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GDF-15 predicts in-hospital mortality of critically ill patients with acute kidney injury requiring continuous renal replacement therapy

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Objectives: Growth differentiation factor-15 (GDF-15) is a stress-responsive cytokine that is positively associated with inflammation. This study evaluated the association between GDF-15 and in-hospital mortality among patients with severe acute kidney injury (AKI) requiring continuous renal replacement therapy (CRRT).

Methods: Among the multicenter prospective CRRT cohort between 2017 and 2019, 66 patients whose blood sample was available were analyzed. Patients were divided into three groups according to the GDF-15 concentrations. In-hospital mortality was compared using Cox proportional hazards regression model.

Results: The mean age was 67.7 ± 14.3 years and 47 (71.2%) were male. The median GDF-15 level was 7865.5 pg/mL (496.9 pg/mL in the healthy control patients). Baseline characteristics were not different among tertile groups except the severity scores (Acute Physiology and Chronic Health Evaluation II [APACHE II] and Sequential Organ Failure Assessment [SOFA]) and serum lactate level, which were higher in the third tertile. After adjusting for confounding factors, the patients with higher GDF-15 had significantly increased risk of
mortality (second tertile: adjusted hazards ratio [aHR], 3.67; 95% confidence interval [CI], 1.05–12.76; *P*=0.041; third tertile: aHR, 6.81; 95% CI, 1.98–23.44; *P*=0.002). Furthermore, GDF-15 predicted in-hospital mortality (area under the curve, 0.710; 95% CI, 0.585–0.815) better than APACHE II and SOFA scores.

Conclusions: Serum GDF-15 concentration was elevated in AKI patients requiring CRRT, higher in more severe patients. GDF-15 is a better independent predictor for in-hospital mortality of critically ill AKI patients than the traditional risk scoring system such as APACHE II and SOFA scores.