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### The impact of left ventricular filling pressure and pulmonary hypertension on 6-month clinical outcome in patients with acute myocardial infarction

Kyungpook National University Hospital

\*Jung Kyu Kang, Na Young Kim, Sun Hee Park, Jang Hoon Lee, Dong Heon Yang, Hun Sik Park, Yongkeun Cho, Shung Chull Chae, Jae-Eun Jun, Wee-Hyun Park

**Background:** The aim of this study was to determine the interactive effect of echocardiographic measurement of left ventricular filling pressure (E/E') and secondary pulmonary hypertension by measurement of right ventricular systolic pressure (RVSP) on 6-month major adverse cardiovascular events (MACEs) in patients with acute myocardial infarction (AMI). **Methods:** Between November 2005 and February 2010, 924 patients (604 men; mean age=64.9±11.4 years-old) were followed up more than 6-month after their AMI and finally analyzed in this study. Patients were stratified into 4 groups based on E/E' and RVSP (Group I, E/E' ≤15 and RVSP ≤30 mmHg; Group II, E/E' ≤15 and RVSP >30 mmHg; Group III, E/E' >15 and RVSP ≤30 mmHg; Group IV, E/E' >15 and RVSP >30 mmHg). The 6-month MACEs were defined as death, MI, and revascularizations. **Results:** Overall, the 6-month MACEs were 8.4% (n=78). The Group I patients had the lowest 6-month MACEs (5.6%). The group IV patients had significantly higher serum levels of log-transformed N-terminal pro-B type natriuretic peptide (5.52±1.71 pg/mL, 6.10±1.86 pg/mL, 6.73±1.71 pg/mL, and 7.69±1.85 pg/mL of Group I, II, III, and IV patients respectively,  $p<0.001$ ) and log-transformed high-sensitivity C-reactive protein (0.72±1.44 mg/L, 0.85±1.62 mg/L, 1.36±1.67 mg/L, and 1.81±1.78 mg/L of Group I, II, III, and IV patients respectively,  $p<0.001$ ) than those of Group I, II, and III patients. In Cox proportional hazards model, the Group III (crude hazard ratio [HR] 1.935, 95% confidence interval [CI] 0.969 to 3.864,  $p=0.061$ ) and Group IV (crude HR 2.741, 95% CI 1.563 to 4.806,  $p<0.001$ ) patients had higher 6-month MACEs than Group I patients. In multivariate analysis, the Group IV patients (adjusted HR 1.897, 95% CI 1.036 to 3.473,  $p=0.038$ ) had significantly higher 6-month MACEs than Group I patients after adjustment for age and sex. **Conclusion:** This observational study suggest the combination of higher left ventricular filling pressure (E/E' >15) and secondary pulmonary hypertension (RVSP >30mmHg) are associated with the highest 6-month MACEs in patients with AMI.

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### Associations between symptom-to-door time and biomarkers on 6-month mortality in patients with acute myocardial infarction

Kyungpook National University Hospital

\*Sun Hee Park, Jung Kyu Kang, Na Young Kim, Jang Hoon Lee, Dong Heon Yang, Hun Sik Park, Yongkeun Cho, Shung Chull Chae, Jae-Eun Jun, Wee-Hyun Park

**Background:** Little is known about the associations between symptom-to-door (STD) time and biomarkers including N-terminal pro-B type natriuretic peptide (NT-proBNP) and high sensitivity C-reactive protein (hs-CRP) in patients with acute myocardial infarction (AMI). **Methods:** Between November 2005 and February 2010, 1,233 patients (811 men; mean age=64.4±12.0 years-old) were followed up more than 12-month after their AMI and finally analyzed in this study. The patients who had STD time more than 3 days were excluded from this study. Patients were categorized into 3 groups based on their STD time; Group I (STD time < 6-hour, n=767), Group II (6-hour ≤STD time≤12-hour, n=181), and Group III (STD time>12-hour, n=285). **Results:** Overall, the 12-month mortality was 10.5%. The 12-month mortality was significantly higher in Group III (13.7%) compared to Group I (9.3%) and Group II (11.0%)( $p$  for trend=0.037). The serum levels of log-transformed NT-proBNP were significantly higher in Group III (7.48±1.70 pg/mL) compared to Group I (5.77±2.06 pg/mL) and Group II (6.64±1.73 pg/mL)( $p$  for trend<0.001). The serum levels of log-transformed hs-CRP were also significantly higher in Group III (1.72±1.74 mg/L) compared to Group I (0.87±1.55 mg/L) and Group II (1.21±1.69 mg/L)( $p$  for trend<0.001). The patients with symptomatic heart failure at admission (Killip class >2) were significantly higher in Group III ( $p=0.041$ ), and left ventricular ejection fraction was significantly higher in Group I ( $p=0.006$ ). In Cox proportional hazards model, Group III (crude hazard ratio [HR] 1.516, 95% confidence interval [CI] 1.026-2.241,  $p=0.037$ ) had significantly higher 12-month mortality compared with Group I. In Group III, elevated serum levels of log-transformed NT-pro BNP (HR 2.761, 95% CI 1.084-7.036,  $p=0.033$ ), not log-transformed hs-CRP, was independent predictor of 12-month mortality after adjustment for confounding variables. **Conclusion:** The STD time is significantly associated with the serum levels of NT-proBNP and hs-CRP, and NT-proBNP is independent predictor of 12-month mortality, particularly in patients with longer STD time.