Veillonella montpellierensis Endocarditis

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Veillonella spp. rarely cause infections in humans. We report a case of Veillonella endocarditis documented by isolating a slow-growing, gram-negative microbe in blood cultures. This microbe was identified as the newly recognized species Veillonella montpellierensis (100% homology) by 16S RNA gene sequence analysis.

Veillonella are anaerobic, gram-negative cocci, part of the normal flora of the mouth, gastrointestinal tract, and vaginal tract. Veillonella dispar, V. atypica, and V. parvula have been cultured from human specimens. They are infrequently isolated in human infections. Rarely, Veillonella species have been the only etiologic agents identified in serious infections such as meningitis, osteomyelitis, prosthetic joint infection, pleuropulmonary infection, endocarditis, and bacteremia. A new species, V. montpellierensis, has recently been isolated from the gastric fluid of a newborn and from the amniotic fluid of 2 women (1). Its pathogenic role is still debated.

The Study

A 75-year-old woman was admitted to the intensive care unit with septic shock. She had a history of diabetes mellitus. A cardiac murmur had been noted 8 years earlier but was not investigated further. On physical examination, the patient had aortic and mitral murmur. Reagent strip for urinalysis detected leukocytes and nitrites. After 3 blood cultures and urinalysis, the patient was treated for septic shock secondary to upper urinary tract infection with ceftriaxone, 2 g/day intravenously. The patient’s condition rapidly improved with antimicrobial drugs and dopamine. Three days after admission, she was afebrile and hemodynamically stable; she was transferred to the urology department for acute pyelonephritis, which had not been confirmed by computed tomographic (CT) scan. Urine culture yielded Gardnerella vaginalis. Chest radiograph showed a patchy density of the right inferior pulmonary lobe confirmed by chest CT scan that suggested either pneumonia or neoplasia. On day 6, a transesophageal echocardiograph, performed because of the cardiac murmur, showed oscillating intracardiac masses on the aortic and mitral valves. Because the blood cultures were still negative, we determined that the patient had culture-negative endocarditis and replaced ceftriaxone with amoxicillin, 12 g/day for 6 weeks, in addition to gentamicin, 3 mg/kg/day for 3 weeks. On day 26, another transesophageal echocardiograph was performed and showed that the vegetation on the aortic valve had disappeared and the mitral vegetation was greatly reduced. The patient was discharged after 42 days of antimicrobial drug treatment, and follow-up was not possible.

On day 14 after sampling, 2 of 3 anaerobic blood cultures (automated blood culture BACTEC 9240 system [Becton Dickinson, Le Pont de Claix, France]) yielded a slow-growing, gram-negative microbe. Blood was subcultured onto Columbia agar with 5% sheep blood (Mérieux, Marcy l’Etoile, France) under 5% CO2, and anaerobic atmosphere and resulted in small colonies. This slow-growing microbe was lost after 2 subcultures, and no isolate is available for further description. The isolate retrieved in the blood culture was identified by 16S rRNA gene sequence analysis. The template DNA was prepared from a few colonies that were isolated on the blood agar incubated anaerobically. DNA was extracted by using Fastprep DNA extraction kit (Ozyme, St Quentin en Yvelines, France) according to the manufacturer’s recommendations and was subjected to polymerase chain reaction (PCR) targeting the 16S rRNA gene as previously described (2). Sequencing the PCR product (2) showed a 1,531-nucleotide sequence. This sequence shared 100% homology with that of V. montpellierensis (GenBank accession no. AY244769) and was already reported (GenBank accession no. AY244769) in a previous article (3). In this article, the isolated Veillonella strain (that was isolated from our patient) was first identified as “candidatus V. atypica” since the sequencing of the amplicon disclosed 94% sequence similarity with that of V. atypica (3). V. montpellierensis had not yet been described. PCR contamination was unlikely since this organism had never been amplified in our laboratory and negative controls remained negative.

Conclusions

According to the modified Duke criteria (4), our patient had definite endocarditis. Anaerobic microbes do not commonly cause endocarditis (5). Most cases of anaerobic endocarditis are caused by anaerobic cocci, Propionibacterium acnes, and Bacteroides fragilis group (5). We describe the seventh reported case of well-documented infectious endocarditis in which a Veillonella species was the sole pathogen and the first due to V. montpellierensis. Characteristics of the 7 Veillonella endocarditis patients are summarized in the Table. Five of them fulfilled the Duke modified criteria for definite endocardi-
Veillonella montpellierensis Endocarditis

Table. Summary of 7 reported patients with endocarditis due to Veillonella species

<table>
<thead>
<tr>
<th>Veillonella species isolated</th>
<th>Age</th>
<th>Sex</th>
<th>Infected valve</th>
<th>Preexisting valvular disease</th>
<th>Echo vegetation</th>
<th>Specimen site</th>
<th>Duration of illness before diagnosis</th>
<th>Outcome</th>
</tr>
</thead>
<tbody>
<tr>
<td>V. alcalescens (6)</td>
<td>51</td>
<td>Male</td>
<td>Prosthetic mitral</td>
<td>Y</td>
<td>Y</td>
<td>Blood†</td>
<td>6 mo</td>
<td>Cured</td>
</tr>
<tr>
<td>V. alcalescens (7)</td>
<td>60</td>
<td>Male</td>
<td>Native aortic</td>
<td>Y</td>
<td>Benign heart murmur</td>
<td>N</td>
<td>Valve‡</td>
<td>Cured</td>
</tr>
<tr>
<td>V. alcalescens (8)</td>
<td>35</td>
<td>Male</td>
<td>Native mitral</td>
<td>N</td>
<td>–</td>
<td>Blood†</td>
<td>7 mo</td>
<td>Cured</td>
</tr>
<tr>
<td>V. dispar (9)</td>
<td>56</td>
<td>Male</td>
<td>Prosthetic mitral</td>
<td>Y</td>
<td>Y</td>
<td>Blood‡</td>
<td>2 wk</td>
<td>Cured</td>
</tr>
<tr>
<td>V. dispar (10)</td>
<td>57</td>
<td>Female</td>
<td>Prosthetic mitral</td>
<td>Y</td>
<td>Y</td>
<td>Blood‡</td>
<td>3 wk</td>
<td>Cured</td>
</tr>
<tr>
<td>V. parvula (11)</td>
<td>49</td>
<td>Male</td>
<td>Prosthetic mitral</td>
<td>Y</td>
<td>N</td>
<td>Valve‡</td>
<td>36 h</td>
<td>Cured</td>
</tr>
<tr>
<td>V. montpellierensis (present work)</td>
<td></td>
<td></td>
<td>Native mitral and aortic</td>
<td>Y</td>
<td>Y</td>
<td>Blood‡</td>
<td>6 d</td>
<td>Unknown</td>
</tr>
</tbody>
</table>

*Y, yes; N, no; echo, echocardiography.
†Negative culture of valve specimens.
‡Negative culture of blood specimens.

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Dr. Rivery is a physician who specializes in infectious disease and tropical medicine in Marseille. Her research interests include rickettsial diseases and emerging pathogens.

References


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