Clinical Outcomes and Predictors of Hyponatremia in Aneurysmal Subarachnoid Hemorrhage

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Disclosures

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Introduction

Hyponatremia is a common complication following aneurysmal subarachnoid hemorrhage (aSAH), occurring in up to 50% of all patients. Previous studies have found that the onset of hyponatremia in these patients is generally associated with worse outcomes and longer hospital stays. In this study, the authors describe clinical outcomes as well as potential risk factors for hyponatremia in patients with aSAH who developed hyponatremia in comparison to a control group with aSAH who did not develop hyponatremia.
Methods

Retrospective analysis was performed for 114 consecutive patients who presented with aSAH and subsequently developed hyponatremia before post bleed day 14. Electronic health records were reviewed to obtain data regarding Hunt-Hess (HH) and Fisher grades on presentation, the post-bleed day of hyponatremia onset, the incidence of delayed cerebral ischemia (DCI), length of stay (LOS) in the intensive care unit (ICU), overall LOS, aneurysm location, treatment, etiology of hyponatremia, and Modified Rankin Scale at hospital discharge. Fisher's exact test was used to compare categorical variables. The Mann-Whitney U test was used to compare continuous variables.
Results

Out of 331 patients with spontaneous aSAH over a six year period, a total of 114 patients were identified who met inclusion criteria: survival beyond hospital day 5, and development of hyponatremia before post-bleed day 14. These patients were compared to a control group of 89 patients with spontaneous aSAH. Of the potential risk factors identified, the only difference found was in the incidence of anterior communicating artery aneurysms, which was 32% in the hyponatremia group and 13% in the control group (p = 0.003).
Results

In the hyponatremia group, the mean HH and Fisher grades were 2.56 and 3.30 respectively. Median ICU and overall LOS were 15 and 20 days. The mean modified Rankin score (mRS) was 2.83. There was no association between duration of hyponatremia and mRS. There was also no difference in mean ICU or overall LOS between hyponatremic patients and controls. Additionally, there was no difference in incidence of DCI or mRS at discharge between the two groups.
Hyponatremia is the most common electrolyte abnormality in aSAH and warrants aggressive treatment. Numerous studies have reported its association with vasospasm and prolonged hospital courses, however there were no differences in clinical outcome between the hyponatremia group and the control group in our study.

We found a significantly greater incidence of ruptured anterior communicating artery aneurysms in our hyponatremia cohort compared to controls. The pathophysiology could be related to this artery’s proximity to the hypothalamus and pituitary gland, causing a more severe irritant effect on the HPA axis.
Summary Points

• The presence of an anterior communicating artery aneurysm is predictive of hyponatremia in patients with aSAH.
• There were no differences in clinical outcome between the hyponatremia group and the control group in our study.