



RESEARCH ARTICLE

CORRELATION OF CLINICAL RISK SCORES WITH ANGIOGRAPHIC EXTENT AND SEVERITY USING MODIFIED GENSINI SCORE IN PATIENTS WITH ST ELEVATED MYOCARDIAL INFARCTION

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Abstract

Cardiovascular diseases have emerged as a significant health burden and became a leading cause of mortality in developing countries like India. In cardiovascular diseases, acute coronary syndromes are the primary cause of morbidity and mortality, for which timely diagnosis and appropriate therapy are of foremost importance to improve clinical outcomes. Different scoring systems are now available based on initial clinical history, electrocardiographic and laboratory tests that enable early risk stratification on admission. The risk scores were created and recommended by national and international guidelines to identify patients with a higher probability of adverse events, recommending more intensive treatment and early angiography in this population. In this study, we considered evaluating clinical predictors and suitable risk scores GRACE and TIMI that correlate with the severity of angiographic extent of coronary artery disease in patients presenting with ST-elevation myocardial infarction using Modified GENSINI score.

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Introduction:-

Methodology:-

This is a prospective observational single-center study conducted in King George Hospital, Visakhapatnam. The study population includes 251 patients who admitted with acute coronary syndrome-ST segment elevation myocardial infarction who subsequently underwent coronary angiography at index hospitalization from January 2020 to December 2021. Patients who met the inclusion criteria were analysed for cardiac risk scores GRACE and TIMI. After coronary angiography Modified gensini score was used for angiographic extent. appropriate software was used for statistical analysis for correlation of clinical scores with angiographic score modified Gensini and results were analysed.

Results:-

Predominately male population with a male to female ratio of 3:1

The youngest patient enrolled in the study was a 23-year-old man, and the youngest woman was 32-year-old & predominant age group was 51-60yrs with a mean age of 53.8±10.6.

Anterior wall STEMI was the most common presentation (40.6%), followed by anterolateral wall STEMI (21.5%) and Inferior wall STEMI (16.7%)

Hypertension was the most common risk factor (48.6%), followed by Diabetes (42.6%) and Smoking (38.2%)

The mean LV-EF at baseline was 50.2 ± 9.1 , with 50% of patients having Normal ejection fraction at admission. 40.2% of patients had normal BMI with 5.2% underweight, 26.3% overweight, and 28% obese. 80% of the patients presented after a window period of 4 hours, 20% had tachycardia at presentation, and 48% of patients were in Killip II-IV at presentation. 172 patients were TIMI risk score intermediate, 55 patients high and 24 patients low at presentation with mean TIMI score of 5.1 ± 2.2 . 148 patients were GRACE risk score high; 73 were intermediate, and 30 were low at presentation. 152.2 ± 37.7 . On evaluation by coronary angiogram, 39.8% had single-vessel disease, 22.7% & 21.1% had double vessel disease & triple vessel disease, respectively, with LMCA involvement of 3.6% of the study population.

The left anterior descending coronary artery was frequently involved, followed by the right coronary artery and left circumflex artery.

Modified Gensini score was low in 172 patients, intermediate in 79 patients with a mean of 38.0 ± 31.2 . None of our study population had high modified Gensini score. 61.4% patients of our study population subsequently underwent PTCA, 17.5% underwent CABG, and 21.1% on optimal medical management.

For GRACE score, patients with high score had a statistically significant greater extent of angiographic involvement than low and intermediate score patients determined MODIFIED GENSINI scores

For TIMI Score, mean GENSINI were low in the intermediate-risk group than low and high-risk groups in our study population. Correlation of clinical risk scores and angiographic scores was done using Pearson coefficient correlation at 95% confidence interval (P-value < 0.05 considered significant).

Significant correlation between TIMI and modified GENSINI (p-value 0.30), between GRACE and MODIFIED GENSINI (p-Value < 0.001) is present in our study

The correlation of the GRACE score is more significant than TIMI score with both angiographic severity scores.

No significant correlation was present between angiographic and clinical risk scores when clinical risk scores were low or intermediate.

Correlation between both clinical and both angiographic scores is statistically significant with anterior/anterolateral STEMI.

In non-anterior STEMI, the correlation between TIMI score and GENSINI scores is not statistically significant.

In non-anterior STEMI, the correlation between GRACE risk score and GENSINI scores is statistically significant.

Significant association demonstrated by multiple regression analysis between Modified Gensini score and left ventricular function (Negative association, p 0.010), Pulse rate at presentation (p 0.008), time of presentation from symptom onset (p 0.023), sr. creatinine (p 0.040) and RBS (p 0.028) at time of presentation.

Conclusion:-

Our study confirmed that there was a significant correlation between TIMI and modified GENSINI (p-value 0.30), between GRACE and MODIFIED GENSINI (p-Value < 0.001).

Our study confirmed the correlation between higher clinical risk scores with the severity of coronary artery disease assessed by modified Gensini score

The higher scores in TIMI and GRACE scoring systems had a significantly greater angiographic disease when compared to low scores.

GRACE risk score had a more significant correlation with modified Gensini score

Correlation between both clinical and both angiographic scores is statistically significant with anterior/anterolateral STEMI

In non-anterior STEMI, the correlation between TIMI score and GENSINI scores is not statistically significant

In non-anterior STEMI, the correlation between GRACE risk score and GENSINI scores is statistically significant

Thus, this study emphasizes using clinical risk scores for stratifying patients and tailoring care for each patient.

We conclude that TIMI and GRACE risk scores can be good predictors to determine the extent of disease in coronary arteries in STEMI patients.