This 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” Hassan et al (2017).

Abstract:

BACKGROUND: 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. This 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.

METHODS: 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.

RESULTS: 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.

CONCLUSION: 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.

Full Text
Reference:


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