Bacteroides pyogenes isolated from appendiceal abscess in a patient without animal contact

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Abstract

Bacteroides pyogenes is a member of the oral flora of cats and dogs. We report a case of B. pyogenes isolated from an appendiceal abscess in a patient without a history of animal contact. This species was identified by matrix-assisted laser desorption/ionization time-of-flight mass spectrometry (MALDI-TOF-MS) and sequencing of 16S rRNA, rpoB, gyrB and hsp60 genes.

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Bacteroides pyogenes is a member of the oral flora of cats and dogs. We report a case of B. pyogenes isolated from an appendiceal abscess in a patient without a history of animal contact. This species was identified by matrix-assisted laser desorption/ionization time-of-flight mass spectrometry (MALDI-TOF-MS) and sequencing of 16S rRNA, rpoB, gyrB and hsp60 genes. A specimen of the appendiceal abscess obtained by intra-abdominal drainage was cultured under aerobic, 5% CO2, and anaerobic conditions. After 24–48 hours of incubation, a small number of colonies of Escherichia coli, Bacteroides thetaiotaomicron, and a large number of colonies of Peptostreptococcus micros were observed on Trypticase Soy Agar with 5% Sheep Blood and PEA-added Anello Colombia RS Blood Agar/BBE Agar. The anaerobic condition under 0% O2 was monitored using an anaerobic indicator. These bacteria were identified by matrix-assisted laser desorption/ionization time-of-flight mass spectrometry (MALDI-TOF-MS, Vitek MS system; bioMérieux). In addition, a large number of small, circular, smooth, and beige colonies were obtained by anaerobic culture on ABHK Agar with nalidixic acid and vancomycin (Fig. 1(a)). The Vitek MS system identified the organism as Bacteroides pyogenes with 99.9% confidence, and Rap ID-ANA II system (Remel. Inc) indicated Bacteroides tectum, while Prevotella melaninogenica was assigned by Vitek 2 system (bioMerieux) using an ANC card with 98% probability.

For accurate identification of the isolate (AMU202101), 16S rRNA gene sequence was determined as described previously [5]. The obtained 1395-bp sequence showed 99.86% identity to B. pyogenes strain JCM10003 [6]. Furthermore, the complete rpoB, gyrB, and partial hsp60 sequences analysed for this isolate had 98.3–99.9% identity to B. pyogenes. These sequences of

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Piperacillin (TAZ/PIPC, 4.5 g/6 h/i.v.). A specimen of the appendiceal abscess obtained by intra-abdominal drainage was cultured under aerobic, 5% CO2, and anaerobic conditions. After 24–48 hours of incubation, a small number of colonies of Escherichia coli, Bacteroides thetaiotaomicron, and a large number of colonies of Peptostreptococcus micros were observed on Trypticase Soy Agar with 5% Sheep Blood and PEA-added Anello Colombia RS Blood Agar/BBE Agar. The anaerobic condition under 0% O2 was monitored using an anaerobic indicator. These bacteria were identified by matrix-assisted laser desorption/ionization time-of-flight mass spectrometry (MALDI-TOF-MS, Vitek MS system; bioMérieux). In addition, a large number of small, circular, smooth, and beige colonies were obtained by anaerobic culture on ABHK Agar with nalidixic acid and vancomycin (Fig. 1(a)). The Vitek MS system identified the organism as Bacteroides pyogenes with 99.9% confidence, and Rap ID-ANA II system (Remel. Inc) indicated Bacteroides tectum, while Prevotella melaninogenica was assigned by Vitek 2 system (bioMerieux) using an ANC card with 98% probability.

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AMU202101 were deposited to GenBank under accession numbers MW930230-MW930233.

Eight days later, contrast CT showed an improvement of the appendiceal abscess and CRP level lowered (Fig. 1(b)). The antimicrobial was changed from TAZ/PIPC to Amoxicillin (AMPC, 250 mg 3 times a day) and Amoxicillin/Clavulanate (AMPC/CVA, 250SR 3 times a day). Twelve days after admission, the patient was discharged.

Human infections by *B. pyogenes* and related species have been mostly found as wound infections from dog or cat bites [4,7], and bacteremia with *B. pyogenes* resulting from a cat bite was also reported [8]. Nevertheless, there are a few reports without contact with animals for cases of joint infection [9] and bloodstream infection associated with liver abscess [10]. Similarly, in the present report, the patient had no history of evident contact with an animal, including cat, dog and cow; thus, this is probably the first case of *B. pyogenes* infection in the appendix without animal contact. Although, in our case, the transmission route of *B. pyogenes* from an animal is unclear, oral ingestion of the bacteria is possible because the infected site is the alimentary tract. Accurate identification by MALDI-TOF-MS, as well as gene sequencing, as shown in this report, is important to accumulate data to approach the real ecology of such rare pathogens, even if there is no relationship between the patient’s background and the detected bacteria.

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**Transparency declaration**

None to declare.

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