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Hyperlactatemia as a predictor of mortality in patients undergoing continuous renal replacement therapy due to acute kidney injury

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Objectives: Hyperlactatemia occurs frequently in hemodynamically unstable patients with sepsis. Although the association between hyperlactatemia and worse outcome has been established, studies are lacking regarding the patients undergoing continuous renal replacement therapy (CRRT) due to acute kidney injury. Herein, we addressed whether serum lactate level is associated with mortality in this patient subset.

Methods: The study retrospectively reviewed 1,661 patients who underwent CRRT for the treatment of severe acute kidney injury between 2010 and 2020. The patients were categorized according to the lactate levels at the time of starting CRRT such as high (> 10 mmol/L), moderate (2–9.9 mmol/L), and low levels (< 2 mmol/L). The hazard ratios (HRs) for the risk of all-cause mortality were calculated before and after adjustment for multiple covariates. The area under the receiver operating characteristic curve (AUROC) for the mortality risk was compared by adding serum lactate level to the SOFA, APACHE II, and CCI scores.

Results: 802 (48.3%) and 542 (32.6%) patients had moderate and high levels of serum lactate, respectively. Patients with moderate and high lactate levels had higher risk of mortality than patients with low level with HRs of 1.58 (1.31–1.90) and 2.92 (2.40–3.56), respectively. Lactate-enhanced models had higher AUCs than models without lactate (0.764 vs. 0.723 for SOFA score; 0.737 vs. 0.678 for APACHE II score; and 0.707 vs. 0.556 for CCI score).

Conclusions: The hyperlactatemia is associated with all-cause mortality in patients undergoing CRRT due to acute kidney injury. Accordingly, monitoring of the serum lactate levels may be needed after starting CRRT.