

## Hypertonic Saline Treatment in Cerebral Edema –Is the Evidence Sufficient?

Hypertonic saline appears to be an appealing addition to the current therapeutic armamentarium to treat cerebral edema. A retrospective study published by Yildizdas, *et al.*(1) concluded the effectiveness of hypertonic saline over mannitol in cerebral edema. However, two primary endpoints demonstrating efficacy of hypertonic saline over mannitol merit critical scrutiny.

First, outcome variable of “duration of comatose state” included all patients irrespective of their survival status. Failure to censor this time-to-event ‘duration of coma’ variable by mortality in this study is a major methodological flaw in evaluating treatment efficacy. Indeed, more aptly definable endpoint would be the “duration of resolution of abnormal mental status (or length of time to recovery from coma)”.

Second, a *P*-value 0.003 in Table II while comparing the outcome of mortality (proportion) appears erroneous(1)? Using factual data about mortality and survival given by authors in their study, the calculated *P* value is 0.07. To substantiate

this point further, we conducted a simple logistic regression with mortality as dependent binary variable and type of hyperosmolar therapy (categorical variable with 3 levels of treatment) as predictor using data provided by authors in the study. Only mixed treatment group was a significant prognostic predictor for survival of children with cerebral edema (OR: 4; 95% CI; 1.0 to 15.8; *P*= 0.049). Similarly, though odds of survival were three times higher with hypertonic saline treatment as compared to mannitol (Odds ratio 3.16), yet it failed to produce any significant 95% CI (0.91 to 10.9, *P*= 0.07).

To conclude, this study simply offers evidence that hypertonic saline is about as effective as mannitol (certainly not more) and is safe and effective alternative to mannitol.

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### REFERENCE

1. Yildizdas D, Altunbasak S, Celik U, Herguner O. Hypertonic saline treatment in children with cerebral edema. *Indian Pediatr* 2006; 43: 771-779.

## Hypernatremic Dehydration Leading to Peripheral Gangrene

We report a 8 month old infant who presented with loose watery stools 30-40/day, vomiting 6-8/day and excessive crying for 3 days. The infant had received home made sugar salt solution, intravenous fluids and injections before coming to our hospital. There was no history of cannulation in the lower limbs. The

child did not have any convulsions. On examination the child was irritable and moderately dehydrated. The toes of both the feet were gangrenous, the parents had noticed discolouration of toes 1 day prior to admission (**Fig 1**). The anterior fontanel was level and the peripheral pulses were palpable. There was no hypertonia and the deep tendon reflexes were brisk with no neurological deficit. Initial investigation revealed blood urea of 107.4 mg/dL, serum creatinine of 1.1 mg/dL and serum sodium (Na<sup>+</sup>) and potassium (K<sup>+</sup>) were 163 meq/L and 2.2