A rare cause of acute severe hyponatraemia secondary to the syndrome of inappropriate antidiuretic hormone (SIADH) secretion

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Introduction

Hyponatremia is the commonest electrolyte abnormality presenting to Medical Admissions and when acute, severe and symptomatic, is associated with high mortality. The syndrome of inappropriate antidiuretic hormone secretion (SIADH) is the most common underlying disorder in hospitalised patients with euvaemic hyponatraemia and is a complication of many clinical conditions and drug therapies.

We discuss the cases of two patients presenting with acute severe hyponatraemia secondary to SIADH, admitted to the same hospital within a 2-week period.

The number of possible causes of SIADH is extensive and maybe difficult to determine despite thorough investigation. We present the chronological events including clinical history and biochemical results in these patients which highlight the importance of considering rarer causes for unexplained hyponatraemia in those with additional symptoms suggestive of underlying pathology.

Analysis

<table>
<thead>
<tr>
<th></th>
<th>PATIENT 1</th>
<th>PATIENT 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Serum sodium (mmol/L)</td>
<td>123</td>
<td>108</td>
</tr>
<tr>
<td>Creatinine (umol/L) eaGFR</td>
<td>76</td>
<td>62</td>
</tr>
<tr>
<td>Liver function tests</td>
<td>Normal</td>
<td>Normal</td>
</tr>
<tr>
<td>Serum glucose mmol/L</td>
<td>Normal</td>
<td>6.4</td>
</tr>
<tr>
<td>Lipids</td>
<td>NA</td>
<td>↓↑ total cholesterol (7)</td>
</tr>
<tr>
<td>TSH (U/mL) +/- T3/4</td>
<td>0.67, 1T4 21 pmol/l</td>
<td>1.9</td>
</tr>
<tr>
<td>Sam cortisol (nmol/L)</td>
<td>480</td>
<td>872</td>
</tr>
<tr>
<td>Serum osmolality (mOsm/kg)</td>
<td>255</td>
<td>251</td>
</tr>
<tr>
<td>Urine osmolality (mOsm/kg)</td>
<td>614</td>
<td>582</td>
</tr>
<tr>
<td>Urine sodium (mEq/L)</td>
<td>195</td>
<td>194</td>
</tr>
</tbody>
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Background to cases

Patient 1 – 54 year old female
No significant past medical history, no regular medication
Presented 18th May:
• Severe abdominal pain
• Hypertension
• Serum sodium 132mmol/L
Deteriorated 21st May:
• Serum sodium 123mmol/L
• Seizure and 2222 call – transferred to ITU

Patient 2 – 27 year old female
No significant past medical history, no regular medication
Presented 2nd June:
• Increasing confusion, lethargy and abdominal pain
• Serum sodium 108mmol/L
• Seizure in ED – intubated and transferred to ITU

Diagnosis: Acute intermittent porphyria (AIP)

Discussion

Acute Intermittent Porphyria (AIP) is an autosomal dominant condition that results from a partial deficiency in activity of porphobilinogen deaminase, the third enzyme in the pathway of haem synthesis. The deficiency leads to increased blood levels of porphobilinogen and decreased haem synthesis. Clinical manifestations classically include recurrent unexplained abdominal pain, peripheral neuropathy and neuropsychiatric symptoms.

Hyponatremia occurs in approximately 20% of cases of symptomatic AIP and is usually due to SIADH.

Both patients discussed were treated for acute severe hyponatraemia secondary to SIADH, with multiple boluses of 2.7% hypertonic saline and strict fluid restriction. Extensive imaging in each case failed to identify an underlying cause. The combination of unexplained SIADH, hypertension and abdominal pain raised the possibility of porphyria as a unifying diagnosis. It was not until they were commenced on haem argin that immediate normalisation of sodium levels occurred.

The cases highlight that whilst a rare cause of hyponatraemia, in unexplained SIADH in young patients with additional symptomatology, a high index of suspicion is needed to accurately diagnose AIP. Early diagnosis, prompt treatment and avoidance of precipitating factors is essential for managing this sometimes fatal condition.

References