

# Chryseobacterium indologenes in septicemia- a rare case report

## Abstract

*Chryseobacteria* formerly known as *Flavobacterium* are a group of aerobic, non-motile, catalase, oxidase & indole positive & non-glucose fermenting Gram negative rods. Though not a part of normal human flora, they are found in the nature, primarily in soil and water. Since it can survive in chlorine-treated municipal water supplies & can colonize the sink basins and tap waters of the hospitals, this bacterium may be a potential infectious agent. Contamination of the medical devices containing water (respirators, intubation tubes, humidifiers, incubators for newborns, etc.) in hospital settings may lead to serious infections especially in patients with predisposing diseases, newborns and immunocompromised patients. Despite their low virulence, *Chryseobacteria* are inherently resistant to many antimicrobial agents including imipenem. Here we have presented a case of septicemia by *C. Indologenes* in a child suffering from all.

**Keywords:** *chryseobacterium indologenes*, immunocompromised patients

Volume 2 Issue 5 - 2015

Rajashree Panigrahy, Sahoo D, Sahu R, Swain B, Sahu K, Rout S

Department of Microbiology, IMS & SUM Hospital, India

**Correspondence:** Rajashree Panigrahy, Department of Microbiology, IMS & SUM Hospital, Bhubaneswar, Odisha, India, Tel 09437216735, Email dr.rajashreep@gmail.com

**Received:** February 20, 2015 | **Published:** August 28, 2015

## Introduction

*Chryseobacterium indologenes*, formerly known as *Flavobacterium indologenes* or *Flavobacterium aureum* belongs to CDC group IIb.<sup>1</sup> Vandamme defined *Chryseobacterium* in 1994 (formerly known as *Flavobacterium*) which originally comprised 6 species of yellow pigmented, non-motile, catalase positive, oxidase positive, indole positive, glucose non-fermenting aerobic Gram negative bacilli.<sup>2</sup> They are ubiquitous in nature & are found in plants, soil, food, and both fresh and marine water. In 1993, Lin et al.,<sup>3</sup> first isolated a strain of *C. indologenes* from a tracheal aspirate in a patient with ventilator associated pneumonia. *C. indologenes* is the most common *Flavobacterium* isolated from clinical specimens but *C. meningosepticum* is the most pathogenic member of the genus. *C. indologenes* is intrinsically resistant to the carbapenams & cephalosporins due to its production of molecular class A beta-lactamase and class B carbapenem-hydrolyzing beta-lactamase (IND1-IND7).<sup>4</sup>

## Case report

A 3years old male child presented with fever of 38.4°C and irritability. The child had rhinorrhea for 2weeks. Normal saline drops and nasal decongestant were prescribed by the primary care physician. On admission; the child had normal vital signs except for fever & cough. Mild nasal congestion was noted. The anterior fontanel was not bulging and the neck was supple. Lung and heart auscultation were normal and the abdomen was soft without any hepato-splenomegaly. The rest of the examination was unremarkable. A complete blood count showed a white blood cell (WBC) count of 3% bands, 46% neutrophils, 35% lymphocytes and 15% monocytes. Haemoglobin level in 8.4%, platelet count 54000. Electrolytes, liver function tests, and urine analysis were normal. Chest X ray as well as a computed tomography scan of the brain, chest, and abdomen showed no findings of infection. Blood C/S was positive by automated method (Bact/alert 3D, Biomeriux). On that day it was subcultured on blood agar and MacConkey agar plate. Then the isolated bacteria from blood agar plate were identified by both conventional and vitek-2

system by using GN-ID card. Antimicrobial susceptibility test was performed according to CLSI guideline on Muller-Hilton agar by Kirby Bauer disc diffusion method and MIC of that organism was done by vitek-2 system by using GN AST card. On the next day, the organism was identified as *Chryseobacterium indologenes*. It was found resistance to piperacillin/tazobactam, ampicillin/sulbactam, ceftriaxone, gentamicin, amikacin, imipenem & aztreonam and susceptible to ciprofloxacin, trimethoprim/sulfamethoxazole & cefepime. Accordingly, cefepime 50mg/kg/dose every 12 hourly was given for a course of 10days. The child became a febrile and her appetite improved one day after cefepime was started and the repeat blood culture after 3days was negative.

## Discussion

The pathogenicity of *C. indologenes* is not well established, however, it is already known that biofilm and proteases production are important mechanisms involved in its virulence. The majority of the infections caused by *C. indologenes* have been reported to have occurred in immune compromised patients with underlying diseases, such as neoplasms, diabetes or heart conditions.<sup>4,5</sup> The associated infections involve the blood stream, pneumonia, intra-abdominal and urinary tract<sup>6,7</sup> and the main risk factors are oncological disease, long hospital stays and prolonged antibiotic treatment (>14days).<sup>8</sup> The antibiotic choice in cases of *C. indologenes* infection is difficult, as the organism shows resistance to amino glycosides, penicillin's, aztreonam, first, second and third generation cephalosporin's except for ceftazidime and variable resistance to imipenem. The most active agents against *C. indologenes* in a multicenter study were fluoroquinolones and in particular garenoxacin, gatifloxacin and levofloxacin, as well as piperacillin/tazobactam, cefepime and trimethoprim/sulfamethoxazole.<sup>9</sup> But in our case, organism was resistant to piperacillin/tazobactam & sensitive to cotrimoxazole and fluoroquinolone groups.

## Conclusion

*C. indologenes* although uncommon, is an important pathogen causing infection in hospitalized patients. The management of

this infection needs better identification, susceptibility testing and monitoring especially for immune-compromised patients with long hospital stays. In addition, this report showed the necessity to survey environmental bacteria that could cause hospital-acquired infection.

## Acknowledgements

None.

## Conflict of interest

The author declares no conflict of interest.

## References

1. Hsueh PR, Hsiue TR, Wu JJ, et al. *Flavobacterium indologenes* bacteremia: clinical and microbiological characteristics. *Clin Infect Dis*. 1996;23(3):550–555.
2. Calderon G, Garcia E, Rojas P, et al. *Chryseobacterium indologenes* infection in a newborn: a case report. *J Med Case Rep*. 2011;5:10.
3. Lin YT, Jeng YY, Lin ML, et al. Clinical and microbiological characteristics of *Chryseobacterium indologenes* bacteremia. *J Microbiol Immunol Infect*. 2010;43(6):498–505.
4. Christakis GB, Perlorentzou SP, Chalkiopolou I, et al. *Chryseobacterium indologenes* non-catheter-related bacteremia in a patient with a solid tumor. *J Clin Microbiol*. 2005;43(4):2021–2023.
5. Nulens E, Bussels B, Bols A, et al. Recurrent bacteremia by *Chryseobacterium indologenes* in an oncology patient with a totally implanted intravascular device. *Clin Microbiol Infect*. 2001;7(7):391–393.
6. Bhuyar G, Jain S, Shah H, et al. Urinary tract infection by *Chryseobacterium indologenes*. *Indian J Med Microbiol*. 2012;30(3):370–372.
7. Acosta-Ochoa MI, Rodrigo-Parra A, Rodríguez-Martín F, et al. Urinary infection due to *Chryseobacterium indologenes*. *Nefrologia*. 2013;33(4):620.
8. Hsueh PR, Teng LJ, Ho SW, et al. Clinical and microbiological characteristics of *Flavobacterium indologenes* infections associated with indwelling devices. *J Clin Microbiol*. 1996;34(8):1908–1913.
9. Kirby JT, Sader HS, Walsh TR, et al. Antimicrobial susceptibility and epidemiology of a worldwide collection of *Chryseobacterium* spp: report from the SENTRY antimicrobial surveillance program (1997–2001). *J Clin Microbiol*. 2004;42(1):445–448.