

Abstract Submission No.: A-0621**Post hoc Analysis of the VENUS Trial: Serum Sodium-Potassium Ratio as a Predictor of Mortality in Severe Acute Kidney Injury Patients Undergoing Continuous Renal Replacement Therapy**

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Objectives : Acute kidney injury (AKI) often results in disturbed sodium and potassium balance. However, the prognostic implications of altered sodium and potassium levels in AKI patients remain underexplored. This study investigates the association between serum sodium, potassium levels, and their ratio, with mortality risk in AKI patients.

Methods : This study included patients with severe AKI requiring continuous renal replacement therapy (CRRT) who participated in the VENUS trial from 2017 to 2020. Mortality was analyzed in relation to hypo/hyper/normo-natremia, hypo/hyper/normo-kalemia, and tertiles of serum sodium/potassium ratio.

Results : The study cohort comprised 208 patients (mean age: 66.6 years; 73.6% male). Multivariable Cox regression models showed no significant difference in 28-day mortality risk among patients with hyponatremia (HR: 1.078; 95% CI: 0.706-1.646) or hypernatremia (HR: 0.618; 95% CI: 0.300-1.271), compared to those with normonatremia. Similarly, no significant differences were observed in patients with hypokalemia (HR: 1.176; 95% CI: 0.593-2.331) or hyperkalemia (HR: 1.232; 95% CI: 0.589-2.573) compared to normokalemia. However, an increased risk of 28-day mortality was noted in patients within the 1st and 2nd tertiles of the sodium-potassium ratio compared to the 3rd tertile (HR: 1.985; 95% CI: 1.238-3.185). No significant mortality differences were observed after 1 year among patients with hyponatremia (HR: 1.407; 95% CI: 0.940-2.107) or hypernatremia (HR: 0.871; 95% CI: 0.418-1.813), and between patients with hypokalemia (HR: 0.543; 95% CI: 0.274-1.079) or hyperkalemia (HR: 0.955; 95% CI: 0.484-1.883) compared to normokalemia. Nevertheless, the 12-month mortality significantly increased in patients with 1st and 2nd tertiles of sodium-potassium ratio compared to those in the 3rd tertile (HR: 2.154; 95% CI: 1.366-3.397).

Conclusions : A lower serum sodium-potassium ratio was significantly linked to higher short- and long-term mortality risks in patients with severe AKI undergoing CRRT. The serum sodium-potassium ratio could potentially serve as a prognostic indicator for clinical outcomes in patients with severe AKI.