

Examine the Prevalence of High TIMI Score and Associated Outcomes in Patients with Acute Myocardial Infarction

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ABSTRACT

Objective: To determine the prevalence of high TIMI score and associated complications and mortality in patients presented with ST elevation myocardial infarction.

Study Design: Cross-sectional/observational study

Place & Duration of Study: Department of Cardiology, Shaikh Zayed Hospital Lahore from 1st January 2019 to 31st December 2020.

Methodology: Three hundred patients of both genders with ages 35 to 80 years with acute myocardial infarction were included. Patient's demographic age, sex and residence were recorded. Patients with previous history of myocardial infarction were excluded. Frequency of high TIMI score and short-term outcomes such as arrhythmias, cardiogenic shock and mortality associated to high TIMI score were examined.

Results: One hundred (33.33%) patients had high TIMI score ≥ 9 . From 100 high TIMI score patients, 63% were males and 37% were females. Mean age of patients was 53.68 ± 13.25 years. Post-infarct angina occurred in 35% patients, pulmonary edema found in 28% cases, revascularization in 23%, cardiogenic shock found in 25% patients and ventricular fibrillation found in 19% cases. Mortality rate was 19%.

Conclusion: The prevalence of high TIMI score is high with high rate of complications. Mortality rate was also high and directly associated with increase TIMI risk score.

Keywords: Acute myocardial infarction, TIMI score, Outcomes

INTRODUCTION

ST elevation myocardial infarction (STEMI) is irreversible necrosis of heart muscle secondary to prolonged ischemia and is the leading cause of death worldwide.¹ The South Asian countries account for the highest burden of cardiovascular diseases including MI compared to any other region.² In Pakistan it is estimated that one in five middle-aged adults may have underlying coronary artery disease (CAD).³

The most frequently used risk stratification system is thrombolysis in myocardial infarction (TIMI) risk score for STEMI patients.^{4,6} The thrombolysis in myocardial infarction (TIMI) risk score for ST-segment elevation myocardial infarction is a simple score based on high-risk parameters that can be used at the bedside for risk stratification of patients at presentation with STEMI, which was developed in a cohort of patients treated with fibrinolysis.^{7,8} Even in patients with ST-elevation acute myocardial infarction, for whom early therapeutic options are well defined, risk stratification has an impact on early and late therapeutic decision making.⁹ TIMI Risk Score accurately defines the population of ST-elevation myocardial infarction and percutaneous coronary intervention at high risk of death not only during the first 30 days but also the Mortality at 1 year was directly related to TIMI risk scores [10].

The recent study was conducted to examine the prevalence of high TIMI score and associated outcomes in patients presented with ST elevation myocardial infarction.

MATERIALS AND METHODS

This study was conducted at Department of Cardiology, Shaikh Zayed Hospital Lahore from 1st January 2019 to 31st December 2020. A total 300 patients of both genders with ages 35 to 80 years with acute myocardial infarction were included. Patient's demographic age, sex and residence were recorded after informed written consent. Patients with history of myocardial infarction, patients with coronary artery bypass surgery, PCI patients and patients with renal failure were excluded. Comorbidities such as diabetes mellitus, hypertension and smoking history were examined. Frequency of high TIMI score and short-term outcomes such as arrhythmias, cardiogenic shock and mortality associated to high TIMI score were examined. Patients were followed up carefully to detect the complications during hospitalization and immediate post-discharge. All the data was analyzed by SPSS 20.

RESULTS

There were 100 (33.33%) patients had high TIMI score ≥ 9 and 200 (66.67%) patients had score < 9 (Table 1). From 100 high TIMI score patients 63% were males and 37% were females. 42% patients were ages 35 to 50 years, 38% patients were ages 51 to 65 years and 20% patients had ages above 65 years. 52% patients had urban residency while 48% had rural residency. Comorbidities such as diabetes mellitus found in 20% patients, 35% patients had hypertension and smoking in 30% patients (Table 2).

Post infarct angina occurred in 35% patients, pulmonary edema found in 28% cases, revascularization in 23%, cardiogenic shock found in 25% patients and ventricular fibrillation found in 19% cases, ventricular tachycardia found in 11% cases, atrial fibrillation found in

Received on 02-01-2021

Accepted on 27-02-2021

2% patients, complete heart block in 5% patients and stroke occurred in 6% patients (Table 3). In our study mortality occurred in 19 patients in which 8 patients had TIMI score 9-10 and 11 patients had score 11-12. Overall mortality rate was 19% (Table 4).

Table 1: Frequency of high TIMI risk score

TIMI risk score	No.	%
<9	100	33.33
>9	200	66.67

Table 2: Baseline findings of all the high TIMI score patients (n=100)

Variable	No.	%
Gender		
Male	63	63.0
Female	37	37.0
Age (years)		
35 – 50	42	42.0
51 – 65	38	38.0
> 65	20	20.0
Residence		
Urban	52	52.0
Rural	48	48.0
Co-morbidities		
Diabetes	20	20.0
Hypertension	35	35.0
Smoking	30	30.0

Table 3: Outcomes associated to high TIMI score

Outcome	No.	%
Ventricular fibrillation	19	19.0
Ventricular tachycardia	11	11.0
Atrial fibrillation	2	2.0
Post-infarct angina	35	35.0
Chronic pulmonary edema	28	28.0
Revascularization	23	23.0
Cardiogenic shock	25	25.0
Complete heart block	5	5.0
Stroke	6	6.0

Table 4: Mortality associated to high TIMI score

Mortality	TIMI Score 9-10	TIMI Score 11-12	Total
Yes	8	11	19 (19%)
No	52	29	81 (81%)

DISCUSSION

ST elevation myocardial infarction is one of the most leading cause of mortality and morbidity in all over the world.¹¹ Present study was conducted aimed to examine the prevalence of high TIMI score in patients with acute myocardial infarction also examine the short-term outcomes associated with high TIMI score. Total 300 patients of acute myocardial infarction were included in this study. Out of all the patients, 100 (33.33%) patients found to have high TIMI score 9-12. In those patients 60% patients were score 9-10 and 40% were score 11-12. A study conducted by Iltaf et al¹² regarding frequency of high TIMI score in acute myocardial infarction patients and they reported 31.84% out of 385 patients had high TIMI score.

In the present study, majority of patients were male 63% as compared to females 37% with mean age 53.68±13.25 years. These results showed similarity to some previous studies in which male patients were high in

numbers as compared to females.^{13,14} In this study 52% patients had urban residency while 48% had rural residency. Comorbidities such as diabetes mellitus found in 20% patients, 35% patients had hypertension and smoking in 30% patients. These results were comparable to many other studies.^{15,16}

In our study we found that post infarct angina occurred in 35% patients, pulmonary edema found in 28% cases, revascularization in 23%, cardiogenic shock found in 25% patient. These results showed similarity to the study conducted by Golabchi et al.¹⁷ Ventricular fibrillation found in 19% cases, ventricular tachycardia found in 11% cases, atrial fibrillation found in 2% patients, complete heart block in 5% patients and stroke occurred in 6% patients. These results showed similarity to multiple studies in which patients with high TIMI score had increase risk of arrhythmias, complete heart block and stroke.^{18,19}

In present study mortality occurred in 19 patients in which 8 patients had TIMI score 9-10 and 11 patients had score 11-12. Overall mortality rate was 19%. These results were similar to some other studies in which patients with increase TIMI score had increase risk of mortality.^{20,21}

CONCLUSION

Acute myocardial infarction is directly associated with high rate of mortality and morbidity. High TIMI score increases the complications rate in STEMI patients. We concluded that the prevalence of high TIMI score is high with high rate of complications. Mortality rate was also high and directly associated with increase TIMI risk score.

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