

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



Camilo Guzman¹, Adi Zaccli¹, John Molinari¹
¹Wayne State University School of Medicine

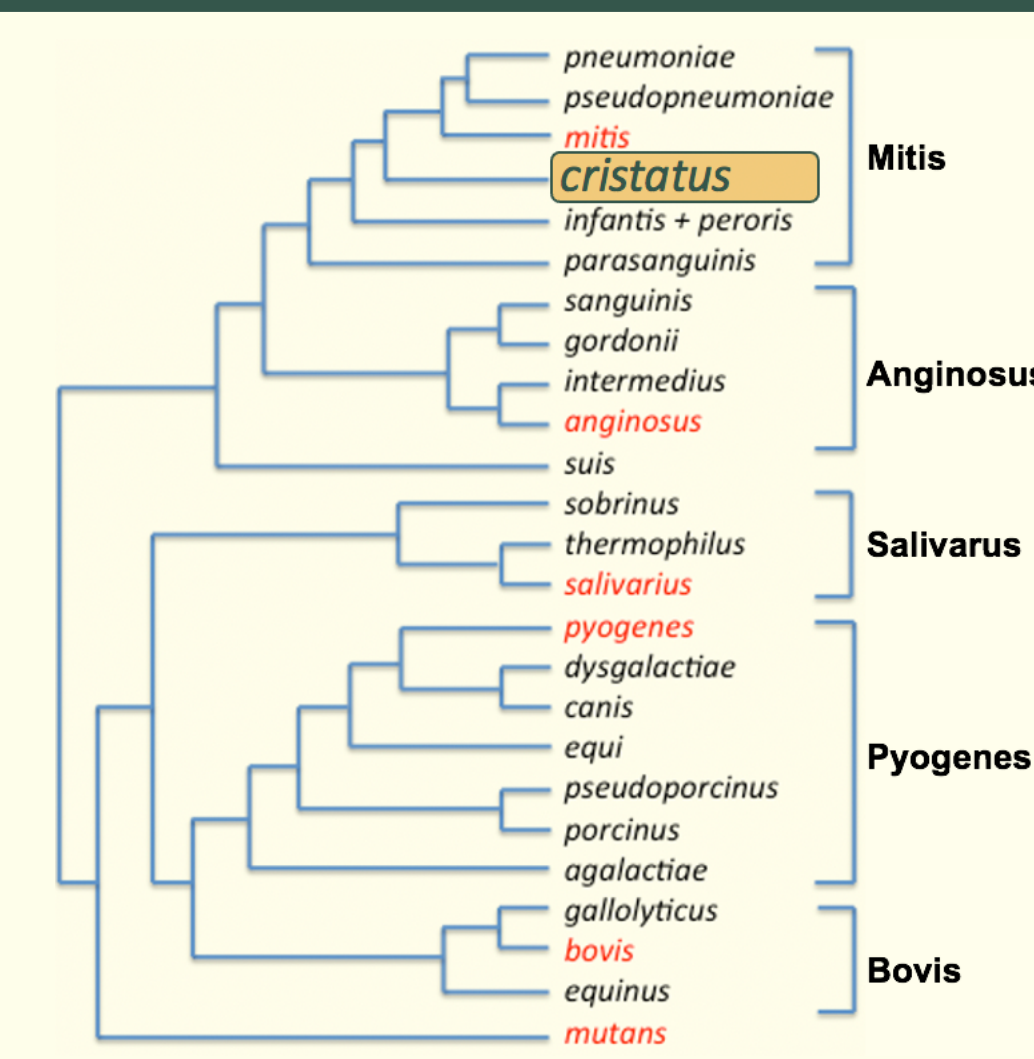


Abstract

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 first adult case in which *S. cristatus* was the sole microbe identified. Our patient had a history of dental caries and poor dentition, which were likely the source of the infection. Despite having end-stage liver disease, our patient did not suffer serious complications from the infection, which contradicts previous cases that resulted in severe endocarditis. Our patient was successfully treated with ceftriaxone, whereas the only other case involving ceftriaxone resulted in treatment failure.

Introduction

- Streptococcus cristatus is a member of the Mitis group
- Originally isolated from the human oral cavity in 1991¹
- Clinical data is extremely limited but appears to be capable of causing severe bacteremia and endocarditis



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 hemoglobin of 7.0 g/dL
- MRI confirmed severe hepatic cirrhosis, potentially with loculated ascites (**Figure 1**)

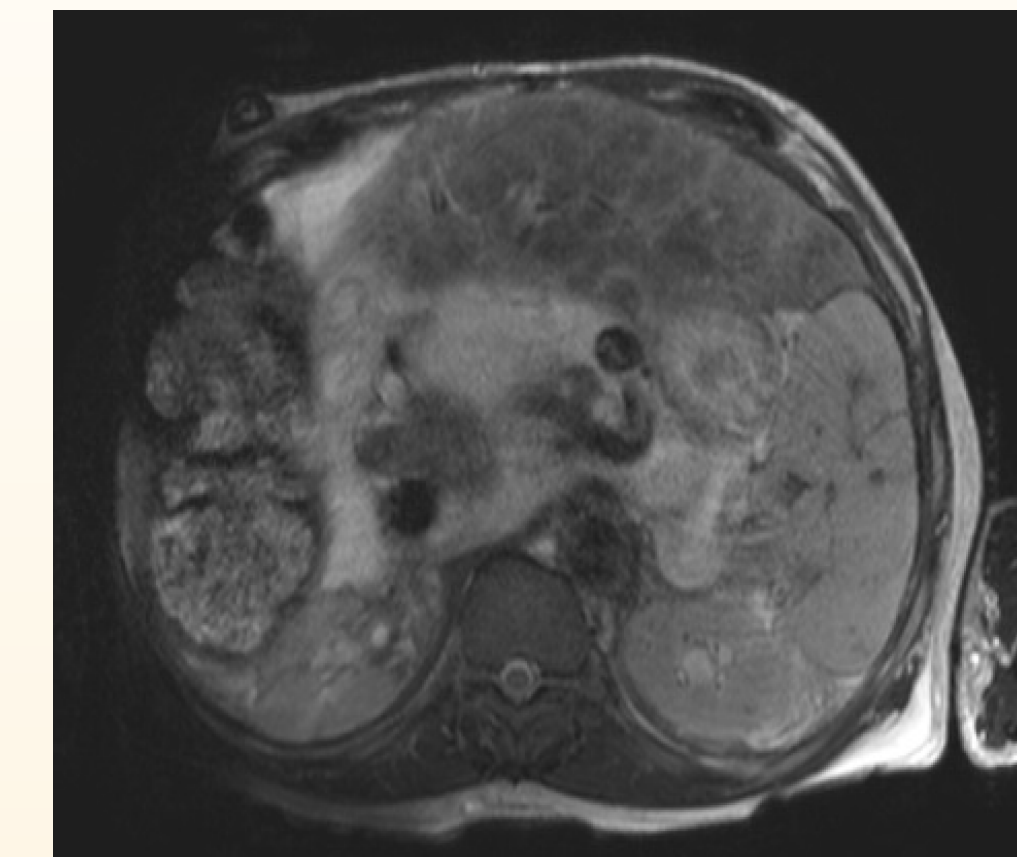


Figure 1: Abdominal MRI showing severe hepatic cirrhosis, likely complicated by loculated ascites

- Blood cultures were positive for Streptococcus cristatus sensitive to ceftriaxone, clindamycin, erythromycin, tetracycline and vancomycin
- TTE & TEE revealed new mild-to-moderate AR, but no other evidence of endocarditis (**Figure 2**)
- New-onset aortic regurgitation + positive blood cultures = “possible endocarditis”
- Despite the bacteremia, the patient had no SIRS criteria throughout his entire hospital stay
- Treated with a 2-week antibiotic regimen, involving 8 days of intravenous 2 g ceftriaxone transitioning to 6 days of oral 400 mg cefpodoxime after discharge. 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, Vogus-Proskauer
 - Variable for: Arginine hydrolysis, Esculin and Sorbitol

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 cefpodoxime
- Limitations: *S. cristatus* was not isolated from patient’s endocardium or from his oral cavity

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.

Literature Review

Study	Patient profile	Site of isolation	Co-infectants	Complications	Antibiotic treatment
Matthys, 2006 ²	37-year-old immunocompetent male	Blood	Streptococcus mitis	<ul style="list-style-type: none"> Cardiac vegetations Severe aortic insufficiency Post-operative AF 	Ampicillin + gentamycin
Matthys, 2006	3-year-old female with history of mental retardation and epilepsy	Blood	-	<ul style="list-style-type: none"> Cardiac vegetations Severe aortic insufficiency 	Amoxicillin-clavulanate
Matthys, 2006	52-year-old-male with a history of epilepsy	Resected aortic valve	Staphylococcus aureus	<ul style="list-style-type: none"> Severe aortic insufficiency Severe mitral insufficiency Mitral perforation Severe LV dilatation Left-sided heart failure Intubation 	<ul style="list-style-type: none"> Failed: ceftriaxone + metronidazole Succeeded: Ampicillin, gentamycin, piperacillin-tazobactam and vancomycin
Gupta, 2020 ³	15-day-old healthy male	Synovial fluid	-	-	Vancomycin

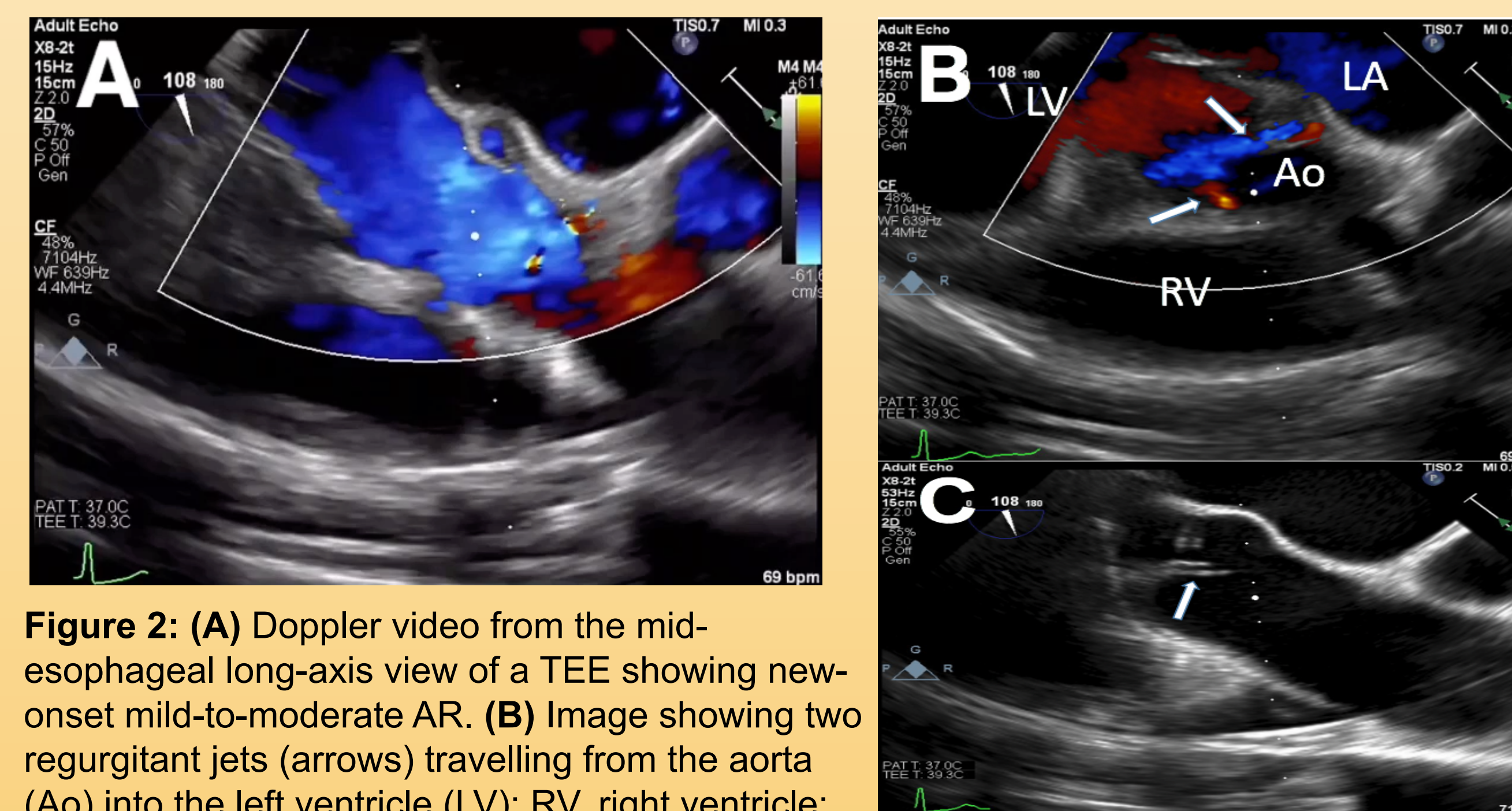


Figure 2: (A) Doppler video from the mid-esophageal long-axis view of a TEE showing new-onset mild-to-moderate AR. (B) Image showing two regurgitant jets (arrows) travelling from the aorta (Ao) into the left ventricle (LV); RV, right ventricle; LA, left atrium. (C) Structurally normal aortic valve (arrow)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

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