Recurrent Port Infection Due to *Chryseobacterium Indologenes*

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**Abstract**
Infections due to *Chryseobacterium indologenes* (*C. indologenes*) are rare and generally associated with immunosuppression and indwelling catheters. We report a recurrent port infection caused by *C. indologenes*. In the first bacteremia episode we did not remove the port and only applied antibiotherapy. However, the patient presented with bacteremia with the same bacteria and successfully treated with antibiotherapy and removal of the port.

**Key Words:** *Chryseobacterium indologenes*, Port infection

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**Introduction**
*Chryseobacterium indologenes* is a non-motile, catalase-, oxidase- and indole-positive, non-fermentative, gram-negative bacillus [1]. It rarely causes human infections, and most develop in immunocompromised patients with medical device implants [2]. Herein, we report a recurrent port infection caused by *C. indologenes*.

**Case Report**
A 66-year-old female patient was admitted to our hospital due to fever and worsening of her general condition. The patient had been followed for one year due to an esophagus carcinoma CA. She had a port catheter and had undergone several rounds of chemotherapy and radiotherapy. A physical examination revealed only purulent discharge around the gastrostomy. Her blood pressure was normal, her body temperature was 38.5°C, and her laboratory results were as follows: leukocytes, 17,500/mm³; C-reactive protein, 184 mg/dL (normal < 5 mg/dL); urea, 65 mg/dl; creatinine, 1.4 mg/dl. All other results were within normal range. We initiated ceftriaxon therapy (1x2 gr) and performed cultures of her blood, urine and the discharge around the gastrostomy. The blood (BacT/ALERT® 3D, bioMérieux, France) and purulent discharge cultures yielded extended-spectrum beta-lactamase-producing *Klebsiella pneumoniae*, and we switched the patient to ertapenem therapy (1x1 gr). On the seventh day of ertapenem treatment, the patient’s body temperature increased to over 38°C, and we obtained new cultures. Blood cultures from the port and periphery yielded gram-negative, non-fermentative, oxidase-positive, slow-growing bacilli. The isolated strain was identified as *Chryseobacterium indologenes* by the API-20NE (bioMérieux, France) identification system. Antibiotic susceptibility testing was performed using the disc diffusion method, and the isolate was sensitive to vancomycin, cefaperozone-sulbactam, ciprofloxacin, ceftazidime and piperacillin-tazobactam. The therapy was switched to ceftazidime (2x2 g) for two weeks. The patient improved and was discharged from hospital. Because of the rapid respond to antibiotic treatment, we did not remove the port.

Eleven days after discharge, the patient was readmitted to the hospital with fever and a poor general condition. We obtained blood cultures from the port and periphery and initiated therapy with meropenem (3x1 gr) and teicoplanin (1x400 mg), and due to the suspicion of *C. indologenes*, ciprofloxacin (2x400 mg) was also administered. One day later, the blood culture obtained from the port yielded gram-negative, non-fermentative, oxidase-positive bacilli 10 hours earlier than the periphery. It was identified as *C. indologenes*
by the API-20NE identification system. We removed the port and continued ciprofloxacin treatment. After two weeks, the patient was doing well and was discharged from the hospital.

Discussion

C. indologenes, formerly known as Flavobacterium CDC group IIb, is rarely isolated from clinical specimens and may cause primary bacteremia, catheter-related bacteremia, wound sepsis, cellulitis, pyonephrosis, peritonitis, biliary tract infection and ventilator-associated pneumonia [3-8]. A standardized method of susceptibility testing for C. indologenes does not exist. However, the broth dilution method is the preferred method. Although CLSI did not establish the MIC breakpoints for C. indologenes, the MIC breakpoints for Enterobacteriaceae or Pseudomonas spp. are generally used for the susceptibility tests [7]. C. indologenes is resistant to many antibiotics, including aminoglycosides, penicillins, aztreonam and first-, second- and third-generation cephalosporins (except for ceftazidime) and demonstrates variable resistance to carbapenems. Kirby et al. [2] (SENTRY cephalosporins (except for ceftazidime) and demonstrates the MIC breakpoints for C. indologenes. In the same study, they also evaluated the sensitivity to vancomycin and did not recommend its use for treatment [2]. With regard to this report, we performed an antibiogram and also evaluated vancomycin sensitivity. Although the isolate was sensitive to vancomycin, we did not use it and treated our patient with ceftazidime and ciprofloxacin.

Because it is a low-virulence bacterium, there is limited information about infections due to C. indologenes, which generally develop in immunocompromised patients with neoplasms, diabetes or heart conditions [9]. Lin et al. [10] recently reported 16 bacteremia episodes due to C. indologenes, and all of the patients had underlying conditions including mechanical ventilation, neoplasm, chemotherapy, chronic heart and lung diseases, chronic bed-ridden status and indwelling catheters. Hsueh et al. [3] also found that most cases involved nosocomial pneumonia and catheter-related bacteremia [3]. Catheter-related infections most likely develop due to the production of biofilms on foreign materials and the protease activity of C. indologenes.

Although Hsueh et al. did not recommend the removal of all indwelling catheters, Lin et al. [10] suggested that catheters be removed when a catheter-related infection occurs due to C. indologenes. Our patient also had a neoplasm and an indwelling catheter (i.e., a port). In the English [1966-2011] literature, there is only one reported port-related infection, and our case is the second [11]. During the first bacteremia episode, we also did not remove the port-a-catheter. However, despite appropriate antibiotic treatment, the patient was readmitted 11 days later with a new bacteremia episode due to the same species.

In conclusion, infections due to C. indologenes are rare, and limited information is available. Further investigations must be performed to determine the MIC breakpoints of C. indologenes. In the majority of cases, an immunosuppressive condition or an indwelling catheter is typically present. When an infection develops due to a port or a central catheter, we suggest its removal to obtain a rapid response.

Conflict of interest statement: The authors declare that they have no conflict of interest to the publication of this article.

References