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급성신부전 치료로 지속적신대체 요법을 시작하는 환자에서 사망률을 예측하는 인자로서의 mean platelet volume/platelet count 비율

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Mean Platelet Volume/platelet Count Ratio as a Predictor for All-cause Mortality in Patients with Acute Kidney Injury on Continuous Renal Replacement Therapy

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Background: Previous studies have shown that mean platelet volume (MPV) was related to risk factors for coronary artery disease and mortality after myocardial infarction (MI). Moreover, several studies have revealed that MPV/platelet count (MPV/P) ratio was superior to the MPV level alone in predicting clinical outcomes after MI. However, there are no studies on the association between MPV/P ratio and mortality in the patients with acute kidney injury (AKI) on continuous renal replacement therapy (CRRT).

Methods: A total of 361 patients, who received CRRT for AKI in intensive care unit (ICU) between August 2009 and October 2011, were collected retrospectively, and baseline MPV, platelet count and other biomarkers were measured at the time of CRRT initiation. In addition, these patients were divided into two groups based on the median value of baseline MPV/P ratio, and Kaplan-Meier plots and multivariate Cox analyses for 28-day all-cause mortality were conducted.

Results: The mean age was 61.1 years and 224 (62.0%) were male. The median MPV/P ratio was 0.111 and 167 patients (46.3%) were included in the upper MPV/P ratio group. At the initiation of CRRT, MPV/P ratio was significantly correlated with platelet count, estimated glomerular filtration rate, serum albumin, total cholesterol levels, and APACHE II score. Kaplan-Meier curve showed that 28-day all-cause mortality was significantly higher in the upper MPV/P ratio group compared with in the lower group ($p<0.001$). Furthermore, Cox regression analysis revealed that higher MPV/P ratio was an independent predictor for 28-day all-cause mortality, even after adjustment for age, gender, serum albumin and total cholesterol values, high-sensitivity C-reactive protein, APACHE II score, mean arterial pressure, and cause of AKI (Hazard ratio, 1.536; 95% Confidence interval, 1.063-2.219; $p<0.05$).

Conclusions: This study suggests that baseline MPV/P ratio at CRRT initiation may be significantly independent risk factor for 28-day all-cause mortality in the AKI patients treated with CRRT in ICU.

Key Words: 평균혈소판용적, 급성신부전, 지속적신대체요법
Mean platelet volume, Acute kidney injury, CRRT