CORRESPONDENCE

Infective endocarditis due to multiple species of anaerobes following tricuspid valve replacement

**KEYWORDS**
anaerobe; *Bacteroides fragilis*; infective endocarditis; *Peptostreptococcus*; *Veillonella*

To the Editor,

A 24-year-old woman presented to the Nagano Children’s Hospital complaining of recurrent fever and malaise. Ebstein’s anomaly had been diagnosed at birth. Three months prior to admission, her tricuspid regurgitation had deteriorated and the defective valve was replaced with a biological valve. She was discharged 3 weeks after the operation uneventfully. Three weeks later, she developed a low-grade fever and oral antibiotics were prescribed. However, the patient’s fever failed to respond stably. On admission to our hospital (Day 0), her body temperature was 40.1°C, blood pressure was 118/79 mmHg, pulse rate was 102 bpm, and her respiratory rate was 28 breaths/min. General appearance indicated malaise, and a systolic ejection murmur (III/VI) was heard. Transthoracic echocardiography was performed subsequently, revealing a 25 mm × 15 mm vegetation on the replaced tricuspid valve. Vancomycin and gentamicin were started immediately and tricuspid valve re-replacement was performed on Day 1.

The Gram stain of the vegetation showed a polymicrobial pattern with multiple morphotypes strongly suspected of being anaerobes. We switched the antibiotic regimen from vancomycin/gentamicin to vancomycin/meropenem. From a blood culture collected on admission, four different types of obligate anaerobes were identified: *Bacteroides fragilis*, *Veillonella* species, *Peptoniphilus asaccharolyticus*, and *Peptostreptococcus anaerobius*. Duplicate three types of anaerobes were also identified from the vegetation culture (Table 1). Identification of the anaerobes was performed using RapID ANA II (Remel Inc., Lenexa, KS, USA). No bacterium was isolated from the facultative anaerobic and strictly aerobic cultures. Blood culture became negative from Day 3 on. Eleven days were required to confirm all the susceptibility results. The antibiotic regimen was switched from vancomycin/meropenem to ampicillin–sulbactam as definitive therapy. The patient was discharged after 6 weeks of therapy, and has had no recurrence for over 1 year.

Anaerobic infective endocarditis (IE) is rare and the prevalence is 2–16% of all IE cases. However, the mortality rate is 21–43% or higher than that of total IE (15–22%).1,2 *B. fragilis* is an anaerobic Gram-negative rod, a component of normal flora in the intestinal tract. It is frequently associated with polymicrobial infections. *Veillonella* species are anaerobic Gram-negative cocci usually present as commensals in the oral and gastrointestinal tract. *Peptostreptococcus* species and *Peptoniphilus* species are Gram-positive cocci, normal flora of the mucocutaneous surfaces.

There are several risk factors for anaerobic IE such as perforation of the intestines, genitourinary infections, and drug abuse. The present case had no risk factors other than intestinal lesion. She suffered from chronic anal fissures and internal hemorrhoids. Some case reports showed that chronic constipation can trigger bacteremia,3 and one source reported that most of these transient bacteremias are asymptomatic.4 A case of *B. fragilis* bacteremia following hemorrhoidectomy has also been reported.5 Therefore, we speculated that her anaerobic IE had occurred due to the perianal lesion.

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Usually, an empirical antibiotic regimen for IE does not target anaerobes. Antianaerobic agents should be administered if the patient had predisposing conditions such as gastrointestinal tract disease. In addition, if Gram staining shows a polymicrobial pattern, anaerobes should be suspected.

Conflicts of interest

All contributing authors declare no conflicts of interest.

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References


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Table 1 Minimum inhibitory concentration and susceptibilities of anaerobic bacteria isolated in this case.

<table>
<thead>
<tr>
<th>Anaerobic Bacteria</th>
<th>Ampicillin</th>
<th>Cefmetazole</th>
<th>Clindamycin</th>
<th>Ampicillin/sulbactam</th>
<th>Piperacillin/tazobactam</th>
<th>Imipenem</th>
<th>Meropenem</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bacteroides fragilis</td>
<td>&gt;1</td>
<td>4</td>
<td>0.5</td>
<td>&gt;4</td>
<td>≤4</td>
<td>≤0.25</td>
<td>≤0.25</td>
</tr>
<tr>
<td>Veillonella species</td>
<td>&lt;0.03</td>
<td>≤1</td>
<td>2</td>
<td>≤4</td>
<td>≤4</td>
<td>≤0.25</td>
<td>≤0.25</td>
</tr>
<tr>
<td>Peptoniphilus asaccharolyticus</td>
<td>0.12</td>
<td>≤1</td>
<td>≤0.12</td>
<td>&lt;4</td>
<td>≤16</td>
<td>≤0.25</td>
<td>≤0.25</td>
</tr>
<tr>
<td>Peptostreptococcus anaerobius</td>
<td>&gt;1</td>
<td>8</td>
<td>0.25</td>
<td>8</td>
<td>0.5</td>
<td>1</td>
<td></td>
</tr>
</tbody>
</table>

R = resistance; S = susceptible.

a Types identified from blood culture on admission

b Types identified from vegetation.