

Prognostic factors in acute myocardial infarction treated with ECMO for refractory cardiogenic shock or ventricular tachyarrhythmia

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Subject: The purpose of this study is the evaluation of prognostic factors in patients treated with extracorporeal membrane oxygenation (ECMO) for refractory cardiogenic shock and/or refractory ventricular tachyarrhythmia (VT) as a complication of acute myocardial infarction (AMI). **Method:** From January 2006 to December 2009, the patients admitted to Chuncheon Sacred Heart Hospital, Hallym University and treated with ECMO for refractory cardiogenic shock or refractory VT as a complication of AMI were enrolled. We retrospectively analyzed prognostic factors for weaning from ECMO. **Result:** A total of 17 patients (39.5%) of the 43 enrolled patients were successfully weaned from ECMO. DM is more prevalent in patients failed to be weaned ECMO. Among the laboratory data at admission, the patients failed to be weaned ECMO had higher level of BUN (25.0 ± 12.0 vs. 17.2 ± 4.9 mg/dL, $p=0.007$), Troponin-I (56.6 ± 103.2 vs. 8.7 ± 25.9 ng/dL, $p=0.051$), CK-MB (134.5 ± 234.0 vs. 39.3 ± 108.6 ng/mL, $p=0.047$), and myoglobin (3401.2 ± 8199.3 vs. 354.4 ± 591.0 ng/mL, $p=0.013$) and had lower level of pH (7.07 ± 0.15 vs. 7.21 ± 0.18 , $p=0.005$), bicarbonate (9.6 ± 2.7 vs. 14.3 ± 4.6 mmol/L, $p<0.001$), and base-excess (-20.5 ± 4.5 vs. -13.3 ± 7.3 mmol/L, $p=0.001$) than the patients succeed to be weaned ECMO. The patients who received cardiopulmonary resuscitation (CPR) at the initiation of ECMO showed lower weaning rate than the patients who didn't (29.0% vs. 66.7%, $p=0.037$). **Conclusion:** At the initiation of ECMO, elevated BUN and cardiac enzymes, and decreased pH, bicarbonate, and base excess were associated with weaning failure. After initiation of ECMO, elevated levels of peak creatinine and peak myoglobin were associated with weaning failure. Receiving CPR at the initiation of ECMO is poor prognostic factor of weaning from ECMO in patients with AMI.

Association between homocysteine and left ventricular diastolic function assessed by echocardiography in patients with diabetes.

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Homocysteine has been demonstrated to play a causal role in atherosclerosis and to predict cardiovascular events in the general population. On the other hand, left ventricular (LV) hypertrophy and diastolic dysfunction assessed by echocardiography can also predict cardiovascular events in patients with cardiovascular risk factors. However, there are few data regarding the relationships among homocysteine, LV hypertrophy, and diastolic function. We examined the relationships among homocysteine, LV mass index, and diastolic function in 1082 patients (63±14 years, Male gender: 63%), who had diabetes. Echocardiography was performed to measure the left ventricular mass index (LVMI) as a parameter of LV hypertrophy. LV diastolic function was assessed by the ratio (E/A) of early (E) and late (A) diastolic transmitral flows, early diastolic mitral annular velocity (Em), and the ratio (E/Em) of E to Em using Doppler echocardiography. E/Em ratio was categorized as $E/Em < 8$, $8 \leq E/Em < 15$ and $E/Em \geq 15$. The homocysteine was correlated with E/E' ($r=0.328$, $p<0.001$) and LVMI ($r=0.187$, $p=0.031$). Homocysteine was increasing with increasing E/Em grade (11.7 ± 5.2 vs 12.8 ± 7.0 vs 13.5 ± 6.9 ; $E/Em < 8$ vs $8 \leq E/Em < 15$ vs $E/Em \geq 15$ respectively, $p=0.04$) (figure). The E/Em as a parameter of LV diastolic function showed the close correlation to homocysteine. These results indicate that elevated homocysteine reflects LV diastolic dysfunction. Therefore, we suggest that homocystein may be a marker of LV diastolic dysfunction in patients with diabetes.

