

CASE REPORT

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Veillonella atypica bacteremia in an immunocompetent patient

Oyintare Fakrogha Maxwella, Viquez Beita Karolina

ABSTRACT

Veillonella atypica is a gram-negative anaerobic coccus normally found in the human gastrointestinal tract and genitourinary tract. It rarely causes infection, and only a few cases have been reported. We describe a case of a 67-year-old immunocompetent male who developed *V. atypica* bacteremia. The diagnosis was confirmed through blood culture analysis, and the patient was initially treated with piperacillin-tazobactam and discharged on amoxicillin-clavulanate. *Veillonella atypica* is emerging as a clinically significant pathogen with increasing case reports highlighting its relevance in infectious disease.

Keywords: Bacteremia, Immunocompetent, *Veillonella atypica*, *Veillonella* treatment

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INTRODUCTION

Veillonella species are Gram-negative, obligate anaerobic cocci that are commonly part of the commensal microbiota of the human gastrointestinal and genitourinary tracts [1]. These organisms have low virulence and are frequently identified in polymicrobial infections, such as dental abscesses and intra-abdominal infections [2]. Because *Veillonella* organisms usually coexist with other bacterial species, *Veillonella* is often overlooked or dismissed as contaminants in clinical specimens [3]. While infections caused by *Veillonella* species are typically associated with immunocompromised individuals, we report an unusual case involving an infection in an immunocompetent patient with no significant comorbidities.

Veillonella parvula is the most frequently reported pathogen, whereas *Veillonella dispar* has been associated with deep infections, particularly in patients with recurrent urothelial carcinoma [4]. *Veillonella atypica* is extremely rare with only a few cases reported to date. Some of the cases include bacteremia in an elderly patient with obstructive pyelonephritis and a case of gut dysbiosis in an individual with alcoholic hepatitis [5, 6]. Given its slow growth rate and fastidious nature, *V. atypica* is hard to diagnose via conventional microbiological techniques [7].

CASE REPORT

A 67-year-old male with a medical history of obstructive sleep apnea and tobacco use presented to the hospital following a cardiac arrest. The patient experienced a syncopal episode at home. Upon arrival at the hospital, 45 minutes after initial syncope, the patient was found to have ventricular fibrillation. Cardiopulmonary resuscitation (CPR) was initiated and return of spontaneous circulation (ROSC) was achieved after 20 minutes. Initial laboratory studies revealed a white blood cell count of 14.6 K/ μ L, with normal hemoglobin, platelet count, and a comprehensive metabolic panel within normal limits. Electrocardiogram (ECG) demonstrated diffuse ST-segment changes. Given these findings, the patient underwent emergent cardiac catheterization, which revealed a 100% ostial occlusion of the left anterior descending (LAD) artery. A drug-eluting

stent was successfully placed. The patient was admitted to the intensive care unit in a stable condition. Sedation was weaned, and he was successfully extubated. On hospital day 2, the patient developed a fever of 38.6 °C. Blood cultures were obtained from a peripheral line, and one anaerobic bottle grew *V. atypica*. Empiric antibiotic therapy with piperacillin-tazobactam was initiated. A CT scan of the abdomen and pelvis was performed to evaluate for a deep-seated infection, but it was unremarkable. Infectious disease consultation recommended switching antibiotics to ampicillin-sulbactam and treating the bacteremia for a total of seven days. The patient's fever resolved, white blood cell count normalized, and once he was tolerating an oral diet, he was transitioned to amoxicillin-clavulanate. He was subsequently discharged home in stable condition.

DISCUSSION

Veillonella atypica is a gram-negative anaerobe part of the normal human microbiota in the gastrointestinal tract and genitourinary system [1]. Its more common presentation is as bacteremia, although rare, *Veillonella* species have been implicated in endocarditis, bacteremia, and osteomyelitis [8–10].

Previous authors have associated *Veillonella* infections predominantly with immunocompromised individuals, some examples include hepatocellular carcinoma, renal malignancies, and alcohol-related liver disease [2, 11]. Immune suppression facilitates the translocation of this organism into normally sterile compartments, causing bacteremia. Given the increased incidence of those after mentioned conditions, *Veillonella* species significance is growing in the medical community.

In contrast to other case reports, our case report involves an immunocompetent patient without evident comorbidities, who developed *V. atypica* bacteremia. This atypical presentation raises the possibility that, under specific conditions, *V. atypica* may function as a primary pathogen causing systemic infection in healthy individuals. The clinical presentation of *Veillonella* infection is vague, and fever is the most common symptoms [11]. However, due to its nonspecific nature, fever alone is not enough to establish a diagnosis. The identification of *Veillonella* is very challenging, mostly because it is a commensal organism and it coexists with more aggressive bacterial species, such *Streptococcus*, *Fusobacterium*, and *Actinomyces* within oral biofilms [12, 13]. In our case, *V. atypica* was cultured in isolation, raising questions about its independent pathogenic potential.

Due to limited reports, no standardized treatment exists yet. Empiric therapy included penicillins, metronidazole, cephalosporins, and macrolides [11, 14, 15]. However, some authors have demonstrated emerging resistance to metronidazole in some *Veillonella* species including *V. atypica* [16, 17].

After *Veillonella* is identified in blood cultures, imaging sometimes is needed to evaluate for localized infections or abscess formation, with some authors successfully identifying deep infections requiring more invasive treatments such as abscess drainage [2]. Our patient had a normal imaging raising the question should routine imaging be done in all cases of *Veillonella* bacteremia, or reserved for high-risk patients or for patients with focal symptoms? Since few cases are reported in the literature, we will recommend that patients with *Veillonella* bacteremia have some sort of imaging to rule out deep infection.

Our case report contributes to the growing understanding of how low virulence organisms, such as *Veillonella*, can be pathogenic in some hosts. The increasing recognition of these organisms as disease causing pathogens could be due to some factors such as widespread antibiotic use, alcohol abuse, increased incidence of chronic immunosuppression and altered host microbiota.

CONCLUSION

Our case shows that *Veillonella atypica* has the potential to cause bacteremia in immunocompetent patients without pre-existing comorbidities. Presentation can be vague, with fevers sometimes being the only symptom. The role of imaging is not clear yet, but we recommend routine imaging after *Veillonella* is identified to rule out deep infections. Beta-lactam antibiotics seem to be the initial drug of choice. More case reports are needed to fully understand the pathogenicity of *Veillonella*.

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Author Contributions

Oyintare Fakrogha Maxwella – Conception of the work, Drafting the work, Revising the work critically for important intellectual content, Final approval of the version to be published, Agree to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved

Viquez Beita Karolina – Acquisition of data, Analysis of data, Interpretation of data, Drafting the work, Final approval of the version to be published, Agree to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved

Guarantor of Submission

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Conflict of Interest

Authors declare no conflict of interest.

Data Availability

All relevant data are within the paper and its Supporting Information files.

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