

Leclercia adecarboxylata isolation from blood cultures: an emerging pathogen in immunocompromised hosts?

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ABSTRACT:

— *Leclercia adecarboxylata* is a Gram-negative rod of the *Enterobacteriaceae* family. It has been first described by Leclerc in 1962 and has been rarely isolated in the context of human infections in single cases or small case reports. We describe a case of a polymicrobial infection, including *Leclercia adecarboxylata*, in an immunocompromised man with positive blood cultures and a phlebitis of the right arm.

— **Keywords:** *Leclercia adecarboxylata*, Phlebitis, Immunocompromised host.

BACKGROUND

L. adecarboxylata is an aerobic, Gram-negative rod, usually isolated as a pure culture in immunocompromised hosts or in polymicrobial infections in immunocompetent patients. *L. adecarboxylata* is a member of the family *Enterobacteriaceae* and it is widely distributed in food and water, as part of the gut flora of some animals and human¹. It has also been isolated from food, water and other environmental sources. Recently, Keren et al² reported a case of foot cellulitis caused by *L. adecarboxylata* in a surfer. This supports the association with infections following injuries in water environment. The most common co-infecting organisms include: *Enterococcus spp.*, *Staphylococcus aureus* and *Escherichia coli*^{1,3,4}.

CASE REPORT

A 50-year-old man, affected by HIV-HCV co-infection, on treatment with lopinavir/ritonavir, emtricitabine and tenofovir was admitted on July 25th to our Infectious Diseases ward for nausea, lost weight and fever, unresponsive to antimicrobial therapy (Levofloxacin 750 mg/die per os). At last contact CD4+ T-lymphocytes were 683 cells, CD4/CD8 ratio 0.5

and HIV-RNA 4943 copies/mL. He was treated for pulmonary tuberculosis for 6 months in 2006 (CDC '93 = C3). At admission body temperature was 36.7°C and blood exams showed WBC 15.640 cells/mcL (nv 4,000-10,800 cells/mcL) and AST/ALT 518/84 UI/L (nv 13-51/15-47). He underwent abdominal CT scan showing a disseminated HCC, confirmed by liver biopsy (pseudoglandular hepatocellular carcinoma). Chest X-ray showed an apical pulmonary opacification in the right lung and sputum culture identified pansensitive *Mycobacterium tuberculosis*. Oncologist consultant excluded treatment for HCC, considering the local invasion and treatment with isoniazid, rifabutin, ethambutol and pyrazinamide was started.

On August, 2nd the patient presented a right arm phlebitis (edema with erythema) (Figure 1), where an intravenous access was obtained at admission to administrate therapy. Four days later, he presented fever and blood samples were collected for culture. Blood exams were performed showing an increased CRP (33.2 mg/L, nv <5.0 mg/L) and 2 isolates were identified from blood cultures: *Enterococcus faecalis* and *Leclercia adecarboxylata* sensitive to most antibiotics, as shown in Figure 2. The intravenous catheter was removed and piperacillin/tazobactam 4.5 g tid was started. An X-ray and US excluded both bone involvement and abscesses. After the beginning of antimicrobial therapy, the patient



Fig. 1. Right arm phlebitis.

presented prompt defervescence, the signs of phlebitis resolved in the next 3 days and piperacillin/tazobactam was stopped after 8 days.

DISCUSSION

L. adecarboxylata has been reported as a causative agent of skin infections after injuries in water environment, as an opportunistic pathogen in immunocompromised hosts or simply as a contaminant. Despite its apparent ubiquity, *L. adecarboxylata* has been identified, as a human pathogen, only in 26 case reports, the majority of whom in immunocompromised patients. There may be several explanations for the lack of reports of *L. adecarboxylata*, the first could be the inability of automated diagnostic systems to distinguish *L. adecarboxylata* from other *Enterobacteriaceae* species. *L. adecarboxylata* shares many biochemical features with *E. coli*⁵. A further reason could be that *L. adecarboxylata* is usually related to non-life-threatening infections and therefore clinicians do not report single cases or case series. *L. adecarboxylata* has a broad sensitivity to the majority of antibiotics (beta-lactams, quinolones, azithromycin, aminoglycosides, and tetracyclines)^{1,4}, as our isolate (Table 1), even if resistant strains have been reported⁵. In the present case, *L. adecarboxylata* was isolated together with *E. faecalis* from blood cultures during fever in arm phlebitis in an immunocompromised host. In fact the patient, despite high value of CD4+ T-lymphocytes, was diagnosed with both advanced stage HCC and *Mycobacterium tuberculosis* pneumonia. *L. adecarboxylata* has been involved in the present clinical scenario and the isolation of *Enterococcus faecalis* provides additional evidence supporting the association between these bacteria^{1,3,4,6}. Of note, this is an uncommon isolation in our Microbiology Laboratory, but it will be likely more often identified with new diagnostic techniques.

Table 1. Antibiotic sensitivity of isolate. S: sensitive; I: intermediate; R: resistant.

Antibiotics	(MIC mcg/ml)		Sensitivity
	<i>Leclercia adecarboxylata</i>	<i>Enterococcus faecalis</i>	
Amikacin	≤2	S	
Amoxicillin/ Clavulanic acid	4	S	S
Ampicillin			≤2 S
Ampicillin/Sulbactam			≤2 S
Azithromycin			R
Cefepime	≤1	S	
Cefotaxime	≤1	S	R
Ceftazidime	≤1	S	
Ceftriaxone			R
Cefuroxime/Axetil			≥64 R
Ciprofloxacin	≤0.25	S	
Clarithromycin			R
Clindamycin			≥8 R
Colistin	≤0.5	S	
Erythromycin			≥8 R
Ertapenem	≤0.5	S	
Fosfomycin	≥256	R	
Gentamicin	≤1	S	
Imipenem	≤0.25	S	≤1 S
Linezolid			2 S
Meropenem	≤0.25	S	
Piperacillin/Tazobactam	≤4	S	
Teicoplanin			≤0.5 S
Tigecycline	≤0.5	S	≤0.12 S
Tobramycin	S		
Trimethoprim/ Sulfamethoxazole	≤20	S	≥320 R
Vancomycin			1 S

CONFLICT OF INTERESTS:

The Authors declare that they have no conflict of interests.

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