

Case Report

A Case of *Raoultella Ornitholytica* Urinary Infection

Aye San^{1*}, Peter Stride²

¹Advanced trainee in general and acute medicine, Greenslopes Private Hospital, Brisbane, Australia

²Consultant physician, School of Medicine, University of Queensland, Brisbane, Australia

***Corresponding author:** Aye San, Advanced trainee in general and acute medicine, Greenslopes Private Hospital, 111 Newdegate Street, Greenslopes, QLD 4120, Australia. Tel: +61-733947111; Email: aye.san@outlook.com

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Clinical presentation

A 75-year-old lady was admitted to the hospital with a 3-day history of right loin pain, dysuria and frequency. Her medical history included type 2 diabetes mellitus, oestrogen receptor positive breast cancer with multiple pulmonary metastases, paroxysmal atrial fibrillation, hypertension, excessive alcohol use and gastro-oesophageal reflux disease. Laparoscopic cholecystectomy had been performed in 2014 for gallstone pancreatitis. She denied recent exposure to fresh or sea water, or fish. Current therapy was amlodipine 10 mg daily, metformin 1 g daily, pantoprazole 40 mg daily, perindopril 2 mg daily, rosuvastatin 5 mg daily, amoxicillin 875 mg + clavulanic Acid 125 mg twice daily and Insulin Glargine 24 units nightly. On examination she was in mild discomfort with pulse rate 55/min, temperature 36.6°C, blood pressure 145/75 mmHg. There was tenderness in the right loin.

Investigations

Hb 116 g/L, WBC $12.9 \times 10^9/L$ (Neutrophils 8.85%) CRP 7.8 mg/L, Glucose 10.1 mmol/L, Na 134 mmol/L. Urine microscopy showed leucocytes $500 \times 10^6/L$, erythrocytes $50 \times 10^6/L$, epithelial cells $<10 \times 10^6/L$. Urine culture grew *Raoultella ornitholytica* $> 10^8/L$, sensitive to amoxicillin/clavulanic acid, cefazolin, trimethoprim and gentamicin but resistant to amoxicillin. Ultrasound of the kidneys and urinary tract did not show any obstruction or significant abnormalities.

Treatment

She was treated ampicillin and gentamicin on admission, changing to ceftriaxone on receipt of the urine culture result. Within forty-eight hours, CRP fell to <2.0 mg/L, and WBC fell to $8.3 \times 10^9/L$. She remained afebrile throughout the admission. She made an uneventful recovery.

Discussion

We report an uncommon case of *Raoultella ornitholytica* urinary infection with a review of the associated clinical problems. The genus *Raoultella* is composed of gram-negative aerobic non-motile capsulated rods named after the French bacteriologist Didier Raoult, which are most effectively identified after the introduction of Matrix-Assisted Laser Desorption/Ionization Time-Of-Flight Mass Spectrometry (MALDI-TOF MS) [1]. *Raoultella ornitholytica* has been isolated from fish intestines. It can cause the histamine fish poisoning or scombroid syndrome characterized by facial flushing, dizziness, vomiting, diarrhoea, headache, burning of the mouth, urticaria, and generalized pruritus [2,3].

The 2013 survey of bacteraemia by The Australian Group on Antimicrobial Resistance found only 15 cases of *Raoultella* bacteraemia in a total of 3493(0.3%) positive blood cultures [4]. When Solak [5] in 2011 reported a case of a diabetic foot ulcer infected with *Raoultella* sensitive to ertapenem, levofloxacin, and tigecycline it was then only the fourth reported case of infection with this microorganism. The patient also had diabetes and chronic renal disease.

Nakasone [6] reported a urinary infection in a 73-year-old lady on methotrexate therapy for rheumatoid arthritis, and noted the problem of *Raoultella* expressing beta lactamases, causing antibiotic resistance. In 2015 Chun [7] in South Korea reported 16 cases of *Raoultella* bacteraemia in a single center over a ten-year period, 15 of whom had advanced malignant disease, and seven patients died. Seng [8] reported 112 cases of *Raoultella* infection found in Southern France over an 11-year period, with frequently associated serious comorbidities, invasive procedures and antibiotic resistance causing a five percent fatality rate.

Due to production of class A beta-lactamases, *R. ornitholytica* is frequently reported to be resistant to ampicillin [8]. There have been reports of carbapenemase-positive strains [8-10]. More recently the emergence of colistin-resistance [11] was identified in vegetables in China but no human infections have been reported so far. In summary *Raoultella ornitholytica* is an uncommon but potentially fatal bacterium, being discovered with increasing frequency, particularly in those with serious comorbidities including diabetes and cancer. In some cases, it poses significant problems of antibiotic resistance.

Acknowledgment

Verbal permission was given to publish this deidentified case. She has recently been lost to follow-up, failing to attend the oncology clinic for her last two appointments.

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