Community-acquired *Chryseobacterium indologenes* in an immunocompetent patient

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**Introduction:** *Chryseobacterium indologenes* is a rare pathogen in the human microflora. Nearly half of the published cases refer to nosocomial infections, and the vast majority of patients had underlying immunocompromising conditions. The clinical evolution is usually conducive to antibiotic treatment, but despite being low-virulent bacteria, infections have often been associated with a high mortality rate as a result of the increased resistance to antibiotics, and the absence of a gold standard for management.

**Case presentation:** A 60-year-old male immunocompetent patient was admitted for acute onset of fever, abdominal pain and dysuria. Blood and urine cultures were positive for multiresistant *C. indologenes*, susceptible only to ciprofloxacin. Clinical improvement was observed on ciprofloxacin antibiotic therapy.

**Conclusion:** This is, to the best of our knowledge, the first Portuguese report of community-acquired *C. indologenes* bacteraemia in an immunocompetent patient, a rare disease agent with low pathogenicity but capable of causing severe illness.

**Keywords:** *Chryseobacterium indologenes*; ciprofloxacin; immunocompetent; multidrug resistance; urinary tract infection.

**Case report**

A 60-year-old male patient was hospitalized in January 2013 for acute onset of fever, abdominal pain, nausea and dysuria. He had a non-characterized chronic neurodegenerative disease causing symmetrical lower limb weakness without neurogenic bladder and therefore used a wheelchair for locomotion. There were no other medical conditions, i.e. diabetes or immunosuppression, no previous medication and no allergies. He was a non-smoker and non-drinker. There was no recent history of hospital admission, intravenous antibiotic therapy, indwelling catheters, or invasive procedures or devices.

At admission, he was alert, had stable vital signs (blood pressure 113/65 mmHg, heart rate 88 bpm, RR 18 cp), and was febrile (38.1 °C) and dehydrated. Cardiopulmonary examination was unremarkable; there was lower abdominal tenderness and a negative Murphy sign and no peripheral oedema. Blood tests revealed leukocytosis (30 × 10⁹ l⁻¹ with 94.5 % neutrophils), elevated C-reactive protein (39 mg dl⁻¹), an erythrocyte sedimentation rate of 40 mm in the first hour, and normal liver function tests and renal function (urea 27 mg dl⁻¹ and creatinine 0.2 mg dl⁻¹), hypokalaemia (3 mmol l⁻¹), with blood ionogram being otherwise within the normal range (sodium, calcium, phosphorus and magnesium).
Because of the urinary tract symptoms despite the apparently normal urinalysis, the patient was started empirically on cefuroxime after blood (3 and urine samples were collected for cultures. After 48 h, C-reactive protein was down to 7.4 mg dl$^{-1}$ and there was no leukocytosis or neutrophilia. On day 4, blood and urine cultures came back positive for multiresistant \textit{C. indologenes}, susceptible only to ciprofloxacin (resistant to piperacillin-tazobactam, ceftazidime, carbapenems, aztreonam, gentamicin, amikacin, tobramycin and colistin). The treatment was adjusted accordingly. Matrix-assisted laser desorption/ionisation-time of flight mass spectrometry was used to identify the bacteria (the reliability of identification was in accordance with the manufacturer’s instructions, with a score above 2.0), as molecular methods were not available in our laboratory. The laboratory used the breakpoints for \textit{Pseudomonas aeruginosa} accordingly to Clinical and Laboratory Standards Institute guidelines.

Urological workup identified an enlarged prostate (benign prostatic hyperplasia). Tests were negative for human immunodeficiency virus types 1 and 2. The patient completed a 2-week ciprofloxacin course and evolution was favourable, with complete remission of the symptoms.

**Discussion**

\textit{C. indologenes} is the main species of the genus \textit{Chryseobacterium} (Chen et al., 2012). It is a Gram-negative bacillus (Reynaud et al., 2007; Lin et al., 2010; Chou et al., 2011; Bhuyar et al., 2012) and a rare pathogen in the human microflora, although it is widely distributed in nature (Chen et al., 2012). According to the SENTRY Antimicrobial Surveillance Program, \textit{Chryseobacterium} spp. represent 0.03 % of the total isolates and account for 0.03 % (50 out of 1553811) of all bacteremia cases (Sakurada, 2008). Reported infections also include ventilator-associated pneumonia and urinary tract infections, and they are often associated with a high mortality rate (Bhuyar et al., 2012; Souza de Souza et al., 2012).

Nearly half of the published cases refer to nosocomial infections, and the vast majority of patients had underlying immunocompromising conditions (Bhuyar et al., 2012). Of all the previous reports, the main differences with the present case were the immunosuppression state, the antibiotic susceptibility and the mortality rate (Lin et al., 2010; Chou et al., 2011; Chen et al., 2012), and, with the exception of one report in the literature (Reynaud et al., 2007), the present case is the only incidence of bacteremia reported in an immunocompetent patient and that was only community acquired.

\textit{C. indologenes} is intrinsically resistant to carbapenems and cephalosporins due to its production of molecular class A \(\beta\)-lactamase and class B carbapenem-hydrolysing \(\beta\)-lactamase/metallo-\(\beta\)-lactamase. According to SENTRY, ciprofloxacin showed activity of around 85 % against \textit{C. indologenes}(Sakurada, 2008), and in a recent study, piperacillin-tazobactam was no longer effective (Chen et al., 2012).

In conclusion, although the clinical significance of \textit{C. indologenes} remains uncertain, infections may be community acquired and occur in the absence of an underlying condition. Thus, there is a need for proper identification of this minor virulent but resistant organism, as prognosis can be favourable if antibiotic therapy is based on correct agent identification and susceptibility testing.

**References**


