Bacteriemia with Streptococcus cristatus – an oral bacterium causing a case of mild Bacteremia and “possible endocarditis”

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Abstract
Streptococcus cristatus is a member of the Mitis streptococcus group. Like other members of this group, it resides in mucosal surfaces of the oral cavity but rarely causes disease. We present a case of S. cristatus bacteremia and “possible endocarditis” (per the modified Duke criteria) in a 59-year-old male suffering from end-stage cryptogenic cirrhosis. To date, it is the fifth reported case of disease caused by the microbe, and the only other case involving ceftriaxone was successfully treated with ceftriaxone, whereas the only other case involving ceftriaxone resulted in treatment failure.

Case Presentation
- 59-year-old male with PMH of dental disease and cryptogenic cirrhosis complicated by hepatic encephalopathy
- Presented to the emergency department after experiencing increasing fatigue
- Admitted to the general practice unit due to a positive blood culture for Streptococcus cristatus
- Blood cultures were positive for Streptococcus cristatus sensitive to ceftriaxone, clindamycin, erythromycin, tetracycline, and vancomycin
- New-onset aortic regurgitation + positive blood cultures = “possible endocarditis”
- Despite the bacteremia, the patient had no SIRI criteria throughout his entire hospital stay
- TTE & TEE revealed new mild-to-moderate AR, but no other evidence of endocarditis (Figure 2)
- Blood cultures remained negative after initiating treatment
- Since then, 6 additional hospitalizations, involving similar presentation of but blood cultures remained negative

Microbiology
- Gram staining showed Gram positive cocci in pairs and chains were seen under microscope
- A-hemolytic growth in Blood and Chocolate agar but not in Mac agar
- Gram-staining showed Gram positive cocci in pairs and chains were seen under microscope
- Biochemical profile:
  - Negative for: Catalase, Mannitol, Urea Hydrolysis, Voges-Proskauer
  - Variable for: Arginine hydrolysis, Esulin and Sorbitol

Conclusion
This was a case of S. cristatus bacteremia with “possible endocarditis” in a 59-year-old male with a history of dental disease and end-stage cryptogenic cirrhosis. The case suggests an affinity for S. cristatus to infect the blood and the endocardium like the other two adult cases in the literature. However, the infection was much milder than the other 2 cases and was not confounded by co-infection with a secondary microbe, suggesting a lower virulence than previously thought.

Works Cited

Introduction
- Streptococcus cristatus is a member of the Mitis group
- Originally isolated from the human oral cavity in 1991
- Clinical data is extremely limited but appears to be capable of causing severe bacteremia and endocarditis

Literature Review

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Figure 1: Abdominal MRI showing severe hepatic cirrhosis, likely complicated by localized ascites

Figure 2: (A) Doppler video from the mid-esophageal long-axis view of a TEE showing new-onset mild-to-moderate AR. (B) Image showing two regurgitant jets (arrows) travelling from the aorta (Ao) into the left ventricle (LV); RV, right ventricle; LA, left atrium. (C) Structurally normal aortic valve (arrow) from the same view in standard ultrasound mode.

Discussion
- First adult case with a likely source identified i.e. patient’s oral cavity in the context of dental disease
- First adult case not confounded by co-infection
- First case in patient with past medical history of severe chronic disease
- S. cristatus not as virulent as suggested by previous reports
- Patient was successfully treated with ceftriaxone and cefoxitin
- Limitations: S. cristatus was not isolated from patient’s endocardium or from his oral cavity