Analysis of risk scores and duration of hospital stay in prognosis of STEMI patients after pPCI

Authors:
SR Thangasami1, JS Prajapati1, GL Dubey1, VR Pandey1, PM Shaniswa1, K Yadav1, U N Mehta Institute of Cardiology & Research Centre - Ahmedabad - India

Topic(s):
ST-Elevation Myocardial Infarction (STEMI)

Introduction: Advances in the immediate management of ST elevation myocardial infarction (STEMI) have led to a dramatic decline in mortality and reduction in hospital length of stay (LOS). We analysed the prognostic value of selected risk models in STEMI treated with primary percutaneous coronary intervention (PPCI) and to identify additional parameters to strengthen risk scores in categorizing patients for safe early discharge and to identify parameters prolonging hospital stay.

Purpose: To assess parameters and risk scores to categorize patients for safe early discharge following STEMI and to assess the composite of death, MI, unstable angina (UA), stroke, unplanned hospitalization at the end of 30 days, 6 months and at 1 year follow up.

Methods: The study included 222 patients, who were diagnosed as STEMI, treated with successful pPCI. The risk scores like TIMI score, GRACE score, ZWOLLE score, CADILLAC score were calculated for all patients from the baseline clinical data collected on admission. Routine blood investigations along with Brain natriuretic peptide (BNP) were done for all patients. The entire cohort was divided into three groups on the basis of length of stay: ≤3 days (n=150), 4–5 days (n=47), and >5 days (n=25). All-cause mortality and major cardiovascular events (MACEs) were assessed up to 1 year.

Results: The mean age group (yrs) of the study population was 53.92 ± 12.9. Patients in LOS <3 days had a mean age (yrs) of 52.41 ± 11.74, patients in LOS 4-5 days group had 54.19 ±13.59 and patient with LOS >5 days had 62.52 ± 15.32. The most important parameters that predicted hospital stay in our study are BNP levels OR: 1.003, 95% CI: 1.002-1.004, P<0.001, GRACE score OR: 1.02, 95% CI: 1.01-1.03, P<0.001, TIMI score OR: 1.35, 95% CI: 1.18-1.55, P=0.007, ZWOLLE score OR: 1.26, 95% CI: 1.16-1.37, P<0.001, CADILLAC score OR: 1.24, 95% CI: 1.15-1.3: P<0.001. 32 (14.4%) patients expired in the study population. 36% patients of LOS >5 days expired in 1 year follow up with maximum mortality in the first 6 months. 56% of the patients in LOS>5 days had an adverse cardiac event in 1 year follow up. Patients in LOS >5 days had increased event rates in 30 days, 6 months and in 1 year follow up. Patients with LOS 4-5 days (30%) had increased event rates than patients in LOS<3 days (19%). Unadjusted Kaplan Meir survival curves for 1 year mortality among hospital survivors showed a significant increase in mortality at 6 months in length of stay> 5 days group. (P value<0.001).

CONCLUSION: Long hospital stay after PCI among patients with STEMI was associated with increased long-term all-cause mortality. Addition of BNP to this risk scores can better predict the course of hospital stay and adverse clinical outcomes in follow up. Long hospital stay may be used as a marker to identify patients at higher risk for long-term mortality.
Analysis of risk scores and duration of hospital stay in prognosis of STEMI patients after pPCI

Authors:
SR Thangasami1, JS Prajapati1, GL Dubey1, VR Pandey1, PM Shaniswara1, K Yadav1, U N Mehta Institute of Cardiology & Research Centre - Ahmedabad - India

Topic(s):
ST-Elevation Myocardial Infarction (STEMI)

Introduction: Advances in the immediate management of STEMI have led to a dramatic decline in mortality and reduction in hospital length of stay (LOS). We analysed the prognostic value of selected risk models in STEMI treated with primary percutaneous coronary intervention (PPCI) and to identify additional parameters to strengthen risk scores in categorizing patients for safe early discharge and to identify parameters prolonging hospital stay.

Purpose: To assess parameters and risk scores to categorize patients for safe early discharge following STEMI and to assess the composite of death, MI, unstable angina (UA), stroke, unplanned hospitalization at the end of 30 days, 6 months and at 1 year follow up.

Methods: The study included 222 patients, who were diagnosed as STEMI, treated with successful pPCI. The risk scores like TIMI score, GRACE score, ZWOLLE score, CADILLAC score were calculated for all patients from the baseline clinical data collected on admission. Routine blood investigations along with Brain natriuretic peptide (BNP) were done for all patients. The entire cohort was divided into three groups on the basis of length of stay: ≤3 days (n=150), 4–5 days (n=47), and >5 days (n=25). All-cause mortality and major cardiovascular events (MACEs) were assessed up to 1 year.

Results: The mean age group (yrs) of the study population was 53.92 ± 12.9. Patients in LOS <3 days had a mean age (yrs) of 52.41 ± 11.74, patients in LOS 4-5 days group had 54.19 ±13.59 and patient with LOS >5 days had 62.52 ± 15.32. The most important parameters that predicted hospital stay in our study are BNP levels OR: 1.003, 95% CI: 1.002-1.004, P<0.001, GRACE score OR: 1.02, 95% CI: 1.01-1.03, P<0.001, TIMI score OR: 1.35, 95% CI: 1.18-1.55, P=0.007, ZWOLLE score OR: 1.26, 95% CI: 1.16-1.37, P<0.001, CADILLAC score OR: 1.24, 95% CI: 1.15-1.3, P<0.001. 32 (14.4%) patients expired in the study population. 36% patients of LOS >5 days expired in 1 year follow up with maximum mortality in the first 6 months. 56% of the patients in LOS>5 days had an adverse cardiac event in 1 year follow up. Patients in LOS >5 days had increased event rates in 30 days, 6 months and in 1 year follow up. Patients with LOS 4–5 days (30%) had increased event rates than patients in LOS<3 days (19%). Unadjusted Kaplan Meir survival curves for 1 year mortality among hospital survivors showed a significant increase in mortality at 6 months in length of stay> 5 days group. (P value<0.001).

CONCLUSION: Long hospital stay after PCI among patients with STEMI was associated with increased long-term all-cause mortality. Addition of BNP to this risk scores can better predict the course of hospital stay and adverse clinical outcomes in follow up. Long hospital stay may be used as a marker to identify patients at higher risk for long-term mortality.