Safety of Early and Late Discharge in St Elevation Myocardial Infarction Patients with Killip Class I after Primary Percutaneous Coronary Intervention

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Background: Primary percutaneous coronary intervention (PPCI) is currently an essential treatment of STEMI as it can markedly reduce mortality and morbidity rates compared to thrombolytic therapy. The present guidelines recommend PPCI as the first line treatment for STEMI. According to the new ESC STEMI 2017 guidelines, early discharge is safe for low risk patients. However, the safety data of early discharge in STEMI patients with killip class I is limited.

Objective: To determine outcomes of killip class I STEMI patients who were discharged within 3 days after admission.

Methods: This retrospective cohort study was conducted at a university hospital in 865 consecutive killip class I STEMI patients who underwent PPCI and were discharged between January 1999 and December 2015. The patients were enrolled and divided into two groups: Group 1: early discharge within 3-day admission and Group 2: late discharge after 3-day admission. The mortality and readmission rates at 30-day and 1-year after discharge of Group 1 and 2 were compared using Cox regression analysis and Logistic regression analysis, respectively. Survival were estimated using the Kaplan–Meier curves and compared using the log-rank test.

Results: There were 544 (63%) and 321 (37%) patients classified as Group 1 and 2, respectively. Median survivals were 3.7 years for all patients (2.9 years vs 3.9 years for Group 1 and 2, respectively, p=0.173). All-cause mortality rate was 22.3/100 person-year for all patients (24.5 vs 21/100 person-year for Group 1 vs Group 2, respectively). Group 2 patients had a greater risk of 1-year mortality than Group 1 patients, with hazard ratio (95% confidence interval) of 2.43 (1.25, 4.71), p=0.009, and 1-year mortality rate of 6.5% vs 2.8%, p=0.007, respectively. Nevertheless, there was no difference in 30-day mortality rate, i.e., 0.2% vs 1.3%, for Group 1 vs Group 2, respectively, p=0.066. Group 1 patients significantly had a lower 1-year readmission rate than the Group 2, i.e. 3.6% vs 7.5%, p=0.02, but no difference in 30-day readmission, i.e. 1.1% vs 1.6%, p=0.548. By multivariate analysis, predictors for early discharge were EF>40% (OR=2.25, p=0.004), CKD stage 1 (OR=2.5, p=0.004), and CKD stage 2 (OR=1.99, p=0.029).

Conclusion: Early discharge within 3-day after PPCI in killip class I STEMI patients is safe in terms of mortality and readmission. Particularly, killip class I patients with EF>40% and CKD stage 1 and 2 could be safely discharged within 3-day after PPCI.

Keywords: STEMI, PPCI, Early discharge, Late discharge, Mortality, Readmission, Killip class
Kaplan-Meier survival curves for cumulative post-discharge survival in the early and late discharge groups of Killip class I