

# Surgical site infection associated with a rare agent, *Chryseobacterium indologenes*

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## Abstract

*Chryseobacterium indologenes* is a Gram-negative, immobile, aerobic, non-fermentative, oxidase-positive bacillus. This agent is a rarely isolated multidrug-resistant nosocomial pathogen. It causes a wide range of infections such as meningitis, bacteremia, respiratory tract infections, urinary tract infections, surgical site infections, soft tissue infections, prosthesis, and catheter infections. In this article, a rare case of *C. indologenes* surgical site infection following percutaneous endoscopic gastrostomy in a patient treated for malnutrition is presented.

**Keywords:** *Chryseobacterium indologenes*; multidrug-resistance; surgical site infection

## INTRODUCTION

*Chryseobacterium indologenes* is a species from Flavobacteriaceae family. Other clinically important species of this family are *Chryseobacterium meningosepticum* and *Chryseobacterium odoratum*. These are Gram-negative, immobile, aerobic, non-fermentative, oxidase-positive bacilli. *C. indologenes* are easily identifiable in culture due to the production of a distinctly yellow to orange pigment (Figure 1) called flexirubin (1).

*C. indologenes* have emerged as a multidrug-resistant nosocomial pathogen in recent years (2). It causes a wide range of infections such as meningitis, bacteremia, respiratory tract infections, urinary tract infections, surgical site infections, soft tissue infections, prosthesis, and catheter infections (3,4).

In this article, a case of *C. indologenes* wound infection after percutaneous endoscopic gastrostomy (PEG) was presented in a patient treated for malnutrition.

## CASE REPORT

An 89-year-old female patient who was brought to the hospital by her relatives with the presence of general condition disorder and cachexia was diagnosed with nutritional disorder, and her nutrition and treatment

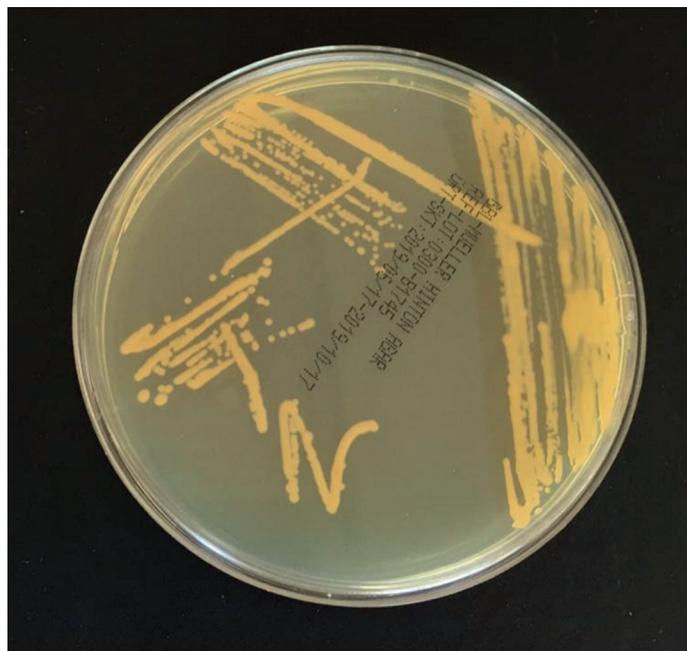
were arranged. The patient's condition deteriorated and PEG procedure was performed by general surgery and treatment was re-arranged. Later, the infection was detected in the surgical site. Laboratory findings of the patient; WBC: 24.30x10<sup>3</sup>/mm<sup>3</sup>, NEU 95.9%, CRP 15,121 mg/dL. Amoxicillin+clavulanic acid 1000 mg peroral (PO) was started empirically to the patient. A wound specimen taken from the patient was sent to the medical microbiology laboratory. The sample was cultured on suitable agar media and a slide prepared for microscopic examination. The Gram-stained slide showed many polymorphonuclear leukocytes and Gram-negative coccobacilli. After 24 hours incubation at 37 °C, oxidase-positive, transparent and yellow-pigmented colonies on Eosin Methylene Blue and Mueller Hinton Agar (Figure 1), respectively, were detected.

The isolate was identified as *C. indologenes* by the fully automated bacterial identification system VITEK 2 ID-AST (bio Merieux, France). Antibiotic susceptibility testing was also performed by VITEK 2. The results were interpreted based on the recommendations of the Clinical and Laboratory Standards Institute (5). The isolate was resistant to many antibiotics. The susceptibility results to various antimicrobial agents were shown in Table 1. Based on these results, the patient's treatment was

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continued with intravenous (IV) ciprofloxacin 400 mg (2), considering the beta-lactamase production profile of the agent. On the 15th day of the treatment, the patient was discharged because there was no growth in repeated wound cultures and the control laboratory values were WBC: 9.85x10<sup>3</sup>/mm<sup>3</sup>, NEU: 76.2%, CRP: 0.45 mg/dL.



**Figure 1.** Yellow-pigmented colonies on MHA isolated from the specimen

**Table 1. Antimicrobial susceptibility results of VITEK 2 (bio Merieux, France).**

Antibiotics	MIC values	Sensitivity
Piperacillin	≥ 128	R
Piperacillin/Tazobactam	≥ 128	R
Ceftazidime	≥ 32	R
Cefepime	≥ 32	R
Aztreonam	≥ 64	R
Imipenem	≥ 16	R
Meropenem	≥ 16	R
Amikacin	16	S
Gentamicin	≥ 16	R
Netilmicin	≥ 32	R
Tobramycin	≥ 16	R
Ciprofloxacin	0.5	S
Levofloxacin	≤ 0.12	S
Tetracycline	≥ 16	R
Tigecycline	1	S
Colistin	≥ 16	R
Trimethoprim/sulfamethoxazole	≥ 20	S

## DISCUSSION

The use of invasive medical devices, broad-spectrum antibiotics, underlying diseases, and primary or acquired immunosuppressive conditions are known risk factors for nosocomial infection (3). The patient had previously diagnosed with Parkinson's disease, aortic valve insufficiency, and hypertension. These accompanying diseases, patient's age, length of hospitalization and PEG opening were predisposing factors for this infection.

In the medical literature, case reports indicate that *C. indologenes* isolation is usually made from blood cultures (6-8). However, an interesting aspect of the case report we have reported is there are no cases of surgical site infection due to *C. indologenes* to the best of our knowledge.

Infection agent *C. indologenes* is a bacterium that is difficult to empirically eliminate because of its antimicrobial resistance unless it is correctly diagnosed (9). *Chryseobacterium* species are resistant to many drugs due to beta-lactamase production and are generally sensitive to quinolones, trimethoprim/sulfamethoxazole, and piperacillin-tazobactam combinations. According to various studies, new fluoroquinolones are the most appropriate antibiotics for the treatment of *C. indologenes* infections (2,10,11). Antimicrobial susceptibility test results of our isolate were found to be similar to the literature. The preferred antimicrobial agent was ciprofloxacin in treatment.

*Chryseobacterium* species are resistant to chlorination. Therefore, elimination is difficult in hospital conditions. It may colonize medical equipment and cause nosocomial infection. Thus, the diagnosis of this rare factor is also valuable in terms of the detection and prevention of nosocomial infections (2,6,12).

## CONCLUSION

As a result; *Pseudomonas*, *Acinetobacter*, and *Stenotrophomonas* are the most common non-fermentative pathogens isolated in clinical laboratories. Other non-fermentative bacilli are often overlooked. Keeping in mind that *C. indologenes*, one of the opportunistic infectious agents, which can be found in the hospital environment, is considered to be very important both for early diagnosis study and targeted antibiotic treatment and for the necessary hospital control measures.

*Conflict of interest :* The authors declare that they have no competing interest.

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*Informed Consent:* Additional informed consent was obtained from the patient's wife since the patient is dead.

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