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Letter to Editor

Critical hypernatremia and neurological outcome in craniopharyngioma surgery, probably secondary to salt excess

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Abnormalities of salt and water balance are common in neurosurgical patients. They are most commonly seen after subarachnoid hemorrhage, traumatic brain injury, with intracranial tumors, and after pituitary surgery.[1–3] According to the literature reviewed we have not found any case of major hypernatremia 172mEq/mL in immediate post-surgical brain tumor eu / hyperchloremic hypervolemia and acidosis, so it is interesting to relate it to neurological complications and medium-term forecast.

41-year-old woman was admitted to the hospital with a six month history of menstrual abnormalities, headache and progressive loss of vision. A CT scan showed to lobular suprasellar mass lesion, greatest diameter of 3.3cm in pituitary stalk with compression of the optic chiasm and third ventricle. A left pterional craniotomy was performed and the tumour was classified as a Craniopharyngioma with a duration of 8 hours. Intravenous mannitol 1.5gr/kg, methylprednisolone 125mg and saline solution 0,9% was given, resulting in a urinary output of 1.5mL/kg/H during surgery. Laboratory test and arterial blood gas value in the operating room (OR) were normal. The patient awakened in the OR and was taken to the Postsurgical Intensive Care Unit (PICU) with no apparent neurologic problems.

2 hours after, laboratory data and arterial blood gas values were Na 172mEq/mL, CL 125mmol/L, lactate levels 5.8mM/L mEq, pH 7.23, HCO3 20mEq, BE–8.5mmol/L, hyperchloremic acidosis, eu / hypervolemia and normal urinary tests.

Correction of hypernatremia starts but eight hours after, acute neurological deterioration and clinical signs of herniation appears, hemorrhagic venous infarction presenting with herniation uncal subfalcine and then being realized urgently left frontal lobectomy. The patient develops severe intracranial hypertension requiring decompressive craniotomy, with a torpid evolution (hygroma collections, transtentorial herniation.), tetraventricular dilatation persists and carries ventriculoperitoneal shunt catheter. When she goes to our hospital she is awake, and responds to verbal commands gaze.

In the specific case of hyperosmolar treatment such as mannitol and saline solution prolonged, elevated serum sodium levels represent whole-body sodium accumulation. Anecdotal evidence and pilot studies suggest that elevated serum sodium targets are attainable, safe, and an early goal of targeted hypernatremia treatment in selected patients lead better outcomes.

This management principle should be the subject of future study to analyze its effect on the frequency of cerebral edema formation, subsequent crises intracranial pressure, and mortality rate, especially in patients undergoing neurosurgical procedures of long duration.

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Conflicts of interest

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