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HYPERTONIC SALINE: SAFE REMEDY FOR CHILDREN WITH ACUTE BRAIN INJURY IN EMERGENCY DEPARTMENT OF LOW AND MIDDLE INCOME COUNTRIES

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Three percent hypertonic saline (3% HTS) is a hypersomotic therapy and has been used for some years to treat elevated intracranial pressure in children in high income countries. There is limited safety data from low and middle income countries. The primary objective of this study was to assess the immediate response and safety of intravenous administration of hypertonic saline in children with acute brain injury presenting to the Pediatric Emergency Department (PED) of Aga Khan University Hospital (AKUH). The secondary outcomes were changes in outcome-predictive physiological parameters. This was a retrospective chart review of all the patients from one month to 16 years who received intravenous HTS in the PED because of traumatic and non-traumatic brain injury. In the study period, 216 children received an intravenous bolus of 3% HTS as part of their initial management in the PED. The median age of the patients was 6.1 years. Diagnosis included traumatic brain injury in 110 patients (50.9%) and non-traumatic injury 106 (49.1%), including central nervous system (CNS) infection (43.4%), intracranial bleeding (7.5%), acute hepatic failure (10.4%), and diabetic ketoacidosis with altered mental status (4.7%). Clinical indications included depressed consciousness (75.5%), seizures (24%) and shock (0.5%). Significant improvement was observed in both heart rate (p-value=<0.05) and Glasgow Coma Scale (GCS) (p-value=0.001) after 3% HTS therapy. No adverse events related to the HTS or its route of administration was noted in any child. In summary, we found that 3% HTS was safe in children with acute brain injury, traumatic or non–traumatic brain injury.

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