early onset HF.[43]

CONCLUSION

This study concluded that frequency of ST elevated myocardial infarction in patient presenting with acute coronary syndrome was found in 53.04% patients with acute heart failure in 24.58%, stroke in 10.61%, oliguria in 4.45% and mortality in 6.70% patients. Findings of our study will help the cardiologist in risk stratification of patient and also help in developing preventing strategies in order to reduce the burden of STEMI. Furthermore, study results will also provide an insight to the cardiologist for modification of management strategies in order to improve in-hospital outcomes.

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