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CASE REPORT

Gemella haemolysans as an emerging pathogen for bacteremia among the elderly

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Abstract

We report a patient of an 82-year-old woman with occult *Gemella haemolysans* bacteremia without a clear entry site. *Gemella haemolysans* is part of the normal human flora but can cause severe systemic infections such as infective endocarditis on rare occasions. In this patient, physical examination showed no localized symptoms, and a transthoracic echocardiogram showed no vegetation on the heart valves. The entry site for this pathogen was unclear. As the number of the elderly with asymptomatic infections has been increasing, clinicians should be aware of that this microorganism can cause occult bacteremia and infective endocarditis.

KEYWORDS
bacteremia, emerging pathogen, *Gemella haemolysans*, infectious diseases, the elderly

1 | INTRODUCTION

Gemella species are facultatively anaerobic, Gram-variable cocci. They can take various forms, such as pairs, clusters, and short chains. Wide-zone alpha-hemolysis can be observed, especially with *Gemella haemolysans*.[1] *G. haemolysans*, *G. morbillorum*, *G. bergeri*, *G. sanguinis*, *G. assacharolytica*, *G. taiwanensis*, *G. parahaemolysans*, *G. palaticanis*, and *G. cuniculi* are the currently recognized species within the genus.[2] *Gemella haemolysans* is part of the normal flora in the human oral cavity, upper respiratory tract, gastrointestinal tract, and genitourinary tract.[3] Although infections with *Gemella* species are rare, *G. haemolysans* can cause severe systemic infections as an opportunistic pathogen.[4] Infective endocarditis is the most common condition associated with *Gemella* species infections, and the most frequently reported *Gemella* species causing infective endocarditis is *G. haemolysans*.[2] *Gemella haemolysans* has also been reported as a pathogen for meningitis, spondylodiscitis, bone infection, infected aneurysm, liver abscess, and eye infection.[3] We report a patient of an 82-year-old woman with occult *G. haemolysans* bacteremia.

2 | CASE PRESENTATION

An 82-year-old woman presented to our hospital with fever, weakness, and anorexia since the previous day. She had multiple medical problems, including hypertension, cerebral infarction treated with rivaroxaban, glioma under observation without treatment, dementia, multiple hepatic cysts, and urinary retention with urinary catheter. She was admitted for further management. On admission, she was drowsy, with a Glasgow Coma Scale score of 13 (E4, V4, M5), a blood pressure of 131/119 mm Hg, a heart rate of 66 beats/min, a respiratory rate of 17 breaths/min, oxygen saturation of 99% on the ambient air, and a temperature of 37.7℃. Her oral cavity was dry. There were no systolic murmurs or significant abdominal findings. She had left costovertebral angle tenderness, but the rest of the findings on physical examination were unremarkable. Laboratory tests showed an elevated C-reactive protein level, a prolonged prothrombin time, international normalized ratio, and activated partial thromboplastin time, pyuria, and bacteriuria. Computed tomography of the chest, abdomen, and pelvis with contrast material showed no dilatation of the ureter, signs of hydronephrosis, or signs of hepatic

TABLE 1 Antimicrobial susceptibility testing results for *Gemella haemolysans* isolated from our patient

Antimicrobial agents	Minimum inhibitory concentration (MIC) μg/ml	Susceptibility
Penicillin	≤0.03	Susceptible
Ceftriaxone	≤0.12	Susceptible
Meropenem	≤0.12	Susceptible
Erythromycin	1	Susceptible
Clindamycin	≤0.12	Susceptible
Levofloxacin	≤0.25	Susceptible

Note: The antimicrobial susceptibility testing was performed on the basis of the Clinical and Laboratory Standards Institute (CLSI) M45-A3.

cyst infection. Antimicrobial treatment with piperacillin/tazobactam 4.5 g every 6 h was started on the basis of a provisional diagnosis of urinary tract infection. The following day, the urine culture obtained on admission became positive for Gram-negative rods, which were identified as *Klebsiella pneumoniae* on day 4 of hospitalization. Her antimicrobial treatment was changed to cefazolin (2 g, 8-hourly). Concurrently, one out of two sets of blood cultures on admission became positive for Gram-positive cocci (GPC) on day 2 of admission and they proved to present alpha-hemolysis on day 5 of admission. The organism in the blood culture obtained on admission was identified as *G. haemolysans* (WalkAway™ Beckman Coulter) on day 9. The antimicrobial susceptibility testing was performed on the basis of the Clinical and Laboratory Standards Institute M45-A3, and the results were provided in Table 1. On day 9, her treatment was changed to continuous intravenous penicillin G (24×10^6 U/day) for 20 days. Additional two sets of blood cultures were obtained on day 5. In one of them, the organism was identified as methicillin-resistant *Staphylococcus epidermidis*, which was considered as contamination. Transthoracic echocardiography (TTE), performed on day 9 of admission, reveals no vegetation on the mitral or aortic valves. Transesophageal echocardiography and colonoscopy were not performed because the clinicians thought that she would be unable to tolerate it. TTE repeated on day 29 did not show any vegetation on the heart valves. The blood cultures repeated on day 20 of hospitalization were negative. Her clinical condition gradually improved, and she was discharged on day 47 of hospitalization.

3 | DISCUSSION

Infectious diseases caused by *Gemella* species are rare. According to a retrospective study conducted in Sweden, the frequencies of bacteremia and infective endocarditis caused by *Gemella* species are 4.5 and 0.31, respectively, per 1,000,000 inhabitants per year.[5] As for infective endocarditis, the common entry sites are dental disease and colon cancer. The number of older patients affected with *Gemella* infective endocarditis is increasing recently because older individuals tend to have entry sites mentioned above.[6] The recommended treatment for infective endocarditis caused by *G. haemolysans* is penicillin or ampicillin combined with gentamicin.[4] Although this patient was diagnosed with *G. haemolysans* bacteremia, TTE showed no vegetation on the heart valves. Considering the higher risk of renal dysfunction because of her age, gentamicin was not administered. The entry site of this pathogen was unclear in this patient. Sadaune et al.[7] showed that 14 of 24 cases of *G. haemolysans* infective endocarditis had no known entry sites. In addition, in the case of *G. haemolysans* bacteremia with liver abscess reported by Malik et al.,[8] the source of bacteremia was unclear. Our patient suggests that *G. haemolysans* may be an emerging pathogen for occult bacteremia among the elderly without the entry site being apparent.

4 | CONCLUSION

We report a patient of occult *G. haemolysans* bacteremia without a clear entry site in an elderly woman. As the number of the elderly has been increasing worldwide, occult bacteremia because of this microorganism may increase. Clinicians should be aware of *Gemella* as an emerging pathogen that may cause bacteremia and infective endocarditis among the elderly. Clinicians should also be aware of bacteremia because of *G. haemolysans* and look for a potential complication of infective endocarditis among the elderly with positive blood cultures even if there are no localized symptoms.

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CONFLICT OF INTEREST

The authors have stated explicitly that there are no conflicts of interest in connection with this article.

INFORMED CONSENT

We obtained an informed consent from the patient's family for this case report.

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