

Profound hyponatraemia in the emergency department: a hot topic

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Hyponatraemia is the most common electrolyte abnormality in clinical practice [1]. Prevalence of mild hyponatremia is up to 30–42%, depending on the healthcare setting and the studied patient population [2]. Profound hyponatraemia, defined as a serum sodium level <125 mmol/l, is less common, with a prevalence of 2–3% [3, 4]. Several factors precipitating hyponatraemia are known, including use of diuretics and comorbidities like heart or renal insufficiency. Little is known, however, about the impact of season on the incidence of hyponatraemia.

Currently in *Swiss Medical Weekly*, Huwylér and colleagues show results of a retrospective case-control study of patients in whom sodium levels were measured at the emergency department during summer and winter periods of two successive years [5]. All patients with profound hyponatraemia were compared with controls admitted during the same time period, but with normal sodium levels.

The results show that profound hyponatraemia was significantly more common in summer than in winter months, with a 1.3% incidence in summer and a 0.5% incidence in winter. Data from earlier studies suggest similar findings: a high incidence of hyponatraemia during periods of heatwave. The question is – why? The most plausible reason is an excess in free water intake. National (and international) recommendations advise elderly people to increase fluid intake in summer periods. This may increase the risk of developing hyponatraemia, especially in elderly and comorbid patients, and in patients on diuretics. In support of this hypothesis, the proportion of patients with euvolaemic hyponatraemia, but not the proportion of hypovolaemic hyponatraemia was increased in summer. Because of the retrospective study design, the exact aetiology of hyponatremia could unfortunately not be determined. It is, however, tempting to speculate that especially the number of patients with SIAD (the syndrome of inadequate antidiuresis) is increased in summertime.

The authors also report, not for the first time and not unexpectedly, an association of profound hyponatraemia with mortality. It is, however, important to note that an association does not prove causality. In addition, such a question is difficult to investigate with a case control design, where the two groups are not balanced with regards to several factors like age, comorbidities and drugs. Supposing that

hyponatraemia itself is causing death, an inverse relationship between sodium and mortality would be expected. In contrast, a recent publication found a strong, positive association between initial sodium concentration and mortality; thus, mortality rate was lower in patients with lower sodium levels [6]. Probably this finding is due to the fact that physicians treat patients with very profound hyponatraemia differently, more intensively than patients with milder hyponatraemia. In that study, there was also a highly significant association between the Charlson comorbidity index and death, meaning that mortality in hyponatraemia is mainly influenced by comorbidities.

The question whether hyponatremia itself causes mortality remains, therefore, unanswered and the chances that such data will be available within the next few years are rather low.

Most recent results from an American and European registry [7] identified important shortcomings in the diagnosis and treatment of hyponatraemia. For example, only 21% of hyponatraemic patients received a complete diagnostic work-up. Seventeen percent of patients did not receive any treatment after diagnosis of hyponatraemia. Eighty percent of patients were still hyponatraemic at discharge from hospital, with half of them even having a sodium level below 130 mmol/l. This is alarming.

It is therefore important that more studies are performed on the topic of hyponatraemia, with the final aim to improve its diagnosis and treatment. Such studies are needed to increase awareness of physicians for this neglected healthcare problem. This is another effect of the present study: it sheds light on an important topic, common in everyday practice, always, but even more in summertime.

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