Predictors of In-hospital Mortality in Patients with Acute Myocardial Infarction Complicated by Cardiogenic Shock in the Contemporary Era of Primary Percutaneous Coronary Intervention

Ong Heng Ann Jimmy, Ho Hee Hwa, Punitha Arasaradnam, Ameeq Ali, Ooi Yau Wei, Tan Ko Beng Julian, Loh Kwok Kong, Jafary Fahim Haider, Foo David, Ong Paul
Department of Cardiology, Tan Tock Seng Hospital, Singapore

PURPOSE
Primary percutaneous coronary intervention (PPCI) is currently the preferred reperfusion therapy for patients presenting with acute myocardial infarction (AMI). About 5-10% of all AMIs are complicated by cardiogenic shock which is associated with a high in-hospital mortality. There is limited data on the clinical outcomes of this group of patients in the contemporary era of PPCI.

METHODS
We sought to evaluate the survival rate and predictors of in-hospital mortality in our cohort of Asian patients (n = 145) with AMI and cardiogenic shock who underwent PPCI at our institution from January 2009 to December 2010. Clinical data was collected retrospectively on demographic characteristics, presenting signs and symptoms, blood investigation, hospital course and in-hospital mortality.

RESULTS
The mean age at presentation was 63.1 ± 12.1 years with male predominance (88%). The majority of patients (73%) presented with anterior MI with 54% found to have multi-vessel disease on coronary angiography. Occlusive left main disease was present in 16 patients (11%). The majority of patients received bare metal stent implantation (65%) during PPCI with post-procedural Thrombolysis in Myocardial Infarction (TIMI) 3 flow achieved in 77% of patients. The average door-to-balloon time was 69.4 ± 29.6 minutes. Multi-vessel PCI was performed in 28 patients (18%).

The mean ejection fraction was 34.4 ± 12.3 %. For hemodynamic support, 141 patients (97%) received inotropic support, 100 patients (69%) received intra-aortic balloon counterpulsation and 5 patients (3.4%) received extracorporeal membrane oxygenation. The overall in-hospital mortality was 28% (40 patients).

Factors associated with in-hospital mortality were older age at presentation, history of cardiac arrest during hospitalization, occlusive left main disease, post procedural TIMI flow, severe heart failure and renal failure. By multi-variate analysis, independent predictors of in-hospital mortality were cardiac arrest and renal failure (hazard ratio 4.43, 95% CI; 1.25-15.8, p=0.02 and hazard ratio 7.3, 95% CI; 1.78-33.9, p=0.006 respectively). All 7 patients (4.8%) who developed >1 episode of cardiac arrest did not survive the index hospitalization.

CONCLUSION
In the contemporary era of PPCI, the in-hospital mortality of patients with AMI and cardiogenic shock remained relatively high. History of cardiac arrest during hospitalization and renal failure were independent predictors of in-hospital mortality. Novel treatment options are certainly needed to improve the prognosis of this group of patients.

The authors have no disclosures or conflicts of interest related to this article.