Risk factors of under-correction in severe hyponatremia: A post-hoc analysis of the SALSA trial

한림대학교 동탄성심병원 내과[1], 서울대학교 보라매병원 내과[2], 분당 서울대학교 병원 응급의학과[3], 분당 서울대학교 병원 내과[4]

배윤형[1], 구자중[1], 류지영[1], 김은정[1], 서장원[1], 구자룡[1], 오윤규[2], 조유환[3], 김세중[4], 백선하[1]

Background/Aims: The under-correction of hyponatremia, non-optimal correction, is insufficient to improve cerebral edema, associated with increased mortality. Few prospective studies have identified the individuals at high risk of under-correction under controlled hypertonic saline treatment.

Methods: We conducted a post hoc analysis of a prospective randomized controlled study − the SALSA (Efficacy and Safety of Rapid Intermittent Correction Compared With Slow Continuous Correction With Hypertonic Saline) trial in 178 patients with glucose-corrected serum sodium (sNa) ≤125 mmol/L. Six subjects without sNa values during the entire follow-up period were excluded from the study. Under-correction was defined as sNa of less than 5 mmol/L within 24 hours or sNa of less than 10 mmol/L or 130 mmol/L within 24-48 hours.

Results: Mean age was 72.8 years old and mean sNa concentrations were 118.2 mmol/L. Over 48-hour intervention period, mean changes in sNa at 24 hours and 48 hours were 8.6 and 11.5 mmol/L, respectively. Twenty-six of 172 patients (15.1%) experienced under-correction (10 patients within 24 hours and 21 patients within 48 hours). The under-correction group received more amount of hypertonic saline (486 ml vs 932 ml, P <0.001) and had less urine output for 48 hours (4117 mL vs 2647 mL, P = 0.004). High levels of urine osmolality, serum calcium and creatinine and lower levels of body mass index, systolic blood pressure, uric acid, and albumin were associated with greater risk for under-correction. The etiologies of hyponatremia and infusion methods of hypertonic saline were not associated with under-correction.

Conclusions: Among patients with symptomatic severe hyponatremia under controlled hypertonic saline treatment, under-correction occurred in 15% and were associated with baseline patient's information.