ORIGINAL ARTICLE

Post Myocardial Infarction Risk Stratification in Non-St Elevation Myocardial Infarction Patients by Using TIMI Risk Score Model

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ABSTRACT

Objective: To determine the risk stratification by using Thrombolysis in Myocardial Infarction (TIMI) risk score model in patients with non-ST elevation myocardial infarction at tertiary care Hospital.

Material and methods: This was cross-sectional descriptive study, which was conducted at Department of the Cardiology of Liaquat University of Medical and health sciences. Duration of the study was six months from March 2019 to August 2019. All the cases with age >20 years, presented with Non-ST-segment elevation myocardial infarction (NSTEMI) and both gender were included in the study. TIMI Risk Score was used for risk stratification the treatment decision making in the treatment decision making. All the data was recorded via self-made study proforma. Data was analyzed by using SPSS version 20.

Results: Out of total 100 cases males were 64.0% and females were 36.0%. Mean age of the study participants were 59.28±10.33 years. Out of all 32.0% had (TIMI score 0-2), 44.0% had intermediate risk (TIMI score 3-4) and 24.0% had high risk (TIMI score 5-7).

Conclusion: It was concluded that the high risk were found to be 24.0% (TIMI score 5-7). All the non-ST elevation myocardial infarction (NSTEMI) patients should undergo risk stratification because this process impacts decision making regarding treatment and provides the patient with some sense of what the future holds.

Key words: TIMI, NSTEMI, high risk

INTRODUCTION

In the lack of continuous ST-segment elevation and in the presence of anginal symptoms or another acute event, non-ST-segment elevation myocardial infarction (NSTEMI) is described as increased cardiac markers of necrosis.[1] NSTEMI is a well-known diagnostic entity with a high mortality rate if it stays undiagnosed.[2] The presentation and prognosis of NSTEMI as well as ST elevation myocardial infarction (STEMI) are vastly different.[3] Non-STEMI patients must be medically stabilized, and high-risk individuals should be planned for an early interventional procedure (within days).[4] The death rate in non-STEMI cases was found to be considerably greater than in STEMI cases[4,5] The question still remains as to how the outcomes of non-STEMI patients can be improved.[4] This can be accomplished by a multifaceted approach that includes identifying high-risk individuals by a thorough clinical assessment of their medical history, electrocardiogram (ECG), physical examination, and cardiac markers such as myoglobin, CK-MB, and cardiac troponin.[4,6,7] Second, employing the TIMI Risk Scores, a basic clinical rating that can be utilized by clinicians at the bedside to evaluate risk and make therapeutic decisions, may enhance patient care.[4,8] Their purpose is to advocate, support for, and offer data-driven risk assessment, as well as risk-driven therapy and evidence-based care continuity from being hospitalized to being discharged and follow-up.[1] Early risk assessment is critical for the best therapeutic interventions of non-ST elevation acute coronary syndrome (NSTE-ACS).[9] During the previous decade, numerous risk factors and scores have been revealed in scientific journals to aid in making more precise therapeutic decisions. However, this study was performed in a tertiary care hospital to assess risk stratification using the TIMI risk factor scoring model in NSTEMI patients using risk score model.

MATERIAL AND METHODS

This was cross-sectional descriptive study, which was conducted at Department of the Cardiology of Liaquat University of Medical and health sciences. Duration of the study was six months from March 2019 to August 2019. All the cases with age >20 years, presented with Non-ST-segment elevation myocardial infarction (NSTEMI) and both gender were included in the study. Complete medical history, clinical examination and required laboratory investigations including imaging diagnosis were done. All the patients' were assessed regarding risk factors of Non-ST-segment elevation myocardial infarction (NSTEMI) as; gender, diabetes, hypertension, dyslipidemia, obesity, family history, smoking and alcohol consumptions etc. TIMI Risk Score was used for the treatment decision making as per severity of disease (high risk patients). TIMI score was categorized as low (0-2), intermediate (3-4) and high (5-7).[10] All the data was recorded via self-made study proforma. Data was analyzed by using SPSS version 20.

RESULTS

Out of total 100 cases males were 61(64.0%) and females were 39(36.0%). Mean age of the study participants were 59.28±10.33 years. Urban areas cases were 39(39.0%) and rural areas cases were 61(61.0%). 94(94.0%) cases were married and remaining were unmarried. Majority of the cases were poor 67(67.0%). Average systolic BP was 143.59±110.66 mm Hg and diastolic BP was 95.03±18.59

mm Hg. Average BMI was 26.62+4.50 kg/m², mean RBS was 180.84+10.17 mg/dl, mean haemoglobin was 13.94+2.98 mg/dl. Average of blood urea, creatinine and Trop I were 46.85+20.78 mg/dl, 01.26+0.63 mg/dl and 5.67+10.11ng/m respectively. Table.1

Most of the study subjects were hypertensive 86(80.0%), followed by diabetes, smokers, sedentary life style, dyslipidemia, obesity and family history as 39(39.0%), 36(36.0%), 34(34.0%), 11(11.0%), 11(11.0%) and 10(10.0%) respectively. Table.2

As per TIMI score 32(32.0%) had mild high risk (TIMI score 0-2), 44(44.0%) had intermediate risk (TIMI score 3-4) and 24(24.0%) had high risk (TIMI score 5-7). Table. 3

Table 1: Demographic characteristics of the study subjects n=100

Variables		Statistics
Age	Mean	59.28+10.33years
Gender	Males	61(64.0%)
	Females	39(36.0%)
Residence	Urban	39(39.0%)
	Rural	61(61.0%)
Marital status	Un married	06(6.0%)
	Married	94(94.0%)
Socioeconomic status	Poor	67(67.0%)
	Middle	24(24.0%)
	Upper	09(09.0%)
Blood pressure	Systolic	143.59+110.6 mm Hg
	Diastolic	95.03+18.5 mm Hg
BMI	Std. Deviation	26.62+4.50 kg/m²
RBS	Std. Deviation	180.84+10.1 mg/dl
Hb, level	Std. Deviation	13.94+2.9 mg/dl
Blood urea	Std. Deviation	46.85+20.7 mg/dl
Creatinine level	Std. Deviation	01.26+0.63 mg/dl
Trop I	Std. Deviation	5.67+10.11 mg/dl

Table.2: Frequency of the risk factors of the study subjects n=100

Risk factors	Frequency (%)
Hypertension	86(80.0%)
Diabetes	39(39.0%)
Smoker	36(36.0%)
Sedentary life style	34(34.0%)
Dyslipidemia	11(11.0%)
Obesity	11(11.0%)
Family history	10(10.0%)

Table 3: TIMI risk score among study subjects n=100

TIMI score	Frequency (%)
Low	32(32.0%)
Intermediate	44(44.0%)
High	24(24.0%)
Mean+SD	03.36+1.50

DISCUSSION

Patients with non-ST elevation myocardial infarction (NSTEMI) can be accurately managed by risks stratification as soon as possible after hospitalization.[11] Previously, in developed nations, the Thrombolysis in Myocardial Infarction (TIMI) risk score was established and employed in patients with unstable angina (UA) or NSTEMI.[11] However in this study as per TIMI score 32(32.0%) were on mildly high risk (TIMI score 0-2), 44(44.0%) had intermediate risk (TIMI score 3-4) and 24(24.0%) had high risk (TIMI score 5-7). Similarly Kumar D et al[11] also demonstrated that The TIMI score was similarly linked to higher rate of mortality, in non-surviving patients who had higher risk scores (4.06±0.73) than the survivors (3.12±0.83).; (p< 0.001). On other hand Khan R et al[12] reported that there were 369 patients in all, and as per TIMI score they were categorized as low-risk group with 205 (55.6%) cases, moderate-risk group with 150 (40.7%) cases, and high-risk group with 14 (3.8%) cases. Another study of Furnaz S et a[13] reported that non-survivor patients had a considerably higher scores of TIMI than those who survived, with 5.25±1.45 of mean TIMI score, which was high as compared to this study as 03.36+1.50.

In this study out of total 100 cases males were in majority 64.0% and mean age of study participants was 59.28+10.33 years. Similarly in the study of Khan R et al[12] mean age of study subjects was 54.3+7.592 years and (64.2%) were males and 77 (35.8%) were female. On other hand Shaikh MK et al[14] also reported 60±0.07 years of mean age and males (69.1%) were in majority. In another study, Kumar D et al[11] also reported 58.04 ± 10.71 years of mean age for their patients.

In present study average systolic BP (blood pressure) was 143.59+110.66 mm Hg and diastolic BP was 95.03+18.59 mm Hg, average BMI was 26.62+4.50 kg/m² and mean haemoglobin level was 13.94+2.9 mg/dl. These findings were almost similar to the studies of Hammami R et al[15] and Furnaz S et a[13+.]

In this study most of the study subjects were hypertensive 86(80.0%), followed by diabetes, smokers, sedentary life style, dyslipidemia, obesity and family history as 39.0%, 36.0%, 34.0%, 11.0%, 11.0% and 10.0% respectively. Consistently Shaikh MK et al[14] also reported the majority of patients were found to have hypertension history (72.6%), diabetes mellitus history (51.9%), smoking history (29.2%) and coronary artery disease family history (19.8%). Khan R et al[12] also stated that smokers were 174 (47.2%), obese cases were 79 (21.4%), and hyperlipidemia cases were 93 (25.2%). This demonstrates that the TIMI risk score may be utilized as an initial risk stratification approach for identifying patients who could benefit from early treatment approaches to increase long-term survival, thus enhancing patient care.[13,14]

CONCLUSION

It was concluded that the high risk were found to be 24.0% (TIMI score 5-7). Risk stratification should be performed on all non-ST elevation myocardial infarction (NSTEMI) patients since it influences treatment decisions and gives the patient a perspective of what the future might hold. However further large scale studies should be done on this subject especially at local level.

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