

Abstract

Introduction: Sodium disturbances and water balance disorders are frequently encountered in critically ill patients and have been associated with an increased risk of death and complications in recent retrospective and prospective studies in neurocritical intensive care units.

Aim of Work: The study was conducted on 50 neuro-critically ill patients who were admitted to Kasr El Eini hospital after traumatic brain injury or subarchnoid hemorrhage or other involvements of neurological events.

Patients & Methods: The studied population was divided into 3 groups according to plasma sodium level: Group A with normal plasma sodium level 135-145 mEq/L. Group B with low plasma sodium level < 135 mEq/L Group C with high plasma sodium level > 145 mEq/L.

Results: There were 35 patients with different traumatic head injury, 7 patients with subarachnoid hemorrhage, 4 with non hemorrhagic cerebrovascular stroke (CVS) and 4 patients with intracerebral hemorrhage. Sixteen (32%) patients were eunatremic, 22 (44%) were hyponatremic and 12 (24%) were hypernatremic. The duration of ICU stay was statistically longer in group C (hypernatremia) than in group A and B, 27.1 ± 7.9 versus 20.8 ± 7.3 and 20.7 ± 7.8 days, respectively and p value was 0.05. There was also a positive significant correlation with duration of ICU stay and sodium level and the correlation factor was 0.4, P value 0.02. Regarding the need for mechanical ventilation, there were higher need for mechanical ventilation in group C (hypernatremic) than group B (hyponatremic) as (11/22, 50%, in group B versus 11/12, 91.6%, in group C were mechanically ventilated) and the p value was 0.02. Also, there were longer duration of mechanical ventilation in the group of hypernatremia than the other 2 groups. There were higher incidence for mortality in group of hypernatremia 8/12 (66.6%) versus 3/22 (13.6%) and the p value was 0.005.

Conclusion: We concluded that Hyponatremia is more frequently occurring in neurocritically ill patients than hypernatremia. Hypernatremia has a more deleterious effects on ICU outcome than hyponatremia in neurocritically ill patients. Hypernatremia is an independent factor that prolongs duration of mechanical ventilation and ICU stay in neurocritically ill patients. Hypernatremia was found to increase risk for mortality independently in neurocritically ill patients and Further prospective, large scale randomized studies are needed for more accurate evaluation of hypernatremia effects on outcome.

Key words: disturbances / Neurocritically ill patients.

