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ORIGINAL ARTICLE

Evaluation of Mortality Frequency in Cardiogenic Shock in Anterior Wall Myocardial Infarction in the Patients Presented to Lady Reading Hospital, Peshawar

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ABSTRACT

Background: The insufficient supply oxygen and blood to the myocardium is characterized by the coronary artery disease. The coronary arteries occlusion leads to this condition. The plaques formation in coronary arteries lumen is indicative of the condition. These plaques impede blood flow. It is a major concern worldwide.

Objective: To evaluate the mortality frequency in cardiogenic shock in anterior wall myocardial infarction in patients presenting to Lady Reading Hospital, Peshawar.

Study Design: It is a descriptive case study conducted at department of Cardiology, Lady Reading Hospital Peshawar and NICVD, Nawabshah. This study was conducted from 1st June 2021 to 30th November 2021.

Subjects and Methods: A total of 139 patients diagnosed with cardiogenic shock were selected for the study. According to the operational definition the followed up of all patients till discharge and mortality was recorded.

Results: The age range of the patients selected for the study was 18-70 years. The mean of age was 47.841±6.66 years, mean weight 83.259±7.39 Kg and mean duration of symptoms was 8.870±3.76 hours. Male patients were 77.7% and females were 22.3%. Mortality was seen in 20.9% patients.

Conclusion: Patients with anterior wall myocardial infarction and cardiogenic shock undergoing percutaneous coronary intervention have better clinical out-comes. The decreased mortality is also observed. Without the delay of time the patients must be transferred to the primary percutaneous coronary intervention facility if it is far away. There is need to establish more primary percutaneous coronary intervention centers.

Keywords: Anterior wall myocardial infarction, cardiogenic shock, mortality.

INTRODUCTION

The insufficient supply oxygen and blood to the myocardium is characterized by the coronary artery disease. The coronary arteries occlusion resulted to this condition. The plaques formation in coronary arteries lumen is indicative of the condition. These plaques impede blood flow. It is a major concern worldwide. It was known as uncommon cause of death at the beginning of the 20th century[1-2]. In the mid-1960s it was reported that deaths due to CAD are increasing constantly. This ratio decreased later, but still it is known as the one of the commonest and leading cause of deaths among the patients world widely. The left anterior descending (LAD) coronary artery deliver blood to the anterior myocardium. LAD artery occlusion leads to the anterior myocardium. The most common cause of MI is atherosclerotic plaque rupture. There are few factors that are highly associated with the higher risk of MI and CAD. Out of these the fiver are considered to contribute more to the disease, and these are hyperlipidemia, obesity, hypertension, diabetes, and smoking[3-4].

The one of the main or primary cardiac condition that leads to the hypoperfusion's tissues biochemical and clinical evidences is known as cardiogenic shock (CS). It incidence is higher in the patients globally. The 23 years period community incidence was reported to be 7%. The global incidence of the cardiogenic shock has increased by the utilization of the tissue plasminogen activator for occluded arteries (GUSTO-1) trial. It was also reported that the global Utilization of Streptokinase has increased the incidence to the 7.2%. Beacause of the insufficient knowledge and death of the majority of the patients before rwacching the hospital has made it more difficult to conclude with the more accurate and certain number[5-6]. The different studies were conducted in the Europe and it was reported that the prevalence of cardiogenic shock following MI has reached to the 7% approximately in the recent years. The preevalnce is even higher in the Asian people with the ratio of 11% and it is lower in the white people with the ratio of 8% and in Hispanic it was reported to be 8.6%. Due to the insufficient and limited data available in the literature the current available data reflect either limited trends, rarely beyond a decade. The other data represent the in-hospital short term evoluation. The need of the hour is to conduct the study and collect the data to come up with the certain figure and numbers. The study were conducted in the Pakistan and incidence of the cardiogenic shock was reported to be 74% in the emergency deaths. Due to the scarcity of[7-8] the data, there is need to conduct this research to better understand the incidence of cardiogenic shocks and related deaths in the MI patients. There is a higher proportion of the in-hospital mortality in patients with cardiogenic shocks after MI. The cornerstones for the diagnosis of anterior myocardium is history and physical examination. The chest pain is the common presentation of the disease. The symptoms associated with the MI are nausea, palpitations, vomiting, dyspnea, anxiety and diaphoresis. The aggravating and relieving factors, duration of symptoms and characteristics and the patients functional capacity is must be recorded in the history of the patient. The evaluation of the patients must be done for the risk factor that are highly associated with the disease. These factors includes smoking, family history, illicit drug use, hypertension, obesity, hyperlipidemia, medication history diabetes, previous history of coronary artery disease and compliance.[9-10] There is need to record the history carefully and perform physical examination as these are the most critical steps that determine the present likelihood of the ischemia.

MATERIAL AND METHODS

By using mortality frequency of 10% in cardiogenic shock in myocardial infarction the sample size was calculated. It was 139[11-12]. For sample size calculation the margin of error was 5% and confidence interval was 95% as described by the WHO formula. The consecutive sampling method was used.

Inclusion Criteria:

1. Age 18 to 70 years
2. Both gender
3. Anterior wall myocardial infarction as per operational definition
4. Cardiogenic shock as per operational definition 47

Exclusion Criteria:

1. ST elevation inferior wall MI on ECG
2. Mechanical complication like acute MR and VSR.
3. on ST elevation MI on ECG
4. H/o congenital heart disease
5. H/o Myocarditis
6. H/o Cardiac tamponade

The patients selected in accordance with the inclusion criteria were asked to sign the consent. Informed consent was taken from caregivers of the patient after explaining the benefits of the study. Demographics like age, gender, ethnicity, physical & social status, dietary pattern, duration of symptoms, emergency treatment given, "history of diabetes, hypertension, smoking, dyslipidemia& anxiety/depression," and weight on weight scale were recorded. All patients were followed up till discharge and mortality was noted. The statistical analysis was performed by the program (IBM SPSS 23). The quantitative variables were used to represent the Mean ±SD such as age, weight and duration of symptoms. Percentage was computed for categorical variables like gender, history of "diabetes, smoking, dyslipidemia, depression/anxiety," physical status, hypertension, social status, dietary pattern, emergency treatment got and mortality. Mortality was stratified on the above variables. For the comparison of the data the chi-square test was done. The data was collected and arranged in the excel sheets. The results were aligned and presented in the form of tables. The conclusion was derived for the data accordingly.

RESULTS

The mean weight 83.259±7.39 Kg and mean duration of symptoms was 8.870±3.76 hours as shown in Table 1. Male patients were 77.7% and females were 22.3%.

Table 1: The mean standard deviation of the patients according to age, duration of symptoms and weight

Characteristics	Mean±SD
Age (years)	47.841±6.66
Weight (Kg)	83.259±7.39
Duration of Symptoms (hours)	8.870±3.76

Mortality was reported in 20.9% patients. Stratification of mortality with respect to diabetes history, hypertension, smoking, age, dyslipidemia, gender, depression/anxiety," physical status, social status, dietary pattern, emergency treatment got are shown in Tables.

Table 2: Frequency and %age of patients according to diabetes, hypertension, smoking, and Dyslipidemia.

factors	Smoking	Hypertension	Dyslipeidemia	Diabetes
Yes	38(27.3%)	50 (36%)	19 (13.7%)	31 (22.3%)
No	101(72.7%)	89 (64%)	120 (86.3%)	108(77.7%)
Total	139 (100%)	139 (100%)	139	139 (100%)

Table 3:

Characteristics	Mortality		P value
	Yes	No	
Emergency treatment			0.000
Thrombolytic	1(1.5%)	64(98.5%)	
Primary PCI	1(2.2%)	45(97.8%)	
No thrombolytic	13(92.9%)	1(7.1%)	
No Primary PCI	14(100%)	0(0%)	
Dietary Pattern			0.782
Vegetarian	10(19.6%)	41(80.4%)	
Non Vegetarian	19(21.6%)	69(78.4%)	
Social status			
On job	22(19.1%)	93(80.9%)	0.271
Job less	7(29.2%)	17(70.8%)	
Duration of symptoms (hours)			
1-12	2(1.8%)	109(98.2%)	0.000
>12	27(96.4%)	1(3.6%)	
Physical status			
Active	17(20%)	68(80%)	0.753
Inactive	12(22.2%)	42(77.8%)	
Total	29(20.9%)	110(79.1%)	

Percentage and frequency of patients according to diabetes history, hypertension, smoking, dyslipidemia, depression/anxiety," physical status, social status, dietary pattern, emergency treatment got are shown in Tables.

DISCUSSION

The one of the highly known disease that is considered as major cause of mortality around the globe is coronary artery disease (CAD). The most fatal disease among CAD is acute STEMI. It has the mortality of 15-20%. The patients diagnosed with the acute MI and further complicated by cardiogenic shock are increasing[13-14]. The significant cases of the mortality and morbidity are reported in such patients. Approximately 30% early mortality rate from acute MI is reported in the literature. According to our studies if the patients diagnosed with CAD with STEMI receive revascularization, the rates of morbidity and mortality can be reduced. The Hashmi et al[15] conducted the study at Pervez Elahi Cardiology Institute, they selected 351 patients with coronary syndrome and post STEMI, The males were 70% and female were 29.9% the mean age was 65.4 ± 7.7 years. The rate of mortality was reported to be 14.6% (p=0.014) with revascularization and 85.4% without intervention. The study in 2017 showed that the better survival rates in the patients diagnosed with CS with STEMI was observed that was from 52.6%-75% only if patients underwent revascularization. The higher rates of mortality was reported in the older age patients that has the age range from 41-70 years[16-17]. The 14% improved survival rates were observed in the patients who underwent revascularization. A study was conducted in Oman from 2013 to 2014. It is comparable to our study, it has the small sample size (63 vs 100). The 79% of the participants were male while other 21% were female. The mean age was 60 ± 12 yrs. The significant survival rates 54.2% (p=0.040) were observed in the primary percutaneous coronary intervention significant survival benefit of.

The primary percutaneous coronary intervention restore the coronary blood flow with complete revascularization. It is the most effective method and cardiologist prefer it on other methods. The rate at -which reperfusion is achieved determine the success of the procedure. If in the non-availability of the P.PCI the medical therapy fibrinolysis is given to the patient then it is mandatory to transfer the patients to the nearby tertiary hospital as soon as possible for the revascularization[18-19]. The non-P.PCI center have reported the higher rates of mortality in the patients with the cardiogenic shocks. The short term and long term mortality can be reduced by the Primary PCI. In hospital mortality rate in patients with CS with 77 STEMI is 39%. The shock duration is much critical and significant step as long duration shock can ultimately leads to failure of organ. The lesser the duration of the shock the higher the improved outcomes and benefits of P.PCI. The study conducted in New York Hospital reported that 30 day survival of 65% in patients who had successful PCI and 20% with unsuccessful PCI. It is comparable to the results interpreted in our study. These values were 61% and 15% at 1 year respectively ($p<0.001$)[20-21]. The limited data about Pakistani population is present in the literature. For the improvement of the survival ratio in patients with the cardiogenic shocks the early reperfusion therapy is highly recommended.

CONCLUSION

Patients with anterior wall myocardial infarction and cardiogenic shock undergoing percutaneous coronary intervention have better clinical out-comes with decreased mortality. Those patients who don't undergo the percutaneous coronary artery intervention have the worst outcome comparing to the former one. The 60% of the patients who undergo the coronary artery intervention survived. Thus, primary percutaneous coronary intervention must be done in all patients with coronary artery disease. Without the delay of time the patients must be transferred to the primary percutaneous coronary intervention facility if it is far away. There is need to establish more primary percutaneous coronary intervention centers. In this way the maximum number of patients can benefit

from primary percutaneous coronary intervention. It will help to decrease the mortality rates in such patients.

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