

## Relowering sodium after overcorrection of chronic hyponatremia: Save the brain

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Overcorrection of severe chronic hyponatremia can lead to the osmotic demyelination syndrome (ODS), a serious neurological complication potentially leading to catastrophic neurological complications or death. The exact incidence of this complication is unknown but is probably >30% and it increases with the level of overcorrection. Brain adapts to changes in environmental osmolality and if correction is too fast, excessive brain dehydration and ODS occurs. Overcorrection is now considered as a medical emergency. No treatment is available. In animal study we showed that relowering the serum sodium (SNa) with DDAVP (desmopressin acetate) and hypotonic fluids in overcorrected rats dramatically reduced the incidence of ODS (9% vs 100%) and mortality (4% vs 80%). The benefit of this rescue manoeuvre is still obvious in symptomatic animals (ODS: 30% vs 100%; mortality: 53% vs 92%). However, clinical experience with this therapeutic approach is limited. We present a series of 14 patients with severe hyponatremia of various origins who were overcorrected and in whom sodium was relowered by combining DDAVP and hypotonic fluids. Seven cases were asymptomatic at time of sodium relowering (Group I) and 7 others present previous neurological manifestations (Group II). In group I, mean  $\Delta$ SNa was  $16 \pm 3$  mEq/l/24hr at time of sodium relowering. Serum sodium level fell by  $-6 \pm 1$  mEq/l after DDAVP and hypotonic fluids administration. In group II,  $\Delta$ SNa was  $15 \pm 5$  mEq/l/24hr and mean decrease of serum sodium was  $-9$  mEq/l and final correction was  $\Delta$ SNa  $12 \pm 3$  mEq/l/24hr. In both groups all patients recovered without neurological sequelae. We conclude that sodium relowering in patients with overcorrection of hyponatremia is an effective rescue manoeuvre to prevent ODS, even when neurologic symptoms are already present.

### Biography

Alain Soupart has completed his Ph.D. from the Free University of Brussels and is a graduate in Internal Medicine (Erasmus University Hospital, ULB). He is co-director of the Research Unit for Hydromineral Metabolism, Free University of Brussels, Belgium. He has published more than 60 papers in peer review journals.

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