

췌장암 환자에 발생한 *Raoultella planticola* 중증 담도염 1예

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A Case of Severe Cholangitis Caused by *Raoultella planticola* in a Patient with Pancreatic Cancer

While *Raoultella planticola* is a rare cause of human infection, we experienced a case of severe cholangitis caused by *R. planticola*. A 75-year-old male patient with cancer of the pancreatic head was admitted and found to have cholangitis. Following performance of percutaneous transhepatic biliary drainage for decompression and initiation of empirical antibiotics with cefotaxime and metronidazole. *R. planticola*, which was susceptible to cefotaxime, was isolated from both bile and blood. Despite administration of prompt and appropriate antibiotic therapy, the patient died 10 days after admission. We herein describe the first case of cholangitis caused by infection with *R. planticola*.

Key Words: *Raoultella planticola*, Cholangitis, Sepsis

Introduction

Raoultella planticola, a gram-negative non-motile bacillus, was formerly identified as a member of the *Klebsiella* genus and reclassified as the *Raoultella* genus in 2001 [1]. Although *R. planticola* has been regarded as an environmental bacterium, five cases of human infection caused by this organism have been reported since 1984 [2-6]. However, no case of cholangitis due to infection with this organism has been reported. We recently experienced a case of fatal cholangitis caused by infection with *R. planticola* in a 75-year-old male patient with pancreatic cancer.

Case report

In November 2010, a 75-year-old male patient was admitted to Korea University Ansan Hospital with fever and jaundice. The patient had been diagnosed with cancer of the pancreatic head three months earlier. Chemotherapy or radiotherapy was recommended; however, the patient and his family refused curative treatment, and only conservative management was

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applied. On admission, his body temperature was 38.4°C and systolic blood pressure was below 90 mmHg. Results of initial laboratory tests were as follows: white blood cell count, 13,110/ μ L; aspartate aminotransferase, 59 IU/L; alanine aminotransferase, 62 IU/L; alkaline phosphatase, 259 IU/L; gamma-glutamyl-transferase, 160 IU/L; total bilirubin, 22.2 mg/dL; direct bilirubin, 15.8 mg/dL; C-reactive protein, 15.4 mg/dL; erythrocyte sedimentation rate 105 mm/hr; blood urea nitrogen, 132 mg/dL; and serum creatinine, 4.6 mg/dL. A low attenuation mass, measuring 3.6×3.2 cm, on the head portion of the pancreas, which grew larger, when compared with the previous image (3.1×2.8 cm), was observed on abdominal computed tomography scan. In an attempt to control his septic condition, the patient was transferred to the intensive care unit. Due to blockage of the bile duct, percutaneous transhepatic biliary drainage was performed for decompression. Blood and bile cultures taken at the time of admission yielded *R. planticola*, which was identified with a 93% probability, using the VITEK-2 (bioMérieux Inc., Marcy l'Étoile, France) biochemical identification system. According to results of the antibiotic susceptibility test, *R. planticola* showed resistance to ampicillin and piperacillin, but susceptibility to cephalothin, cefoxitin, cefotaxime, cefepime, aztreonam, imipenem, amikacin, levofloxacin, and trimethoprim/sulfamethoxazol. Despite administration of prompt and appropriate antibiotic therapy, fluid resuscitation, vasopressor, and inotropic agents, the patient's condition did not show improvement. Fever persisted with increasing leukocytosis up to 33,800/mm³, and he eventually demonstrated greater hemodynamic instability on day four of hospitalization. On day eight, a Gram-positive organism was isolated from the patient's blood, indicating suspicion of central catheter-related bloodstream infection (CR-BSI); therefore, vancomycin was added.

However, the patient's condition showed progressive deterioration and he died of multiple organ failure on day 10 of hospitalization.

Discussion

Since description of the first case of *R. planticola* septicemia by Freney in 1984 [2], four additional cases of human infection have been reported (Table 1); one case of post-operative infection [3], one case of pancreatitis with retroperitoneal abscess [4], one case involving surgical site infection [5], and, the most recent case, primary soft tissue infection [6]. However, cholangitis caused by infection with this organism has not yet been reported.

R. planticola was originally named *Klebsiella planticola* in 1981 [7]; however, its name was changed to *K. trevisanii* in 1983 [8]; it was then renamed *K. planticola* in 1986 [9]. Based on sequence analysis of the 16S rRNA and rpoB genes, a new genus, *Raoultella*, was proposed in 2001 [1]. *R. planticola* was originally regarded as an environmental bacterium, and, despite its isolation from various human specimens, the clinical significance of the organism remained uncharacterized [2, 3]. In our case, *R. planticola* was isolated from both blood and bile fluid, and the patient exhibited clinical features of severe sepsis due to cholangitis. While the organism was then identified with a 93% probability, using VITEK-2 (bioMérieux Inc.), evaluation of the VITEK-2 (bioMérieux Inc.) GN card for identification of Gram-negative bacilli revealed that the system had correctly identified 97.4% of the 426 isolates tested [10]. As a result, *R. planticola* isolated from the patient was determined to be a true pathogen of cholangitis. The patient's condition did not show any improvement from the initial throughout his entire hospital course; therefore, despite the presence of another infection, CR-BSI, the cause of his death was thought to be mainly related to cholangitis by infection with *R. planticola*. However, in the five previously reported cases of *R. planticola* infection, no case involving mortality was reported; thus, the *R. planticola* strain isolated from our patient could be more virulent than those of previously reported cases. Underlying malignancy and combined nosocomial infection observed in our case may also have contributed to the fatal outcome.

In conclusion, this is the first report of cholangitis caused by infection with *R. planticola*. This report demonstrates that, although rare, *R. planticola* can truly cause human infection,

Table 1. Reported Cases of Human Infection Caused by *Raoultella planticola*

Case/Ref	Age/Sex	Clinical Presentation	Underlying conditions	Treatment	Outcome
Case 1 ^a /[2]	69/F	Septicemia	Postoperative status of mitral valve replacement	Cefotaxime, Tobramycin	Survival
Case 2 ^a /[3]	57/- ^b	Pneumonia	Postoperative status of coronary artery bypass graft	Ceftriaxone	Survival
Case 3/[4]	45/M	Pancreatitis with retroperitoneal abscess	Alcoholism	Imipenem, Amikacin	Survival
Case 4/[5]	66/M	Surgical site infection	Left tibia fracture, hypertension, hyperlipidemia	Clindamycin	Survival
Case 5/[6]	30/M	Cellulitis	None	Ciprofloxacin	Survival

^aThree cases were reported as infection caused by *Klebsiella trevisanii*, the previous name of *R. planticola*.

^bThe gender of the patient described in case 2 was not reported.

which can be fatal.

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