



## ***Gemella* Prosthetic Aortic Valve Endocarditis Treated Successfully with Vancomycin and Gentamicin**

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### Abstract

*Gemella* are facultatively anaerobic Gram-positive cocci found in the oral cavity. Endocarditis from this organism is rare. We describe a case of late onset aortic prosthetic valve endocarditis with *Gemella* after dental surgery that was successfully medically managed with vancomycin and gentamicin.

### Introduction

*Gemella*, a facultative anaerobic Gram-positive cocci normally found in the oral cavity, is a well-described but rare cause of subacute infective endocarditis. Its exact incidence may be underestimated because of difficulties isolating this organism. We describe a case of bioprosthetic aortic valve, late-onset endocarditis with *Gemella* that was treated with vancomycin and gentamicin initially, in a 59-year-old man who reported severe allergy to penicillin.

### Case Presentation

A 59-year-old Caucasian man with a history of a prosthetic bovine aortic valve 2 years prior presented to his primary care physician with fevers, night sweats, and abdominal pain for 3 weeks. He was sent to an academic medical center for further work up of the source of the fever. The patient received dental instrumentation without antibiotic prophylaxis 8 weeks prior to presentation. Physical exam showed a fever of 102 F, normal heart rate and blood pressure, a systolic ejection murmur, best heard on the 2<sup>nd</sup> left intercostal space, and a splinter hemorrhage on the right 5<sup>th</sup> fingernail. Laboratory examination revealed an elevated white blood cell count to  $15 \times 10^3/\mu\text{L}$ , c-reactive protein of 153 mg/L, and erythrocyte sedimentation rate of 37 mm/hr. Transesophageal echocardiography showed asymmetric thickening of the posterior aortic annulus adjacent to the ring with an irregular, shaggy texture and gelatinous characteristic; no root abscess, no vegetation, and an elevated gradient across the aortic valve. Electrocardiogram showed no PR prolongation. CT scan of the chest revealed a splenic infarct and confirmed the absence of an aortic root abscess. Blood inoculated using VersaTREK blood culture system initially showed Gram-positive cocci in clusters that

were later identified biochemically as *Gemella* by bioMerieux's API from 2 sets of blood culture bottles. Antimicrobial susceptibility testing using E-test was  $\leq 0.12 \mu\text{g/mL}$  for penicillin. Empiric treatment prior to organism identification was with vancomycin and gentamicin. The patient reported a penicillin allergy with a reaction of hives and anaphylaxis as a child. Blood cultures were negative 2 days after initiating antibiotics. Gentamicin was dosed at 1 mg/kg every 8 hours and levels were 0.5 - 2.6 mcg/mL and vancomycin was given at 1250 mg every 12 hours. Repeat blood cultures at 2 weeks post therapy were negative. Transthoracic echocardiography showed no valvular thickening and less valve gradient 2 weeks post therapy. Three weeks after antibiotic therapy, however, the patient developed elevated creatinine levels necessitating discontinuation of gentamicin. Therapy with vancomycin was continued for a total of 6 weeks without recurrence of symptoms.

### Discussion

*Gemella* spp. are Gram-positive, catalase-negative, facultatively anaerobic cocci that are usually found in the oral cavity, and also in the upper respiratory, gastrointestinal, and urinary tracts. *Gemella morbillorum* is the most common species but others such as *heamolysans* have been reported. They have been associated with abscess formation, sepsis, and endocarditis. Risk factors for *Gemella* infection include poor dentition, dental surgery, immunosuppression, advanced age, prosthetic implants, colon cancer, indwelling lines, and piercings [1,2]. This slow-growing and fastidious organism can cause subacute to chronic endocarditis in both native and prosthetic valves, and complications of congestive heart failure [3]. Thus far, at least 12 cases of prosthetic valve endocarditis have been reported in the literature [3-9]. It has been described in both mechanical ball valve and bovine prosthetic valves. Majority of reported cases of *Gemella* endocarditis were treated with a beta-lactam antibiotic, such as penicillin, ampicillin, ampicillin-sulbactam, and ceftriaxone. However, there have been cases that were successfully treated with vancomycin monotherapy, but these were in native valve endocarditis [10]. To our knowledge, our patient herein is the first case of prosthetic valve endocarditis to be successfully managed with vancomycin and gentamicin.

The guidelines for management of infective endocarditis by the American Heart Association and Infectious Diseases Society of America recommend that *Gemella spp.* should be treated like a nutritionally deficient streptococci or viridans group streptococci (VGS) until susceptibility testing indicates penicillin susceptibility and with minimum inhibitory concentrations below 0.12 µg/mL. In cases of penicillin resistance or intolerance, vancomycin, in combination with gentamicin, is recommended for 6 weeks [11]. This recommendation, however, is based on anecdotal case reports and extrapolation from studies on other VGS. Our patient was successfully cured, determined by clinical improvement as well as with repeat imaging and blood cultures weeks after treatment. We describe this case to further add support that, in the setting of severe penicillin allergy, vancomycin, with gentamicin, can be used successfully to treat *Gemella* PVE.

## References

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