Sterofundin

Normal saline (NS) is a common fluid of choice in neurosurgery and neuro-intensive care unit (ICU), but it does not contain other electrolytes and has the potential to cause hyperchloremic metabolic acidosis with prolonged infusion. These problems may be reduced with the availability of balanced fluid (BF), which becomes a more physiological isotonic solution with the presence of complete electrolyte content. A study aimed to compare the changes in electrolytes and acid-base between NS and BF (Sterofundin® ISO) therapy for post-operative severe traumatic brain injury (TBI) patients in neuro-ICU.

Sixty-six severe TBI patients who required emergency craniotomy or craniectomy and were planned for post-operative ventilation were randomised into NS (n = 33) and BF therapy groups (n = 33). The calculation of maintenance fluid given was based on the Holliday-Segar method. The electrolytes and acid-base parameters were assessed at an 8 h interval for 24 h. The data were analysed using repeated measures ANOVA.

The NS group showed a significant lower base excess (-3.20 versus -1.35, P = 0.049), lower bicarbonate level (22.03 versus 23.48 mmol/L, P = 0.031), and more hyperchloremia (115.12 versus 111.74 mmol/L, P < 0.001) and hypokalemia (3.36 versus 3.70 mmol/L, P < 0.001) than the BF group at 24 h of therapy. The BF group showed a significantly higher level of calcium (1.97 versus 1.79 mmol/L, P = 0.003) and magnesium (0.94 versus 0.80 mmol/L, P < 0.001) than the NS group at 24 h of fluid therapy. No significant differences were found in pH, pCO2, lactate, and sodium level.

BF therapy showed better effects in maintaining higher electrolyte parameters and reducing the trend toward hyperchloremic metabolic acidosis than the NS therapy during prolonged fluid therapy for postoperative TBI patients ¹⁾.

A balanced solution (Sterofundin®ISO) provided significantly better control over acid-base balance, sodium and chloride levels when used as intraoperative fluid maintenance and replacement during elective neurosurgery ²⁾.

The aim of a work of Vassilyev was to evaluate the effectiveness of Sterofundin in the framework of complex therapy of hypernatremia in neurosurgical patients after removal of brain tumors. They analyzed the dynamics of the concentrations of sodium, potassium, chorus of the plasma, anion gap and buffer bases in the postoperative period of these patients. For obtaining reliable results, the patients were divided into groups according to the nature of the treatment: Sterofundin and symptomatic correction of hypotonic solution of sodium chloride, saluretic and Spironolactone respectively. In a comparison between the groups, a distinct difference in the speed of regression of hypernatremia and durability of the achieved effect was observed. In case of treatment with Sterofundin there was a significant decrease of hypernatremia by the end of the second day of the postoperative period without tendency to re-raise. The prevalence of hypotonic solutions of sodium chloride and potassium-sparing saluretics in intensive care allowed reducing the sodium concentration non-persistently to the fourth day on the background of significant fluctuations in its concentration. The use of Sterofundin in complex therapy of electrolyte disturbances, particularly of hypernatremia in neurosurgical patients after removal of brain tumors, is reflected in the form of significant regression of increased sodium concentration in plasma compared with the method of use

"hypotonic" hemodilution, saluretics and potassium-sparing diuretics³.

References

1)

Hassan MH, Hassan WMNW, Zaini RHM, Shukeri WFWM, Abidin HZ, Eu CS. Balanced Fluid Versus Saline-Based Fluid in Post-operative Severe Traumatic Brain Injury Patients: Acid-Base and Electrolytes Assessment. Malays J Med Sci. 2017 Oct;24(5):83-93. doi: 10.21315/mjms2017.24.5.9. Epub 2017 Oct 26. PubMed PMID: 29386975; PubMed Central PMCID: PMC5772818.

Hafizah M, Liu CY, Ooi JS. Normal saline versus balanced-salt solution as intravenous fluid therapy during neurosurgery: effects on acid-base balance and electrolytes. J Neurosurg Sci. 2017 Jun;61(3):263-270. doi: 10.23736/S0390-5616.16.03221-5. Epub 2015 Apr 9. PubMed PMID: 25854455.

Vassilyev D. [MODERN APPROACHES TO CORRECTION OF HYPERNATREMIA IN NEUROSURGICAL PATIENTS]. Georgian Med News. 2016 Nov;(Issue):12-16. Russian. PubMed PMID: 28009309.

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