Impact of obesity on in-hospital mortality and 1-year clinical outcome in patients with ST-segment elevation myocardial infarction undergoing primary percutaneous coronary intervention: Results from INTERSTELLAR registry

Pyung Chun Oh,1 Woong Chol Kang,1 Jeonggeun Moon,2 Jun Suh,3 Hyun Woo Park,1 Ho-Jun Jang,1 Tae-Hoon Kim,1 Sang-Don Park,1 Sung Woo Kwon,1 Taehoon Ahn,1 Eak Kyun Shin1 Gil Medical Center, Gachon University, Incheon, Korea, Republic of; 2Bucheon Soonchunhyang Hospital, Bucheon, Gyeonggi-do; 3SoonChunHyang University Bucheon Hospital, Seoul, Korea, Republic of; 4Sejong General Hospital, Bucheon, Korea, Republic of; 5Inha University Hospital, Incheon, Korea, Republic of

BACKGROUND Recent studies have suggested an obesity paradox, whereby obesity may be associated with more favorable outcomes in patients with coronary artery disease. So, we investigate the impact of obesity on in-hospital mortality and 1-year clinical outcome in patient with ST-segment elevation myocardial infarction (STEMI) undergoing primary percutaneous coronary intervention (PCI).

METHODS A total of 1540 patients with STEMI undergoing primary PCI between July 2007 and June 2014 were analyzed retrospectively from the Incheon-Bucheon cohort of patients undergoing primary PCI for acute ST-Elevation myocardial infarction (INTERSTELLAR) registry. Patients were divided into three groups according to body mass index (BMI): normal weight (BMI < 23.0 kg/m², n=554, 36%), overweight (23.0 kg/m² ≤ BMI < 27.5 kg/m², n=785, 51%), and obese groups (BMI ≥ 27.5 kg/m², n=201, 13.1%). Primary endpoint was in-hospital mortality and 1-year major adverse cardiac and cerebrovascular events (MACCEs), defined as the composite of all-cause death, non-fatal MI, stroke or admission for heart failure.

RESULTS Each group was well balanced with respect to demographic characteristics. There were also no significant differences of Killip class, incidence of anterior wall MI, and peak level of CK-MB among three groups. However, Left ventricular systolic function (ejection fraction < 40%) was more common in the normal group compared to the overweight or obese group (23.5% vs. 19.8% vs. 15.5%, p=0.049, respectively). The incidence of in-hospital death was significantly higher in the normal weight group than those in the overweight or obese group (7.9% vs. 4.3% vs. 5.5%, p=0.020, respectively). The cumulative incidence of 1-year MACCEs was also higher in the normal weight group, compared with the overweight or obese group (18.2% vs. 13.5% vs. 10.4%, p=0.027, respectively). However, normal weight was not independent predictor for in-hospital mortality or 1-year clinical outcomes in the multivariate analysis adjusting for age, sex, diabetes, anterior MI and left ventricular systolic function.

CONCLUSIONS Although patients with normal weight was associated with worse clinical outcomes compared with overweight or obese patients, obesity status was not independent predictor for in-hospital and 1-year clinical outcomes after adjusting traditional predictors in patient with STEMI undergoing primary PCI.

CATEGORIES CORONARY: Acute Myocardial Infarction

KEYWORDS Acute myocardial infarction, Obesity, Outcomes, adverse

Prognostic Impact of Combined Dysglycemia and Hypoxic Liver Injury at Admission in Patients with ST-Elevation Myocardial Infarction Undergoing Primary Percutaneous Coronary Intervention: Data from INTERSTELLAR cohort

Ho-Jun Jang,1 Tae-Hoon Kim,1 Jeonggeun Moon,2 Woong Chol Kang,2 Pyung Chun Oh,1 Jun Suh,3 Hyun Woo Park,4 Sang-Don Park,3 Sung Woo Kwon3 Sejong General Hospital, Bucheon, Korea, Republic of; 2Gil Medical Center, Gachon University, Incheon, Korea, Republic of; 3Bucheon Soonchunhyang Hospital, Bucheon, Gyeonggi-do; 4SoonChunHyang University Bucheon Hospital, Seoul, Korea, Republic of; 5Inha University Hospital, Incheon, Korea, Republic of

BACKGROUND Dysglycemia at admission is known to predict the prognosis of ST-elevation myocardial infarction (STEMI). Recently, hypoxic liver injury (HLI) at admission has been proposed as a novel prognostic marker for STEMI. Therefore, we sought to evaluate the prognostic impact of combined dysglycemia and HLI at admission in patients with STEMI who underwent primary PCI.

METHODS From 2007 to 2014, a total of 1497 consecutive patients (79.3% male, mean age 60.5±13.1 years) who underwent primary PCI for STEMI in INTERSTELLAR (Incheon-Bucheon cohort) of patients undergoing primary PCI for acute ST-Elevation myocardial infarction (INTERSTELLAR) cohort were analyzed retrospectively. Dysglycemia was defined as either hypoglycemia (serum glucose <90 mg/dl) or hyperglycemia (serum glucose ≥200 mg/dl). HLI was defined as ≥2-fold increase of any serum aminotransferase above upper normal limit. Patients were divided into six groups according to their dysglycemia and HLI status at admission: hypoglycemia without HLI as group 1, normoglycemia without HLI as group 2, hyperglycemia without HLI as group 3, combined hypoglycemia and HLI as group 4, HLI without dysglycemia as group 5, and combined hyperglycemia and HLI as group 6. Primary endpoint was in-hospital mortality and secondary endpoint was all-cause mortality at 12 months after index procedure.

RESULTS Of the 1497 patients, there were 19 (1.3%) patients in group 1, 882 (58.9%) patients in group 2, 278 (18.6%) patients in group 3, 7 (0.5%) patients in group 4, 215 (14.4%) patients in group 5, and 96 (6.4%) patients in group 6. Over a mean follow-up period of 2.1±1.5 years, there were 85 (5.7%) in-hospital mortalities and 121 (8.1%) all-cause mortalities. The in-hospital mortality rates were the highest in group 4 (57.1%), followed by group 6 (28.1%) and were always higher in HLI(+) groups than in HLI(-) at the same glucose status. Kaplan-Meier survival analysis at 12 months continued the similar trends. Interestingly, 3-month landmark analysis revealed that hypoglycemia with and without HLI at admission was associated with high mid-term mortality rate (Log Rank p <0.001) (Figure).

CONCLUSIONS Combined dysglycemia and HLI at admission is associated with early mortality in patients with STEMI undergoing primary PCI. Hypoglycemia at admission is associated with mid-term STEMI mortality.

CATEGORIES CORONARY: Acute Myocardial Infarction

KEYWORDS Glycemia, Liver failure, ST-segment elevation myocardial infarction