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Correlation between dyskalemia and mortality during CRRT in patients with chronic kidney disease undergoing maintenance hemodialysis

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Objectives: Continous renal replacement therapy (CRRT) is often used in intensive care units for hemodynamics stability and effective volume control. However, there have been reports that there is an association between dyskalemia and mortality in patients undrgoing CRRT. In previous reports, chronic kidney disease or maintenance dialysis patients have been excluded. In addition, studies on the appropriate potassium level in patients with chronic kidney disease are controversial. We aimed to evaluate the correlation between potassium derangement and mortality during CRRT in the intensive care unit(ICU) with chronic kidney disease patients undergoing maintenance hemodialysis

Methods: We retrospectively analyzed 47 patients with chronic kidney disease on maintenance hemodialysis from January 1,2013 to June 30,2022. They were admitted to the intensive care unit through the emergency room and started CRRT. We collected serum potassium levels at the emergency room, during CRRT, and during the intensive care unit after completion of CRRT. Potassium values were classified into three groups, ≤3.4, 3.5-5.4, and ≥5.5 mmol/L. Cox regression analysis was used to analyze the correlation between serum potassium levels and 90-day mortality. Statistical significance was set at $P < 0.05$

Results: The patient's mean baseline potassium level was 4.75±0.8 and mean potassium level during CRRT was 3.79±0.62. The average potassium level after termination of CRRT and before discharge was 3.76±0.52. There were no patients with hypokalemia and 17% with hyperkalemia at baseline potassium levels. During CRRT, hypokalemia was 23% and hyperkalemia was 4.3%. Hypokalemia and hyperkalemia were not significantly correlated with 90-day mortality in patients with chronic kidney disease before and during CRRT. Potassium levels after CRRT termination and before discharge were also not significantly correlated with the 90-day mortality.

Conclusions: Hypokalemia and hyperkalemia before and during CRRT, and from termination of CRRT to just before discharge were not significantly correlated with the 90-day mortality