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Efficacy and safety of rapid intermittent bolus compared with slow continuous correction in severe hypernatremia patients (SALSA II Trial)

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Objectives : Severe hypernatremia (serum sodium (sNa) ≥155 mmol/L) is associated with high mortality, yet the optimal correction strategy remains unclear due to the complexity of electrolyte-free water clearance calculation. This study evaluated the efficacy and safety of rapid intermittent bolus (RIB) versus slow continuous infusion (SCI) of electrolyte-free water in patients with severe hypernatremia.
Methods : This prospective, multicenter, randomized controlled trial enrolled patients from three hospitals in Korea between June 2021 and January 2025. Patients were randomly assigned to receive either RIB or SCI therapy (Figure 1). The primary outcome was achieving rapid sodium correction, defined as a decrease in sNa of ≥6 mmol/L within 24 hours or reaching sNa ≤150 mmol/L. Secondary outcomes included sNa changes at 6 hours, total 5% dextrose water volume over 48 hours, target correction (12–23 mmol/L decrease or sNa ≤150 mmol/L within 48 hours), overcorrection rate, and 28-day survival.
Results : Among 178 patients (mean age 75.8 ± 12.8 years, 51.1% male, mean baseline sNa 160.4 ± 6.2 mmol/L), rapid sodium correction was achieved in 91% (RIB) vs. 88.8% (SCI) (p=0.62). The RIB group exhibited a greater sNa decrease within 6 hours (-4.7 ± 2.6 vs. -3.6 ± 2.6 mmol/L, p = 0.004) and required less total fluid over 48 hours (1976.0 ± 1285.3 vs. 2505.6 ± 1704.8 mL, p=0.04). Both groups achieved high target correction rates (95.2% vs. 95.3%, p=1.00) with no significant differences in overcorrection rates (16.5% vs. 14.1%, p=0.67) or 28-day survival (9.1% vs. 12.4%, p=0.48).
Conclusions : Both RIB and SCI effectively corrected sNa with no significant differences in primary or safety outcomes. However, RIB achieved faster initial sodium reduction with lower fluid volume, potentially reducing fluid overload risk. This trial highlights the feasibility of a simplified correction

protocol, incorporating ongoing losses without requiring complex electrolyte-free water clearance calculations, making it more practical for clinical use.

[SASLA2] Figure1.JPG

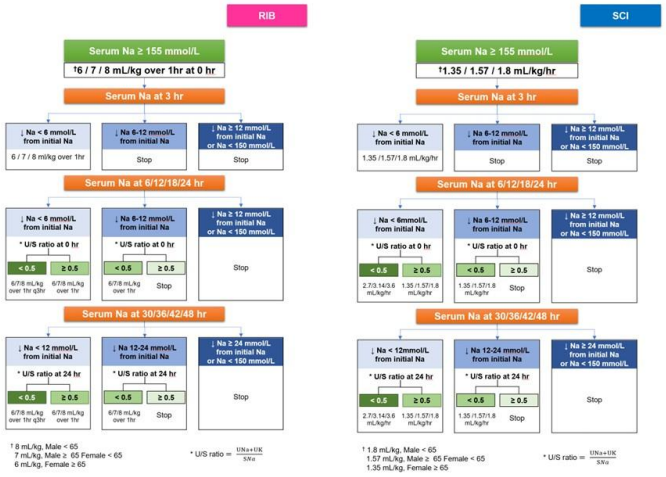

Figure1. Study protocol of SALSA II study.

[SASLA2] Figure1.JPG

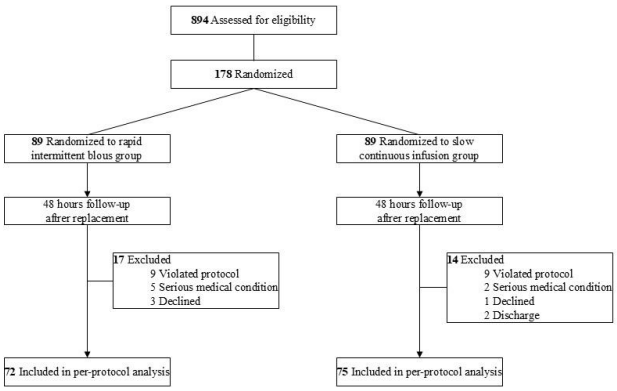

Figure 2. Flow chart of SALSA II study.