HYPONATREMIA IN CHILDREN HOSPITALIZED DUE TO PNEUMONIA

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Background: Community-acquired pneumonia (CAP) is one of the major causes of hospitalization in children, especially in children under five years of age. Some reports suggest that hyponatremia (HN) is associated with the severity of CAP. The aim of this retrospective analysis was to evaluate the relation between hyponatremia, defined as serum sodium levels under 136 mmol/L, and the severity of CAP. **Material and methods:** Between January 2009 and December 2010 (24 months), 441 patients with CAP were hospitalized in the Department of Pediatrics, Bielanski Hospital. 28 children met exclusion criteria or did not meet inclusion criteria, due to accompanying disease, previous hospitalization, delayed diagnosis of pneumonia (over 48 hours after admission). Furthermore, only children with radiologically confirmed pneumonia were eligible for this analysis. The chest radiographs were taken in 405 of 413 (98.1%) children who met the inclusion criteria. CAP was confirmed in 331 cases (81.7%). 19 children were excluded from further analysis due to lack of sodium level measurement, so the total number of enrolled patients was 312 (165 boys, 147 girls) aged between 33 days to 15 years and 8 months (mean age 2 years and 7 months). As there is no widely-accepted and evidence-based scale for rating severity of pneumonia in children, we used clinical findings such as breath frequency, heart rate, capillary blood saturation, body temperature, time for defeverscence, duration of antibiotic treatment and serum inflammatory markers (white blood cells count, neutrophil count, serum C-reactive protein and procalcitonin) as disease's severity predictors. **Results:** Hyponatremia was observed in 104 of 312 (33.3%) children with radiologically confirmed CAP. On admission, children with HN had higher neutrophil count in both groups, under and over 4 years of age (medians 6.96*10^3/uL vs. 5.73*10^3/uL; p<0.05 and 12.46*10^3/uL vs. 8.22*10^3/uL; p=0.01, respectively), higher total white blood cells count in the group over 4 years of age (15.85*10^3/uL vs. 8.22*10^3/uL; p=0.02) and lower lymphocyte count in group under 4 years of age (3.74*10^3/uL vs. 4.75*10^3/uL; p=0.02) than children without HN. Hyponatremic children had higher serum C-reactive protein level (median 28.82 mg/L vs. 9.18 mg/L; p<0.01), whereas higher procalcitonin levels (0.31 ng/mL vs. 0.19 ng/mL) had p-value just over statistical significance (p=0.054). Body temperature on admission was higher (38.6 ˚C vs. 37.6 ˚C; p<0.01) and duration of hospital stay was longer (9 days vs. 8 days, p=0.01) in hyponatremic children, as compared to children without HN. There was no correlation between the sodium levels and either breath frequency, heart rate, capillary blood saturation, time for defeverscence or time of antibiotic treatment. **Conclusions:** Hyponatremia is a frequent finding in CAP and seems to be associated with disease's severity measured with inflammatory markers (WBC in children over 4 years of age, neutrophil count, CRP). Children with HN presented higher body temperature on admission and required longer hospitalization, yet, there was no correlation between HN and duration of antibiotic treatment.

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