<table>
<thead>
<tr>
<th>Title</th>
<th>Ventricular Fibrillation After Pseudo-Bartter's Syndrome</th>
</tr>
</thead>
<tbody>
<tr>
<td>Author(s)</td>
<td>Hayakawa, Mineji; Sugimoto, Satoru; Matsubara, Izumi; Gando, Satoshi; Kameue, Takashi; Morimoto, Yuji</td>
</tr>
<tr>
<td>Citation</td>
<td>Annals of Emergency Medicine, 39(2): 205-206</td>
</tr>
<tr>
<td>Issue Date</td>
<td>2002-02</td>
</tr>
<tr>
<td>Doc URL</td>
<td><a href="http://hdl.handle.net/2115/45414">http://hdl.handle.net/2115/45414</a></td>
</tr>
<tr>
<td>Type</td>
<td>article (author version)</td>
</tr>
<tr>
<td>File Information</td>
<td>AME39-2_205-206.pdf</td>
</tr>
</tbody>
</table>

Hokkaido University Collection of Scholarly and Academic Papers : HUSCAP
Ventricular fibrillation following pseudo-Bartter syndrome

Authors
Mineji Hayakawa, MD*
Satoshi Gando, MD, PhD‡
Satoru Sugimoto, MD, PhD*
Takashi Kameue, MD, PhD‡
Yuji Morimoto, MD, PhD‡
Izumi Matsubara, MD, PhD*

Institutional affiliations
*Emergency and Critical Care Medicine Center,
Sapporo City Municipal General Hospital, Sapporo, Japan
‡ Department of Anesthesiology and Critical Care Medicine,
Hokkaido University Graduate School of Medicine, Sapporo, Japan

Institution at which this work was performed
Emergency and Critical Care Medicine Center,
Sapporo City Municipal General Hospital, Sapporo, Japan

Financial supports
No financial support was provided for the study.

Corresponding author (for reprints)
Mineji Hayakawa, MD
Emergency and Critical Care Medicine Center,
Sapporo City Municipal General Hospital,
N11 W13, Chuou-Ku, Sapporo,
060-8604 Japan
Tel: +81-11-726-2211, Fax: +81-11-726-7912
Email: mineji@dm.mbn.or.jp

Word count
This report includes 312 words.
To the Editor:

Hypokalemia is one of the risk factors for cardiac arrhythmia and conduction abnormalities such as ventricular fibrillation (VF). Although pseudo-Bartter syndrome can induce severe hypokalemia, no previous report has described fatal arrhythmia following this syndrome. We describe the first case of a patient with pseudo-Bartter syndrome presenting with ventricular fibrillation following hypokalemia.

A 37-year-old woman, who was ambulatory, had been treated for pseudo-Bartter syndrome for several years. Frequent vomiting was the main cause of her symptoms of pseudo-Bartter syndrome. Although the reason of frequent vomiting had been suspected anorexia nervosa, it had been unclear. In April of 1999, the patient visited the outpatient department complaining of severe fatigue. Laboratory investigation showed more severe electrolyte abnormalities than those evident on her last visit (Table). The patient suddenly collapsed at the outpatient department. Cardiopulmonary resuscitation was immediately started. Electrocardiogram showed ventricular fibrillation. The patient was successfully defibrillated with the second direct current shock. After correction of the electrolyte abnormalities, the patient became hemodynamically stable. On the next day, she was almost fully conscious. Several weeks after this attack, the patient was discharged from our hospital.
Pseudo-Bartter syndrome is induced under various conditions, such as diuretic abuse, chronic diarrhea, or frequent vomiting. Although the development of severe electrolyte abnormalities is symptomatic of pseudo-Bartter syndrome, life-threatening arrhythmias following the syndrome have not been reported in the English literature. It is well recognized that hypokalemia can increase incidence of ventricular fibrillation and other ventricular arrhythmias. In this case, we could found severe electrolyte abnormalities indicative of hypokalemia, hypophosphatemia, and hypochloremia, but no other abnormal data could be detected. These electrolyte abnormalities, especially hypokalemia, disturbed cardiac conduction and resulted in ventricular fibrillation. Our case indicates the importance of early detection and correction of severe electrolyte abnormalities following diagnosis of pseudo-Bartter syndrome before the occurrence of serious complications such as ventricular fibrillation.
pseudo-Bartter syndrome

REFERENCES


<table>
<thead>
<tr>
<th>Time</th>
<th>Na (mmol/L)</th>
<th>K (mmol/L)</th>
<th>Cl (mmol/L)</th>
<th>Ca (mmol/L)</th>
<th>P (mmol/L)</th>
<th>Mg (mmol/L)</th>
<th>pH</th>
<th>BE</th>
</tr>
</thead>
<tbody>
<tr>
<td>11:42</td>
<td>139</td>
<td>2.8</td>
<td>103</td>
<td>9.1</td>
<td>3.3</td>
<td>3.3</td>
<td>7.392</td>
<td>-1.3</td>
</tr>
<tr>
<td>13:12</td>
<td>131</td>
<td>2.1</td>
<td>78</td>
<td>9</td>
<td>1.1</td>
<td>2.0-2.6</td>
<td>7.458</td>
<td>2.3</td>
</tr>
<tr>
<td>13:30</td>
<td>125</td>
<td>3.9</td>
<td>1.07</td>
<td>1.07</td>
<td>1.1</td>
<td>3.3</td>
<td>7.359</td>
<td>1.5</td>
</tr>
<tr>
<td>13:45</td>
<td>120</td>
<td>2.27</td>
<td>1.15</td>
<td>1.15</td>
<td>3.8</td>
<td>2.2-4.1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>13:12</td>
<td>125</td>
<td>2.15</td>
<td>82</td>
<td>8.2</td>
<td></td>
<td>2.0-2.6</td>
<td></td>
<td></td>
</tr>
<tr>
<td>13:12</td>
<td>129</td>
<td>3.3</td>
<td>3.3</td>
<td>3.3</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Last Data Before CPA**

<table>
<thead>
<tr>
<th>Na (mmol/L)</th>
<th>K (mmol/L)</th>
<th>Cl (mmol/L)</th>
<th>Ca (mmol/L)</th>
<th>P (mmol/L)</th>
</tr>
</thead>
<tbody>
<tr>
<td>139</td>
<td>2.8</td>
<td>103</td>
<td>9.1</td>
<td>3.3</td>
</tr>
<tr>
<td>131</td>
<td>2.1</td>
<td>78</td>
<td>9</td>
<td>1.1</td>
</tr>
<tr>
<td>125</td>
<td>2.27</td>
<td>1.07</td>
<td>1.07</td>
<td>1.1</td>
</tr>
<tr>
<td>120</td>
<td>2.15</td>
<td>1.15</td>
<td>1.15</td>
<td>3.8</td>
</tr>
<tr>
<td>125</td>
<td>3.3</td>
<td>3.3</td>
<td>3.3</td>
<td></td>
</tr>
</tbody>
</table>

**Normal Range**

- Na: 135–145 mmol/L
- K: 3.6–5.0 mmol/L
- Cl: 97–107 mmol/L
- Ca: 2.2–2.50 mmol/L
- P: 0.80–1.60 mmol/L
- Mg: 2.0–2.6 mmol/L
- pH: 7.35–7.45
- BE: -2.5 to 2.5
Table  Changes of the patient’s electrolytes

<table>
<thead>
<tr>
<th>Electrolyte (normal range)</th>
<th>Last Data</th>
<th>Before VF</th>
</tr>
</thead>
<tbody>
<tr>
<td>Na (135–145 mmol·l⁻¹)</td>
<td>139</td>
<td>131</td>
</tr>
<tr>
<td>K (3.6–5.0 mmol·l⁻¹)</td>
<td>2.8</td>
<td>2.1</td>
</tr>
<tr>
<td>Cl (97–107 mmol·l⁻¹)</td>
<td>103</td>
<td>78</td>
</tr>
<tr>
<td>Ca (2.2–2.5 mmol·l⁻¹)</td>
<td>2.28</td>
<td>2.25</td>
</tr>
<tr>
<td>P (0.8–1.6 mmol·l⁻¹)</td>
<td>1.07</td>
<td>0.36</td>
</tr>
</tbody>
</table>