

Enterococcus casseliflavus bacteremic infection of a right atrial thrombotic mass: first reported case

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Dear Editor,

A unique episode of *Enterococcus casseliflavus* infected left atrial thrombotic mass is described and commented on the basis of the available literature in this field. Mobile enterococci, like *Enterococcus gallinarum* and *E. casseliflavus/flavescens*, usual inhabitants of poultry/pet gut, are infrequently transmitted to humans [9, 2, 5, 14, 7, 11, 3, 16]. Sparse case reports of human disease are present, usually in compromised and/or hospitalized hosts [4, 8, 10, 12, 15]. We herewith describe the first case of *E. casseliflavus* infection of a left atrial mass, associated with bacteremia.

A 58-year-old obese male with arterial hypertension was referred to the intensive care Cardiology Department of our Hospital due to worsening dyspnea. Atrial fibrillation-elevated pulse rate-heart failure were disclosed, together with a severe mitral insufficiency, and a ruptured heartstring. A compromised left ventricle with an Ejection Fraction (EF) <30% together with increased pulmonary pressure (50 mm Hg) were shown by a trans-esophageal heart ultrasonography. After medical stabilization with diuretics-beta-blocker-nitrates, our patient was moved to a centre of heart surgery to receive a mitral annuloplasty. During surgery, a thrombotic mass located in the left atrium was removed, and its microbiological culture allowed the growth of *E. casseliflavus* at high titre (>1 million CFU/mL). The strain tested susceptible to sulbactam-ampicillin, imipenem, gentamycin, teicoplanin, and linezolid. A combination i.v. therapy of full dose sulbactam-ampicillin plus gentamycin led to a normalization of serum C-reactive protein levels (72 mg/dL upon admission), and to a significant recovery of left ventricular function (EF 53%), after 4 weeks, at the time of discharge.

Reid KC reported the largest case series of *E. gallinarum/flavescens* bacteremia (20 episodes of bacteremia from 1992 to 1998) [9]. Among clinical presentations, bacteremia was also recorded by Pappas G [9]. Of notable interest the episodes of endophthalmitis [1], while a case of endocarditis with mixed flora has been also described [13]. Vancomycin-resistant *E. gallinarum* was responsible for an abscess in a patient with acute myeloid leukemia [6]. Prior gut colonization may represent a risk factor for subsequent clinical manifestations in the compromised host [3], and public hygiene measures may help in the containment of food-borne enterococcal infection. Like other enterococci, also *E. casseliflavus* shows an unpredictable *in vitro* antibiotic susceptibility profile, with a proportionally high rate of methicillin and vancomycin resistance,

mediated by plasmids/transposons or chromosomally-encoded [9, 2, 14, 7, 11, 3, 1]. Molecular biology techniques are already available from the veterinary medicine world, and should be implemented in clinical practice, with special attention devoted to a timely recognition of enterococcal strains with a poor sensitivity to beta-lactams and glycopeptides [7, 11, 3, 6].

References

1. Bao QD, Liu TX, Xie M, Tian X. Exogenous endophthalmitis caused by *Enterococcus casseliflavus*: A case report. *World J Clin Cases* 2019;7:3904-11.
2. Bourafa N, Abat C, Loucif L, et al. Identification of vancomycin-susceptible major clones of clinical *Enterococcus* from Algeria. *J Glob Antimicrob Resist* 2016;6:78-83.
3. Christidou A, Gikas A, Scoulica E, et al. Emergence of vancomycin-resistant enterococci in a tertiary hospital in Crete, Greece: a cluster of cases and prevalence study on intestinal colonisation. *Clin Microbiol Infect* 2004;10:999-1005.
4. Dave VP. Enterococcus endophthalmitis: clinical settings, antimicrobial susceptibility, and management outcomes. *Retina* 2020;40:898-902.
5. Goh SH, Facklam RR, Chang M, et al. Identification of *Enterococcus* species and phenotypically similar *Lactococcus* and *Vagococcus* species by reverse checkerboard hybridization to chaperonin 60 gene sequences. *J Clin Microbiol* 2000;38:3953-9.
6. Ishii Y, Ohno A, Kashitani S, et al. Identification of VanB-Type vancomycin resistance in *Enterococcus gallinarum* from Japan. *J Infect Chemother* 1996;2:102-5.
7. Koganemaru H, Hitomi S. Bacteremia caused by VanC-type enterococci in a university hospital in Japan: a 6-year survey. *J Infect Chemother* 2008;14:413-7.
8. Pappas G, Liberopoulos E, Tsianos E, Elisaf M. *Enterococcus casseliflavus* bacteremia. Case report and literature review. *J Infect* 2004;48:206-8.
9. Reid KC, Cockerill III FR, Patel R. Clinical and epidemiological features of *Enterococcus casseliflavus/flavescens* and *Enterococcus gallinarum* bacteremia: a report of 20 cases. *Clin Infect Dis* 2001;32:1540-6.
10. Ruess M, Sander A, Hentschel R, Berner R. *Enterococcus casseliflavus* septicaemia in a preterm neonate. *Scand J Infect Dis* 2002;34:471-2.
11. Simjee S, White DG, McDermott PF, et al. Characterization of Tn1546 in vancomycin-resistant *Enterococcus faecium* isolated from canine urinary tract infections: evidence of gene exchange between human and animal enterococci. *J Clin Microbiol* 2002;40:4659-65.
12. Stephens A, Sivapathasantharam C, James HK. Monocular loss of vision following an open tibial fracture: a case of *Enterococcus casseliflavus* endogenous endophthalmitis. *BMJ Case Rep* 2021;14:e241292.
13. Tomkowski WZ, Kuca P, Gralec R, et al. Management of purulent pericarditis. *Arch Monaldi Chest Dis* 2003;59:308-9.
14. Tuhina B, Anupurba S, Karuna T. Emergence of antimicrobial resistance and virulence factors among the unusual species of enterococci, from North India. *Indian J Pathol Microbiol* 2016;59:50-5.
15. Vasilakopoulou A, Vourli S, Siafakas N, et al. *Enterococcus casseliflavus* bacteraemia in a patient with chronic renal disease. *Infect Dis Rep* 2020;12:70-3.
16. Willey BM, Jones RN, McGeer A, et al. Practical approach to the identification of clinically relevant *Enterococcus* species. *Diagn Microbiol Infect Dis* 1999;34:165-71.