

Sodium Abnormalities in Children Admitted to Paediatric Intensive Care Unit - A Cross Sectional Study

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ABSTRACT

Objective: Fluid and electrolyte disorders are commonly seen in patients admitted to the intensive care unit. Hyponatremia and hypernatraemia can develop and exacerbate during hospitalization. To determine the aetiology and outcome of hyponatraemia and hypernatraemia in children admitted to the paediatric intensive care unit (PICU) of a tertiary hospital.

Design: A hospital based cross sectional study

Setting: This cross-sectional study was carried out in a tertiary care hospital, Chennai, India between March 2012 and June 2013.

Method: All children admitted to the PICU who developed hyponatraemia or hypernatraemia on admission, or during their period of illness, were included in the study. If hyponatremia or hypernatremia was confirmed, on or after admission to the PICU, samples were collected and sent for plasma osmolality, urine osmolality and urine sodium for further classification into the syndrome of inappropriate anti-diuretic hormone (SIADH) and diabetes insipidus (DI). Serum sodium levels were monitored till normalization.

Result: The study observed 130 patients admitted in PICU for a period of 15 months. Seventy-five patients had hyponatraemia and 55 had hypernatraemia. Hypernatraemic patients had a mortality rate of 29.1% compared to 8% for hyponatraemic patients and this was statistically significant ($p=0.002$). In hyponatraemic patients 29.3% had SIADH and in hypernatraemic patients 32.7% had DI. Overall, severity assessed between hyponatraemic and hypernatraemic patients based on the Glasgow Coma Scale (GCS) and mechanical ventilation showed that hypernatraemic patients tended to be significantly more critical and unwell than hyponatraemic patients ($p=0.000$).

Conclusion: The study reported a higher mortality rate in hypernatraemic patients compared to the hyponatraemic patients. Presence of SIADH was noted in hyponatraemic patients and DI in hypernatraemic patients.

Keywords: Hyponatraemia, hypernatraemia, osmolality, syndrome of inappropriate anti diuretic hormone, SIADH, diabetes insipidus, DI, Glasgow Coma Scale, GCS.

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