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Response of relowering treatment and clinical significance in severe hyponatremia: a post-hoc analysis of the SALSA trial.

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Objectives: Relowering treatment has been performed in overly rapid correction of hyponatremia and its response may be numerous. However, few studies evaluated response of relowering therapy and its relationship to prognosis in patients with treating hyponatremia.

Methods: One hundred seventy-eight patients with glucose-corrected serum Na (sNa) ≤ 125 mmol/L were included. Eighty-seven out of 178 patients (in total 207 cases) underwent relowering treatment. Relowering regimen was 5% dextrose infusion of 10 ml/kg over 1hour if sNa level increase is ≥ 10 mmol/L or ≥ 18 mmol/L within 24 or 48 hours, respectively. Patients with concurrent desmopressin use or without sNa level after relowering were excluded. Eighty-seven patients (age 73.1 years, male 43.7%, and mean initial sNa 117.0 mmol/L) were classified into responder group (RG) (≥ 2 mmol/L) (34/87) and non-responder (NRG) (< 2 mmol/L) (53/87) group according to decrease of sNa after relowering treatment. Overcorrection was defined as increase in the sNa level by $>12/18$ mmol/L within 24/48 hours.

Results: Mean of sNa at time of relowering treatment and delta sNa from initial sNa were 128.6 mmol/L and 11.7 mmol/L, respectively. Among 87 patients with relowering treatment, overcorrection occurred in 9/34 (26.5%) of RG and 27/53 (50.9%) of NRG ($P = 0.024$). Median value of sNa decreases by 1 mmol/L (interquartile -1 to 3 mmol/L) in total, 4 mmol/L (interquartile 3 to 6 mmol/L) in RG, 0 (interquartile -2 to 1 mmol/L) in NRG after treatment. Older age (adjusted odd ratio [OR] 1.06, $P=0.021$), higher initial sNa level (adjusted OR 1.13, $P=0.015$), chronic alcoholics (adjusted OR 24.39, $P=0.032$) were associated with RG. However, sNa level at time of relowering, causes of hyponatremia, and infusion methods of hypertonic saline did not show association with treatment responsiveness.

Conclusions: Our findings indicate that incidence of overcorrection is low in the group where sNa decrease by 2 or more after relowering therapy.