

## Enterococcus cecorum human infection, France

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### Abstract

*Enterococcus cecorum* is a bacterium of the intestinal tract of many domestic animals that is rarely reported as human pathogen. Here we report the first case of incisional hernia plate infection and the first case of urinary tract colonization due to *E. cecorum* from patients in Marseille, France.

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*Enterococcus cecorum* is a species that was first isolated from the intestines of poultry but also occurs in pigs, calves, ducks, cats and dogs [1]. It is an uncommon human pathogen, with only five reported clinical cases in the literature: one septicemia, two peritonitis, one thoracic empyema and one endocarditis [2–6]. Here we report a case of incisional hernia plate infection and a case of urinary tract colonization due to *E. cecorum* from patients in Marseille, France.

The first case comprised a 56-year-old man with Crohn diseases who was referred to our digestive surgery department in February 2012 for surgical management of an infectious syndrome with persistence of a purulent discharge from the parietal abdomen. At admission, the patient was afebrile; he had a pain in the right iliac fossa. The white blood cell count was normal ( $7.5 \times 10^9/L$ ), hemoglobin was 1270 g/L and C-reactive protein was elevated (1160 nmol/L). The patient underwent surgery with resection of a loop of the fistulized small intestine and ablation of the incisional hernia plate. The surgical samples of the incisional hernia plate cultures were positive for *Enterococcus cecorum*, which was identified by MALDI-TOF (matrix-assisted laser desorption ionization time-of-flight mass spectrometry). The

isolate was susceptible to amoxicillin, gentamicin 500, vancomycin, rifampicin and erythromycin. Antibiotic treatment with amoxicillin was initiated for 30 days. The patient was discharged 10 days after his surgery and was considered cured.

The second case comprised a 39-year-old woman who consulted with our nephrology department in December 2013 for her termly checkup after kidney transplantation in September 2012. At admission, the patient was afebrile, without any sign of infection. White blood cell count was normal ( $5.7 \times 10^9/L$ ); hemoglobin was 1550 g/L. A urine sample was collected; leukocyturia was 5 elements/mm<sup>3</sup>, and bacteriuria was  $10^4/mm^3$  with positive culture for *Enterococcus cecorum*, which was identified by MALDI-TOF. The isolate was susceptible to amoxicillin, gentamicin 500, vancomycin, teicoplanin, linezolid and nitrofurantoin. No antibiotic treatment was initiated for this asymptomatic urinary colonization.

*Enterococcus cecorum* is a bacterium rarely involved in human infections. The rarity of these infections can be explained by the fact that *E. cecorum* is difficult to identify correctly and has probably been underestimated by the past. In fact, conventional methods such as the VITEK 2 or API systems are less efficient than MALDI-TOF [7] and 16S RNA for identification of non-*faecalis* and non-*faecium* *Enterococcus* species [8]. The characteristics of patients with *E. cecorum* infections are outlined in Table 1. Close contact with animals was previously assumed to be a major risk factor for *E. cecorum* human infection [2,6]. No available data on our patients helped us learn whether they had exposure to domestic animals. Nevertheless, because food

**TABLE 1. Characteristics of patients with *Enterococcus cecorum* infection**

Patient no.	Age (years)/ Sex	Infection type	Underlying disease or condition	Bacteriology source for <i>E. cecorum</i>	Identification method	Antimicrobial therapy	Outcome	Study
1	44/F	Septicemia	Morbid obesity, malnutrition, skin lesions	Blood culture (2)	SDS-PAGE	Imipenem	Cure	Greub [2]
2	44/M	Peritonitis	Decompensated liver cirrhosis (alcohol related) with ascites, and hepatorenal syndrome, peritoneal dialysis	Dialysate	16S RNA	Cefazolin + gentamicin	Cure	De Baere [3]
3	60/M	Peritonitis	Decompensated liver cirrhosis (hepatitis B virus related) with ascites and hepatic encephalopathy	Blood culture (1), ascites fluid	16S RNA	Cefoxitin	Died	Hsueh [4]
4	44/M	Empyema thoracis	Decompensated liver cirrhosis (Wilson disease related) with ascites	Pleural fluid	16S RNA	Cefotaxime	Cure	Woo [5]
5	58/M	Infectious endocarditis	No anterior valvulopathy, teeth extraction 5 weeks before admission	Blood culture (1), aortic valve	16S RNA	Amoxicillin + gentamicin	Cure	Ahmed [6]
6	56/M	Incisional hernia plate infection	Crohn disease, stenosing and fistulizing	Incisional hernia plate	MALDI-TOF	Amoxicillin	Cure	This study
7	39/F	Urinary tract colonization	Kidney transplantation	Urine culture	MALDI-TOF	None	Cure	This study

MALDI-TOF, matrix-assisted laser desorption ionization time-of-flight analysis; SDS-PAGE, sodium dodecyl sulphate polyacrylamide gel electrophoresis mass spectrometry.

animals can be a reservoir of *E. cecorum* [1], we hypothesize that the infections originated from a food-mediated acquisition of the pathogen, probably facilitated by the immunosuppressive drug intake of the two patients. *E. cecorum* was susceptible to all the antibiotics tested, including amoxicillin and glycopeptides (vancomycin, teicoplanin), with a low level of resistance to gentamicin. These two cases confirm that *E. cecorum* can be responsible for human infections.

### Conflict of Interest

None declared.

### References

- [1] Devriese LA, Hommez J, Wijffels R, Haesebrouck F. Composition of the enterococcal and streptococcal intestinal flora of poultry. *J Appl Bacteriol* 1991;71:46–50.
- [2] Greub G, Devriese LA, Pot B, Dominguez J, Bille J. *Enterococcus cecorum* septicemia in a malnourished adult patient. *Eur J Clin Microbiol Infect Dis* 1997;16:594–8.
- [3] De Baere T, Claeys G, Verschraegen G, Devriese LA, Baele M, Van Vlem B, et al. Continuous ambulatory peritoneal dialysis peritonitis due to *Enterococcus cecorum*. *J Clin Microbiol* 2000;38:3511–2.
- [4] Hsueh PR, Teng LJ, Chen YC, Yang PC, Ho SW, Luh KT. Recurrent bacteremic peritonitis caused by *Enterococcus cecorum* in a patient with liver cirrhosis. *J Clin Microbiol* 2000;38:2450–2.
- [5] Woo PC, Tam DM, Lau SK, Fung AM, Yuen KY. *Enterococcus cecorum* empyema thoracis successfully treated with cefotaxime. *J Clin Microbiol* 2004;42:919–22.
- [6] Ahmed FZ, Baig MW, Gascoyne-Binzi D, Sandoe JA. *Enterococcus cecorum* aortic valve endocarditis. *Diagn Microbiol Infect Dis* 2011;70:525–7.
- [7] Seng P, Drancourt M, Gouriet F, La Scola B, Fournier PE, Rolain JM, et al. On-going revolution in bacteriology: routine identification by matrix-assisted laser desorption ionization time-of-flight mass spectrometry. *Clin Infect Dis* 2009;49:543–51.
- [8] Fang H, Ohlsson AK, Ullberg M, Ozenci V. Evaluation of species-specific PCR, Bruker MS, VITEK MS and the VITEK 2 system for the identification of clinical *Enterococcus* isolates. *Eur J Clin Microbiol Infect Dis* 2012;31:3073–7.