



Shaping Tomorrow's Nephrology: Insight-Driven Kidney Care

KSN SEOUL, KOREA
2026

The 46th Annual Meeting of the Korean Society of Nephrology



Jun 11 (Thu) – 14 (Sun), 2026

COEX, Seoul, Korea

Abstract Type : Poster exhibition

Abstract Submission No.: A-0584

Abstract Topic : Acute Kidney Injury

Early Lactate Clearance Following CRRT Initiation Predicts Renal Recovery in Severe Acute Kidney Injury

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Objectives : Lactate clearance reflects improvements in tissue perfusion and metabolic status in critically ill patients. Although elevated lactate levels at the time of continuous renal replacement therapy (CRRT) initiation have been associated with poor outcomes, the prognostic significance of early lactate clearance for renal recovery remains unclear. This study aimed to evaluate whether 24-hour lactate clearance predicts 28-day renal recovery in patients with severe acute kidney injury (AKI) requiring CRRT.

Methods : We retrospectively analyzed adult patients with severe AKI who initiated CRRT between 2018 and 2024. Lactate clearance at 24 hours was calculated as: (lactate at CRRT initiation minus lactate at 24 hours) divided by the initial lactate level, multiplied by 100. Patients were categorized into a high-clearance group ($\geq 20\%$) and a low-clearance group ($< 20\%$). The primary outcome was renal recovery at 28 days, defined as dialysis independence for at least 7 days with an estimated glomerular filtration rate ≥ 15 mL/min/1.73 m². Multivariable logistic regression analysis adjusted for age, sepsis, vasopressor use, and Sequential Organ Failure Assessment (SOFA) score.

Results : A total of 180 patients were included, of whom 63 (35.0%) were classified in the high-clearance group and 117 (65.0%) in the low-clearance group. Renal recovery occurred more frequently in the high-clearance group than in the low-clearance group (76.2% vs. 57.3%). High lactate clearance was independently associated with increased odds of renal recovery (odds ratio 2.39; 95% confidence interval 1.20–4.74; $p = 0.01$). Kaplan–Meier analysis also demonstrated a significantly higher rate of dialysis independence within 28 days in the high-clearance group ($p < 0.01$).

Conclusions : Early lactate clearance following CRRT initiation is associated with improved 28-day renal recovery in patients with severe AKI. A 24-hour lactate clearance $\geq 20\%$ may serve as a useful early prognostic marker and help guide clinical decision-making during the early phase of CRRT management.

Lactate_Clearance_ROC.jpg



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