FREQUENCY OF COMPLICATIONS IN PATIENTS WITH ACUTE ST ELEVATION MYOCARDIAL INFARCTION WITH HIGH LEUCOCYTE COUNT

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ABSTRACT

Objective: To determine the frequency of in hospital complications in patients with acute ST Elevation Myocardial infarction with high leukocytes count.

Material and Methods: This study was conducted at Cardiology Department Hayatabad Medical Complex, PGMI, Peshawar. Duration of the study was six months (January 2012 to June 2012). This was a cross-sectional (descriptive study) in which the total sample size was 177, using 8% proportion of ventricular arrhythmias with acute STEMI, 9.95% confidence level and 4% margin of error, under WHO software for sample size determination.

Results: In this study mean age was 60 years with standard deviation ± 1.28. Seventy percent patients were male while 30% patients were female. Twenty percent patients had heart failure, 7% patients died, 10% patients had Ventricular tachycardia and 7% patients had ventricular fibrillation.

Conclusion: Conduction defects complicating acute myocardial infarction are common in this thrombolytic era in our population. Such patients should be closely observed and monitored as they have got higher rate of complications and mortality during hospital course. This study shows a small decline in frequency of conduction defects which reflects beneficial effect of thrombolytic therapy as compared with previous studies which were done in pre-thrombolytic era.

Key Words: Heart, Failure, Acute, Mycardial Infarction, ventricular, fibrillation, Tachycardia.

INTRODUCTION

Coronary artery diseases are a leading cause of death worldwide. Indo-Pakistani populations have one of the highest risks of coronary artery disease (CAD) in the world. The findings indicate that one in five middle-aged adults in urban Pakistan may have underlying coronary artery disease (CAD).

Acute STEMI is frequently associated with leukocytosis and relative increased in neutrophil count. It is believed that the peripheral leukocyte count have important prognostic implication in acute myocardial infarction (AMI)[1]. It is less well appreciated that leukocytosis can be associated with increased mortality and morbidity risk but this effect is well described for coronary heart disease (CHD) and associations are also reported with hypertension[2], and general mortality risk[3].

Sustained ventricular arrhythmias (VA) complicate 5-10% of all acute MIs. These arrhythmias remain a life-threatening complication of MI, with an in-hospital mortality rate of 16-20%, despite advances in reperfusion and pharmacotherapy[4]. Initial serum WBC may predict ventricular arrhythmia after first acute myocardial infarction.

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In our health care setup, where proper facilities are limited and also overburdened, little attention has been given so for to high leukocyte count among patients of STEMI. Additionally there is no local statistics about the complication of leukocytosis in our population presenting with acute STEMI and this current study is designed in view to generate local statistics of the complication of acute STEMI with high leukocyte count. Also this study will be first of its kind in our local population and based upon results of this study, crucial decisions can be made by consultants in the management of patients with high leukocyte count with acute STEMI and higher authorities in opening further areas of research work incorporating high leukocytes count in STEMI and its association with the common in hospital complications.

MATERIAL AND METHODS

This study was conducted at cardiology Department Hayatabad Medical Complex, PGMI, Peshawar, after approval was obtained from hospital ethical committee. All patients with history of acute MI with high leukocytes count, age above 30 years of either gender were included in study. While patients with prior history of ventricular dysfunction, known case of cardiomyopathies, presentation with fever, recent infection with in 1 week, history of trauma, malignancy, myeloproliferative disorders, and recent surgical

intervention that might have altered the leukocyte count, were excluded.

ECG was done by same expert Technician using the Toshiba 1Aplio 2Xario 3Core Vision Perlong SXD-3A1 Machines respectively to diagnose acute STEMI and leukocytes count was done for confirmation of high leukocytes count. Once the patients diagnosed. A written informed consent was obtained after explaining the purpose and benefits of the study. All patients were admitted in the cardiology unit of the hospital for further evaluation like blood pressure and Echocardiography by Perlong SXD-3A1 Machines to find the heart failure and other complication like ventricular tachycardia (VT), ventricular fibrillation (VF). Patients were followed for 7 days in ward to see any mortality. All the above information including name, age, gender, were recorded in a predesigned proforma.

Data was entered into SPSS version 10. Mean and standard deviation was calculated for numerical variables like age. Frequencies and percentages were calculated for categorical variables like gender, VA, death and in hospital complication (Heart failure, Ventricular Tachycardia, Ventricular fibrillation, Death). In hospital complication was stratified among age and gender to see the effect modifiers. All the results were presented as tables and graphs.

Table 1: Age Distribution (n=177)

Age in years	Frequency and percentage
< 40 years	9(5%)
41-50 years	35(20%)
51-60 years	62(35%)
Above 60 years	71(40%)
Total	177(100%)

Table 2: Frequency of in hospital complications (n=177)

Complications	Frequency and percentage
Heart failure	35(20%)
Death	12(7%)
Ventricular Tachycardia	18(10%)
Ventricular Fibrillation	12(7%)

RESULTS

A total of 177 patients were observed to find the frequency of in hospital complications in patients with acute STEMI with high leukocytes count and the results were analyzed as: Age distribution among 177 patients was analyzed with mean age was 60 years with standard deviation ± 1.28. (Table 1)

Gender distribution among 177 patients was analyzed as n=124(70%) patients were male while n=53(30%) patients were female. In hospital complication among 177 patients was analyzed as n=35(20%) patients had heart failure, n=12(7%) patients were died, n=18(10%) patients had Ventricular Tachycardia and n=12(7%) patients had ventricular fibrillation. (Table 2).

Association of common in hospital complications with age distribution was analyzed as shown in Table 3. Association of in hospital complications with gender distribution was analyzed as in 35 cases of heart failure, 25 patients were male and 10 patients were female. In 12 death cases, 9 patients were male and 3 patients were female. In 18 cases of ventricular tachycardia, 12 patients were male and 6 patients were female. In 12 cases of ventricular fibrillation, 10 patients were male and 2 patients were female. Mean age was 60 Years with standard deviation ± 1.28.

DISCUSSION

In our study most of the patients 40% were in age range 60 years and above followed by 35% patients were in age range 51-60 years. Mean age was 60 years with standard deviation ± 1.28. Similar results were found in another study done by Abid AR et al[6] in which most of the patients 52% were in age range 60 years and above while 40% patients were found in age range 51-60 years. In this study mean age was 63 years with standard deviation ± 2.13.

In our study most of the patients 70% were male and 30% patients were female. Similar results were in another study done by Abid AR et al[6] in which most of the patients 60% were male and 40% patients were female. In our study most of the patients 52% patients were STEMI and 48% patients were NSTEMI. Similar

Table 3: Association of complications in age distribution (n=177)

Common clinical outcome	< 40 years	41-50 years	51-60 years	> 60 years	Total
Heart Failure	—	3	12	20	35
Death	—	1	5	6	12
Ventricular Tachycardia	—	3	7	8	18
Ventricular Fibrillation	—	2	5	5	12
Total	—	6	17	19	42

results were found in another study done by Abid AR et al[6] in which most of the patients 62% patients were STEMI and 38% patients were NSTEMI. In one study incidence of life-threatening VA with first attack of AMI with high WBC was 8%[5].

Our study shows that 20% patients had heart failure while 80% patients didn't had heart failure. Similar results were found in another study done by El-Menyar et al[7] in which 35% patients had heart failure while 65% patients didn't had heart failure.

In our study 45% patients were in Killip Class II, 35% patients were in Killip Class III and 15% patients were in Killip Class IV. Similar results were found in another study done by El Menyar A[7] in which high Killip classes were defined in 22% of patients. In comparison to Killip Class I, patients with higher Killip class had greater prevalence of cardiovascular risk factors, presented late, were less likely to have angina, and were less likely to receive antiplatelet, statins, and β-blockers. Classes II, III, and IV were associated with higher adjusted odds of death in ST-elevation myocardial infarction, 95% confidence interval [CI] 1.25-3.69; OR 6.1, 95% CI 3.41-10.86; and OR 28, 95% CI 15.24-54.70, respectively) and non-ST-elevation acute coronary syndrome respectively.[6] In conclusion, across ACS, patients with higher Killip class had worse clinical profile and were less likely to be treated with evidence-based therapy. High Killip class was independent predictors of mortality in ST-elevation myocardial infarction and non-ST-elevation acute coronary syndrome. Physician in the emergency department should be aware of the importance of clinical examination in the risk stratification in patients presenting with ACS.[7]

In our study 7% patients were died, 10% patients had Ventricular tachycardia and 7% patients had ventricular fibrillation. Similar findings were observed in another study done by Minicucci MF[8] in which sustained ventricular arrhythmias and heart failure are well-recognized complications after acute myocardial infarction (AMI) and have been associated with worse outcomes and increased mortality. The use of and outcomes associated with acute beta-blocker therapy in patients with AMI complicated by sustained ventricular tachycardia (VT) or ventricular fibrillation (VF) and heart failure were investigated. Of 5,391 patients in the VALIANT Registry, sustained VT/VF occurred in 306 (5.7%), with an in-hospital mortality rate of 20.3%.[8] Multivariable logistic regression identified sustained VT/VF as a major predictor of in-hospital death (relative risk 4.18, 95% confidence interval 2.91 to 5.93). Of those with sustained VT/VF, 55.2% were treated with intravenous or oral beta blockade in the first 24 hours. After adjusting for baseline characteristics, propensity for acute beta-blocker use, and the interaction between Killip classification and beta-blocker therapy, beta-blocker therapy within 24 hours was associated with decreased in-hospital mortality in patients with sustained VT/VF without evidence of worsening heart failure. Patients with sustained VT/VF were less likely to receive beta blockers within 24 hours ($p = 0.001$).[8]

CONCLUSION

In patients with sustained VT/VF, beta-blocker therapy in the first 24 hours after AMI was associated with decreased early mortality without worsening heart failure.

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