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Natremia in traumatic brain injury patients in ICU: a sub-analysis in 1346 patients from CENTER-TBI.

Introduction

Lowering Intracranial Pressure (ICP) due to increased edema represents the main goal in the management of Trauma brain Injury (TBI) in the Intensive Care Unit (ICU). A more aggressive therapeutic approach is described in patients monitored with ICP. Among therapies to lower ICP, increasing evidence emerges about the administration of hyperosmolar solutions. Our study focused on sodium values in TBI patients in ICU accordingly to ICP monitoring.

Results

In 1346 patients the [Na] at day 1 was 140 [138, 142] and 142 [139, 146] at day 7, $p < 0.001$. The occurrence of Hyponatremia ($[Na] < 135$) decreased along the week (7.1% versus 6.3%, $p < 0.001$) meanwhile Hypernatremia ($[Na] > 145$) increased (7.3% versus 29.1% (188), $p < 0.001$). Sodium was kept higher in the ICP-monitored compared to the not ICP-monitored group. A similar but more pronounced trend was observed in the group ICP-monitored (hypernatremia 8.8% (n=51) at the 1st day in ICU versus 35.3 % (n=164) at the 7th, ($p < 0.001$)(**Figure 1**).

Methods

We included patients from the CENTER-TBI cohort who were diagnosed with TBI and admitted to ICU with at least three blood samples within the first week. Sodium concentration ($[Na]$, mmol/l) had been described daily over the first week as median and quartiles [Q1, III]. The trend of $[Na]$ has been compared among ICP-monitored and not monitored patients.

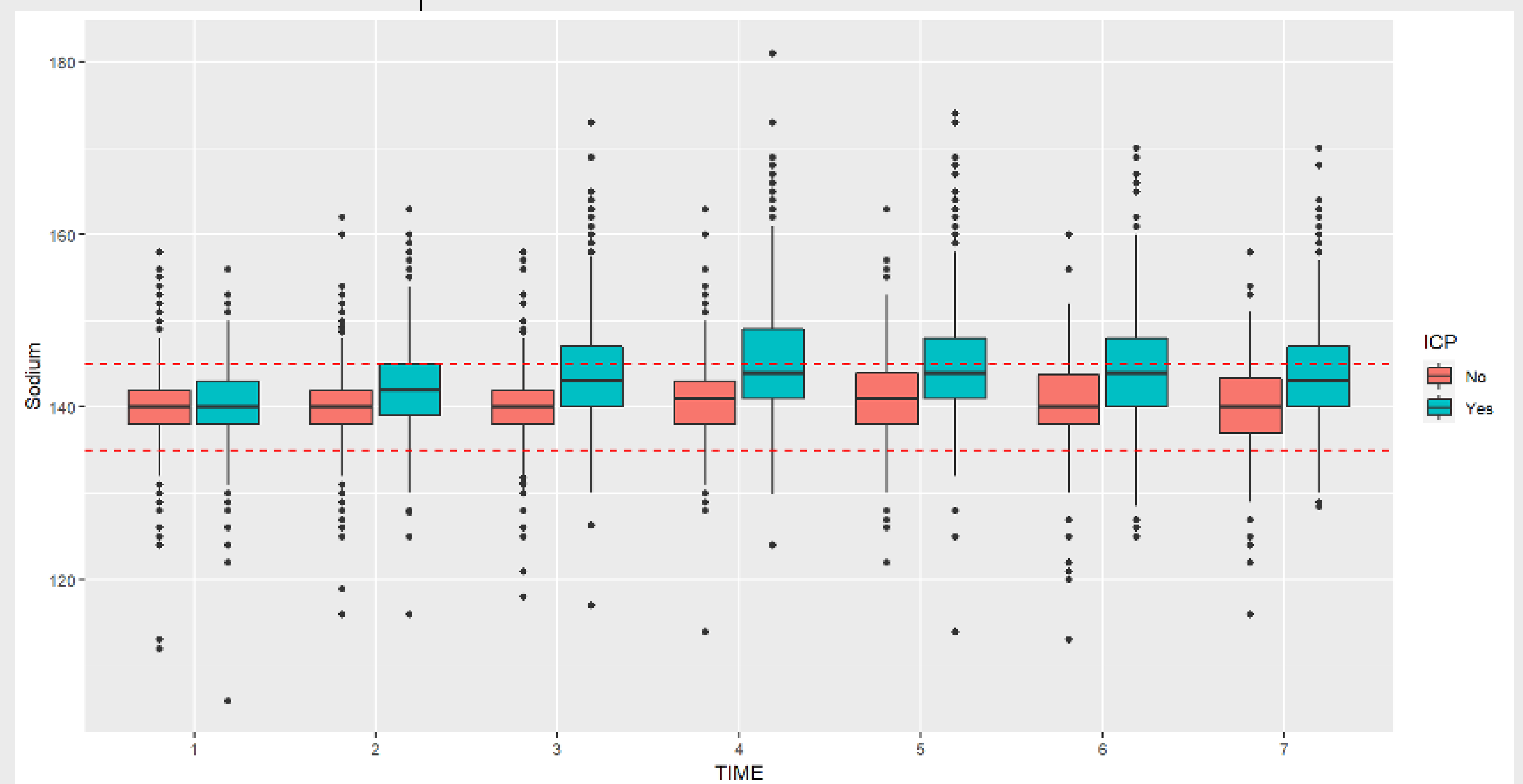


Figure 1. Trend of sodium concentration over the first week in ICU among ICP- and not ICP-monitored patients.

Conclusion

We observed increased $[Na]$ over the first week in ICU according to a rise in the prevalence of hypernatremia at day 7. A similar trend is confirmed among patients whose ICP was monitored. This observation enlightens a more aggressive approach to managing TBI patients in ICU when related to ICP monitoring

References

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