

## Severe Sepsis Due to *Raoultella Planticola*

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**Abstract:** *Raoultella planticola* usually invaded immune compromised patients and has been considered a relatively harmless Gram-negative bacteria. We reported a case of a women with a new pancreatic cancer diagnosis that abruptly develop severe sepsis. A *Raoultella planticola* was yielded in blood cultures. This case suggest *Raoultella* as pathogen causing life threatening community acquired infection.

**Keywords:** *Raoultella Planticola*, Infection, Cholangitis, Severe Sepsis

### Introduction

Severe sepsis due to *Raoultella planticola* is a quite rare and usually nosocomial acquired infection.

We hereby report an illustrative case of bacteremic life-threatening infection due to community-acquired *Raoultella planticola*.

### Case Report

In April 2015 a 55-year-old woman visited our hospital with asymptomatic jaundice.

She had a past medical history significant for Sjogren's syndrome and iodine contrast allergy.

She denied being on any regular medications.

After 24 h the clinical status changed: On clinical examination the patient satisfied two criteria for systemic inflammatory response syndrome (BT 39° and tachycardia of 110 bpm) and appeared confused.

The performed abdominal examination did not show any significant abnormality; neither rigor nor neurological defect was detected.

Laboratory test showed an increased white cell count ( $2,4 \times 10^3/\text{microL}$ ), C-reactive protein  $150 \text{ mg L}^{-1}$ , bilirubin  $10 \text{ mg dL}^{-1}$ , alkaline phosphatase  $180 \text{ U L}^{-1}$ , alanine amino transferase  $58 \text{ U L}^{-1}$ , gamma-glutamyl transferase  $140 \text{ U L}^{-1}$ .

The abdominal ultrasonography showed a pancreatic lesion and dilated intrahepatic ducts; a biliary stent was inserted and the CT-PET confirmed the solid lesions with a suspect lymph node at the hilum (low standardized uptake values).

Surgical specimen confirmed the diagnosis of pancreatic mucinous adenocarcinoma.

About 48 h after admission, two blood culture specimens with drawn before procedures yielded a sensitive to every antibiotic *Raoultella planticola*. Urine remained negative. The patient was empirically treated with ceftriaxone 1gr/die in the suspect of cholangitis; after susceptibility testing, antimicrobial therapy was de-escalated for 14 days with good clinical response.

### Discussion

*R. planticola* is a Gram-negative anaerobic bacillus belonging to the Enterobacteriaceae family; it was previously described as *Klebsiella planticola*, but in 2001 was reclassified as a new genus.

Members of the *Raoultella* genus include *Raoultella electrica*, *R. terrigena*, *R. planticola* and *R. ornithinolytica*.

*R. planticola* has been reported as clinical isolates in human sputum, stools, wounds and urine, but it is a rare cause of invasive human infection (Teo *et al.*, 2012).

A complication in identifying *R. planticola* in humans is that it is difficult to isolate the pathogen in culture and that it can be easily mistaken for other genera within the family Enterobacteriaceae (Lam and Salit, 2014).

The infection is frequently associated with a history of invasive procedures and an immune compromised status. The major underlying disease has been found to be malignancy.

The most common primary sites of infection are the biliary and urinary tracts (Teo *et al.*, 2012).

The percentage of bacteremia reported in literature varies from 0.3% (as described in a recent review occurring over a 4-year period) (Chun *et al.*, 2014) to

9.4% of cases, as reported in a recent analysis over a 5-year period (Boattini *et al.*, 2016).

Most strains showed susceptibility to cephalosporin, as well as to carbapenem, although nosocomial emergence of Carbapenem-Resistant *R. Planticola* (CRRP) has recently been highlighted (UTI in females). No resistance to fluoroquinolone agents has been observed (Chun *et al.*, 2014).

The majority of patients survive the infection: Since its identification in 1984 only 17 patients with severe sepsis have been reported. Among these cases only one was, like ours, community-acquired, while the others were nosocomial (Ershadi *et al.*, 2014).

In the cases where the patient did not survive, either blood cultures revealed evidence of polymicrobial infection or *Raoultella planticola* was found to be multidrug-resistant, due to its carrying the carbapenem-resistant bla KPC gene (Ershadi *et al.*, 2014).

Given the difficulty in isolating the described pathogen in culture, the real incidence of this life-threatening infection is surely underestimated. The above-mentioned case is, in fact, the second reported in literature.

## Conclusion

Clinicians should be aware that *Raoultella planticola* has the potential to cause severe infections, even when community-acquired.

## Author's Contributions

**Chiara Casarsa:** Contributed to the writing.

**Filippo Mearelli:** Contributed to the writing and the reviewing.

**Gianni Biolo:** Contributed to the reviewing and editing.

## Ethics

This article is original and contains unpublished material. The corresponding author confirms that all of the other authors have read and approved the manuscript and no ethical issues involved.

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