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Interdisciplinary Endocrinology 1

Causes and outcomes of hyponatraemia at Mater Dei Hospital, Malta

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Context: Hyponatraemia is the most common electrolyte balance disorder in clinical practice, amounting to 15–20% of casualty visits. While there is general agreement that associated mortality rates are high, most studies are uncontrolled.

Objective: To determine the characteristics, causes and outcome of severe hyponatraemia (<125 mmol/l) in hospitalised patients and to indentify mortality predictors.

Design: This is a retrospective case-controlled study of all medical admissions in the months of February, June and November, who at any point during the index admission developed a serum sodium <125 mmol/l. For each case, an age- and gender-matched control was identified.

Results: A total of 5195 medical admissions were reviewed. Of these, 193 patients had a sodium level <125 mmol/. 26 patients were excluded from the case group leaving a total of 167 cases and 193 controls. Length of hospital stay was more prolonged in the case group (12 vs 8 days, *P*<0.001). There was a highly significant excess mortality, both during the index admission (25% in cases vs 7% in controls (*P* < 0.001)) as well as till the end of the follow-up period (52% in cases vs 22% in controls (*P*<0.001)). Mortality was unrelated to severity of hyponatraemia. Patients who developed the lowest serum sodium later on during their admission (ie sodium levels continued falling during the admission or fell *de novo*), had a higher rate of mortality than patients whose lowest serum sodium was on the day of admission (64.3% vs 45%, *P* 0.019). A cox regression analysis showed that hyponatraemia (*P*<0.001), male gender (*P* 0.033), age (*P* 0.021), and serum creatinine level (*P* 0.008) were independent risk factors for mortality. There was no statistically significant difference between the rates of ITU admission at different levels of hyponatraemia <125 mmol/l (*P*=0.497). Thus, serum sodium levels of <125 mmol/l should be used to identify patients who need more intensive monitoring and therapy irrespective of the degree of hyponatraemia. Only 41% of cases developed neurological symptoms, of these, confusion and altered level of consciousness were the

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more prevalent at 12% each, followed by falls (9%), unsteady gait (4%) and seizures (4%). The cause for hyponatraemia was frequently poorly evaluated and in 23% of cases no definite diagnosis was made.

Conclusion: Data on assessment, investigation and management of hyponatraemia illustrates variability and shortcomings in clinical practice. The question remains whether the relationship between hyponatraemia and increased mortality is causal or associative.

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