**Chryseobacterium indologenes infection: a case report**

_Infecção por Chryseobacterium indologenes: relato de um caso_

**INTRODUCTION**

The genus _Chryseobacterium_ encompasses six species previously called _Flavobacterium_. These are aerobic, gram-negative, non-fermenting, oxidase-positive bacilli.\(^1\)

_Chryseobacterium indologenes_ is found in the soil, plants, food, sweet and salt and potable water. In the hospital environment is found in the water systems, equipments surface and wet medical devices (such as ventilators, tubes, and humidifiers, among others).\(^2\)

In 1993 the first _Chryseobacterium indologenes_ strain was isolated from the tracheal aspirate of a patient with ventilator-associated pneumonia, although this organism pathogenicity was not clear. Nevertheless, it is already known that biofilm and proteases production are important mechanisms involved in the pathogenesis.\(^3\) _Chryseobacterium_ species rarely cause disease in humans.\(^4\) However, sparse cases reports are reported both in children and adults.\(^1,4-10\) The associated infections involve the blood stream, pneumonia, intra-abdominal and surgical wounds\(^5,8-10\) and the main comorbidities are diabetes mellitus and oncological diseases.\(^2,3\)

This case report is from an in-patient (January to March 2009) from the ICU of the Hospital de Base de São José do Rio Preto - Faculdade de Medicina de São José do Rio Preto. An informed consent form signature was not requested as personal information will not be identified.

**ABSTRACT**

We report a case of _Chryseobacterium indologenes_ infection. The agent was isolated from the tracheal aspirate in a patient on prolonged mechanical ventilation. Epidemiological, microbiological and therapeutic aspects are discussed. The patient was a 30 years-old male, admitted with idiopathic medullary aplasia and febrile neutropenia, referred to the intensive care unit with severe bronchopneumonia and sepsis of pulmonary origin. Most of the previously reported _Chryseobacterium indologenes_ infection cases were associated with severe diseases and polymicrobial infections. The antibiotic treatment for _Chryseobacterium infections_ is not yet established.

**Keywords:** _Chryseobacterium_; Cross infection; Sepsis; Neutropenia; Case reports
CASE REPORT

A Caucasian 30 years-old male patient was admitted in the hospital on January 13, 2009 diagnosed idiopathic medullary aplasia and febrile neutropenia. He had high fever not resolved with antipyretics followed by dizziness and dyspnea. He had no cough, expectoration, or other symptoms related to the gastrointestinal or genitourinary tracts. The physical examination identified that the patient was conscious, oriented, with normal cardio-pulmonary and abdominal examinations.

Laboratory tests: hemoglobin 7.2 g/dL; hematocrit = 21%; leucocytes = 900; platelets 4,000; sodium = 135 mEq/L; potassium = 3.6 mEq/L; C-reactive protein = 10.9 mg/dL. Negative urine culture, and two blood cultures with cephepime-sensitive *Escherichia coli*. Imagery tests, abdomen ultrasound, chest computed tomography and echocardiogram failed to show pathologic alterations. Initial empirical antibiotic-therapy was started with ceftazidime and amikacin.

In the 3rd day in the hospital ward, blood cultures guided treatment with cephepime was started replacing the previous scheme of antimicrobial therapy. The patient remained febrile and non-responding to the therapy. In the 34th hospital day anti-lymphocitic immunoglobulin (ALG) was started.

In the 40th day of hospitalization the patient was referred to the intensive care unit (ICU) due to acute respiratory failure. Severe worsening of the pulmonary infiltrates were noticed. Vancomycin, imipenem and anphotericin B were started after admission in the ICU. Despite the treatment, pulmonary infiltrates and respiratory function deteriorated needing mechanical ventilation after 3 days in the ICU. Tracheal aspirate was collected, growing *Chryseobacterium indologenes* sensitive to cephepime, ceftazidime, ciprofloxacin, and sulphamethoxazole-trimethoprim, being then restarted cephepime. At the same time a blood culture was positive for *Candida krusei*, and therapy with voriconazole was started.

In the ICU the patient remained on mechanical ventilation for a long period. On the 55th day of hospitalization, while on progressive weaning from mechanical ventilation, he presented a sudden massive enterorrhagia followed by refractory shock and death.

DISCUSSION

Most of *Chryseobacterium indologenes* infections are related to invasive devices during hospital stay.\(^1\) In this patient, this was a hospital-acquired pneumonia. The best choice of an antimicrobial agent to treat a *Chryseobacterium indologenes* nosocomial infection is questionable, and for several reasons the antimicrobial therapy effectiveness is also difficult to evaluate. First, the cutoff point for an appropriate minimal inhibitory concentration (MIC) for defining *Chryseobacterium indologenes* sensitivity/resistance was not approved by the National Committee for Clinical Laboratory Standards (NCCLS). Second, almost the entire penicillins, first and second generation cephalosporins and aminoglycosides have been proven to have weak *in vitro* activity against *Chryseobacterium* spp (including *Chryseobacterium indologenes*).\(^1\) According to the SENTRY Antimicrobial Surveillance Program results, the best agents against *C. indologenes* are quinolones (gatifloxacin and levofloxacin) and sulphamethoxazole-trimethoprim (≥ 95% sensitivity), followed by piperacillin-tazobactam (90% sensitivity). Ciprofloxacin, cephepime, ceftazidime, piperacillin and rifampicin were shown to have reasonable activity against this agent (85% sensitivity).\(^2,3\) Third, there are reports of discrepancies between the agar test dilution standard and the disc diffusion are routinely used for testing *Chryseobacterium* spp sensitivity to several antimicrobials prescribed.\(^1\) In this case, disc diffusion antimicrobial sensitivity testing was performed.

In this case, the option for cefepime was based on the antibiogram as there were reports of more than 80% of the isolates to be sensitive to this drug.\(^2\) Nevertheless, the response to the chosen therapy was difficult to evaluate, as the patient concomitantly had fungal blood stream infection. Enterorrhagia and hypovolemic shock were the cause of death. Most of the reported cases of *Chryseobacterium indologenes* infections occurred in association with critical diseases and polymicrobial infections what complicates the evaluation of the adequacy and appropriateness of the antimicrobial therapy used against this agent.

CONCLUSION

The majority of the cases reported in the literature with infections caused by *chryseobacterium indologenes* had critical diseases and, frequently, polymicrobial infections. Microbiological and epidemiological studies are warranted to clear the clinical importance of this agent in the chronic critically ill patient.
RESUMO

Relatamos um caso de infecção por Chryseobacterium indologenes, presente na cultura de aspirado traqueal em paciente sob ventilação mecânica invasiva, revisando os aspectos epidemiológicos, microbiológicos e o tratamento na unidade de terapia intensiva. Paciente do sexo masculino, 30 anos, internado com quadro de aplasia de medula idiopática e neutropenia febril foi transferido para a unidade de terapia intensiva com quadro de broncopneumonia e sepsis grave de origem pulmonar. A maioria dos casos já relatados de pacientes com infecção por Chryseobacterium indologenes apresentavam patologias graves associadas e infecções polimicrobianas que podem dificultar a interpretação da efetividade da terapia antimicrobiana contra este agente.

Descritores: Chryseobacterium; Infecção hospitalar; Sepsia; Neutropenia febril; Relatos de casos

REFERENCES