CASE REPORT

Gemella morbillorum prosthetic aortic valve endocarditis

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SUMMARY

Gemella morbillorum is facultative anaerobic, Gram-positive cocci and are a commensal part of human flora. The reported patient in this case, with a prosthetic bovine aortic valve, presented with fever, poor dental hygiene, new cardiac murmur and signs of congestive heart failure. Blood cultures were positive for a viridans streptococcal species; however, the organism could not be further identified at our institution. Echocardiogram demonstrated a decrease in ejection fraction and vegetation attached to the prosthetic aortic valve associated with a perivalvular abscess. The patient was treated with a 6-week regimen of penicillin G with gentamicin for the first 2 weeks along with cardiac surgery. The results from the 16S rRNA gene sequencing of the viridans streptococcal species were available, which reported the organism as *G. morbillorum*. This case adds to the literature on *G. morbillorum* prosthetic valve endocarditis and provides additional evidence to consider infectious endocarditis in the setting of *G. morbillorum* bacteraemia.

BACKGROUND

Gemella morbillorum, previously known as *Streptococcus morbillorum*, is a facultative anaerobic, Gram-positive cocci that is catalase and coagulase negative and was first isolated from humans in 1917.¹ It was considered to be a viridans streptococcus because it failed to produce β -haemolysis on blood agar and lacked the distinguishing serogroup antigens. However, based on its biochemical and physiological properties, it was transferred from the genus *Streptococcus* to the genus *Gemella*.² It is recognised as a commensal part of the human oropharyngeal, gastrointestinal and genitourinary tract; however, infections due to *G. morbillorum* are infrequently reported. Bacteraemia along with infectious endocarditis is recognised; however, during our literature review only four previous cases of *G. morbillorum* prosthetic valve endocarditis were identified.^{3–6} This case would add to the literature and make physicians aware of the need of considering infectious endocarditis in the setting on *G. morbillorum* bacteraemia.

CASE PRESENTATION

This is a case of a 73-year-old Caucasian man who presented to the emergency department with a 5-day history of fever and swelling of his lower extremities. The patient mentioned having low-grade fever of 101°F for the past 5 days associated with mild chills and fatigue. He also reported

bilateral lower extremity swelling for the same duration, a symptom he had never experienced in the past. A complete review of systems was performed; the patient denied any other contributing symptoms.

The patient had a history of coronary artery disease with moderate aortic stenosis for which he had undergone a coronary artery bypass graft with an aortic valve replacement with a bovine tissue valve 4 years prior to this presentation. The patient also had associated well-controlled diabetes mellitus and hyperlipidaemia and was on metformin, pravastatin, aspirin and lisinopril as his home medication regimen. He was currently retired and stayed at home with his wife. He denied alcohol use, smoking or use of illicit drugs.

Examination on presentation was significant for fever (102.6°F) and tachycardia (108 bpm). Further examination revealed dental caries in his bilateral lower molars, bilateral basilar crackles on pulmonary auscultation and a new grade II/VI pan systolic murmur best heard in the aortic area on cardiac auscultation. Lower extremities showed 1+ pitting oedema without rashes or deformities.

INVESTIGATIONS

Initial laboratory examination revealed leucocytosis ($12.8 \times 10^6/L$) with 83% neutrophils, anaemia (haemoglobin 8.9 g/dL) and elevated C reactive protein (18.3 mg/dL) with normal renal and liver function tests. Three sets of blood culture were obtained in the first 24 h of admission and incubated in a continuous-monitoring culture system. Growth was noted in all bottles at 24 h of incubation and the samples were then subcultured on sheep blood agar and chocolate agar. α -Haemolytic, catalase negative, Gram-positive cocci arranged in clusters were grown and identified as a viridans streptococcal species. The organisms could not be identified further at our institution and were hence sent to a reference laboratory capable of performing 16S rRNA gene sequencing.

Antimicrobial susceptibility by Kirby Bauer disk diffusion method showed the organism to be sensitive to ceftriaxone, clindamycin, erythromycin, levofloxacin and vancomycin and sensitive to penicillin G by E test. The patient's chest X-ray on admission demonstrated moderate prominence of the pulmonary vascularity indicating concerns for pulmonary oedema. A transthoracic echocardiogram was performed demonstrating a significant decrease of the ejection fraction from 40–45% to 20–25% along with a mobile 1.8×1 cm vegetation

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attached to the bio prosthetic aortic valve associated with a perivalvular abscess. This finding was later confirmed on a transoesophageal echocardiogram.

TREATMENT

The patient was diagnosed with prosthetic valve infective endocarditis secondary to a viridans streptococcal species and was started on intravenous antibiotics with a plan of a 6-week regimen with penicillin G along with gentamicin for at least the first 2 weeks based on the American Heart Association guidelines.⁷ Repeat surveillance blood cultures 48 h after initiation of antibiotics were negative. A surgical intervention with an aortic valve replacement was planned for the patient because of the perivalvular abscess, large size of the vegetation and the associated heart failure.

Dental extractions were performed initially for the bilateral lower second molars to reduce the risk of re-infection followed by cardiac surgery, which included debridement of the perivalvular abscess and bio prosthetic aortic valve replacement. The same viridans streptococcal organism was cultured from the infected aortic valve obtained during surgery.

OUTCOME AND FOLLOW-UP

The results from the 16S rRNA gene sequencing of the previously identified viridans streptococcal species were available at this time and reported the organism as *G. morbillorum*. The patient completed his 6 weeks regimen of intravenous antibiotics as previously planned and had a successful outcome with his infective endocarditis.

DISCUSSION

G. morbillorum, as previously mentioned, is a commensal part of the human oropharyngeal, gastrointestinal and genitourinary tract; and infection due to it are infrequently reported. Bacteraemia with infectious endocarditis is recognised and many such cases of native valve endocarditis are reported in the literature.⁴ Predisposing factors in these cases included poor dental hygiene, recent dental procedures, colonic pathology and gastrointestinal procedures. Our literature review identified only four previous cases of *G. morbillorum* prosthetic valve endocarditis.^{3–6} Three of those patients were successfully treated with penicillin G for 6 weeks and gentamicin for 2 weeks³; ceftriaxone for 4 weeks and gentamicin for the first 2 weeks⁴; and with penicillin G plus rifampin for 6 weeks, gentamicin sulfate for the initial 2 weeks, and valve replacement, respectively.⁵ The fourth patient underwent valve replacement and was treated with vancomycin, gentamicin and rifampin; however, the patient died secondary to *Escherichia coli* bacteraemia during the postoperative period.⁶ There is emerging literature

suggestive of penicillin resistance in some *Gemella* spp,⁸ hence antimicrobial susceptibility, if possible, should be performed and use of vancomycin considered. This case adds to the literature on *G. morbillorum* prosthetic valve endocarditis and provides additional evidence to consider infective endocarditis in the setting of *G. morbillorum* bacteraemia.

Learning points

- *Gemella morbillorum* are catalase and coagulase negative facultative anaerobic, Gram-positive cocci that are commensal part of the human oropharyngeal, gastrointestinal and genitourinary tract.
- Infection due *G. morbillorum* are infrequently reported and bacteraemia with infectious endocarditis is recognised.
- Predisposing factors in cases of *G. morbillorum* endocarditis include poor dental hygiene, recent dental procedures, colonic pathology and gastrointestinal procedures.
- The American Heart Association guidelines recommend a 6-week regimen with penicillin G with gentamicin for at least the first 2 weeks as medical therapy.

Competing interests None.

Patient consent Obtained.

Provenance and peer review Not commissioned; externally peer reviewed.

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