

# **A trend of Japanese Acute Myocardial Infarction Patients: Development of Prognostic Prediction Rules**

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## **Abstract**

Acute myocardial infarction is still one of the serious diseases with a high mortality rate. The aim of this study is to explore the prognostic predictors for the outcome of acute myocardial infarction patients. A total of 457 acute myocardial infarction patients admitted to Nihon University Itabashi Hospital between 2014 and 2017 were analyzed in this study. The primary endpoint of this study was a 30-day mortality. The secondary endpoint was a major adverse event: all-cause death, non-fatal myocardial infarction, hospitalization due to heart failure, stroke, bleeding and repeat percutaneous coronary intervention. Forty-two patients died within 30 days after acute myocardial infarction. There were 123 patients who had major adverse event within the 1 year. Multiple Poisson regression model was used to identify the most important predicting factors for 30-day mortality

after acute myocardial infarction, which were higher Killip classification (risk ratio [RR]: 4.17, 95% confidence interval [CI]: 1.74-9.95), history of stroke (RR: 3.79, 95% CI: 1.59-9.01), maximum creatine kinase level more than 1500 IU/L (RR: 3.02, 95% CI: 1.25-7.31), age (RR: 1.04, 95% CI: 1.01-1.08), and heart rate (RR: 1.02, 95% CI: 1.01-1.03). The classification and regression trees analysis identified Killip classification as the most important factor for 30-day mortality. However, the Killip classification (RR: 1.91, 95% CI: 1.09-3.42) and the use of beta-blockers (RR: 1.68, 95% CI: 1.11-2.53) were found to be significant predictors for the one-year major adverse event. The initial profiles except for the Killip classification were not associated with the one-year outcome. These findings are expected to improve clinical outcomes of Japanese patients with acute myocardial infarction.

## **I Introduction**

Acute myocardial infarction (AMI) is defined as myocardial cell death due to prolonged myocardial ischemia (Libby, 2013). Clinically AMI is diagnosed with rising cardiac biomarkers such as creatine kinase or cardiac troponin and the ST-T change in an electrocardiogram. It is the most frequent condition responsible for heart disease, which is the second leading cause of death. The number of AMI patients increased from 7.4% to 27.0% during the last 30 years (Takii et al., 2010). Primary percutaneous coronary intervention (PCI) is an established revascularization strategy for AMI, and can reduce mortality up to 10% after AMI (Hochman et al., 1999) compared to thrombolysis or coronary artery bypass grafting (CABG). Furthermore, the use of drug-eluting stent (DES), which is a metallic stent coated with drugs suppressing cell proliferation was released around 2000. It has dramatically reduced the target lesion revascularization (TLR) compared to bare metal stent (BMS) implantation. Nonetheless, the in-hospital mortality rate for AMI is still around 10%