Peritoneal Dialysis-Related Peritonitis Due to *Kingella Denitrificans*: The First Case Report

Editor:

The genus *Kingella* belongs to the family *Neisseriaceae* and is most closely related to the genera *Neisseria* and *Eikenella* (1). *Kingella denitrificans* is a fastidious gram-negative rod and a common inhabitant of the human nasopharynx (2). Herein, we present the first case report of continuous ambulatory peritoneal dialysis (CAPD)-related peritonitis due to *Kingella denitrificans*.

A 74-year-old male patient who had been receiving CAPD therapy for approximately 1 year because of end-stage renal disease caused by diabetic nephropathy and hypertension presented with abdominal pain, nausea, vomiting, and cloudy dialysate for 3 days. He had no

history of peritonitis. The tunnel of the CAPD catheter was normal and the exit site was clear. White blood cell (WBC) count of the peritoneal fluid was 2,230/mm³, with neutrophils predominant. Gram stain of the peritoneal fluid revealed a small number of gram-negative bacilli. After microbiological evaluation, he was empirically started on an antibiotic regimen consisting of cefazolin and amikacin intraperitoneally. With the empiric combined antibiotic treatment, peritoneal fluid WBC count was 720/mm³ on the second day, with neutrophils predominating. On the fourth day after his admission to the hospital, a bacterium growing in the peritoneal fluid culture was identified as *Kingella denitrificans*. When *Kingella denitrificans* isolated from the patient was sensitive to ceftazidime, the empiric combined antibiotic treatment was stopped and intraperitoneal ceftazidime therapy was started. However, blood culture did not grow any micro-organism. The patient's clinical condition was entirely recovered and peritoneal WBC decreased dramatically. Intraperitoneal treatment was continued for 14 days and the patient was discharged without any problem.

Kingella is a slow-growing, fastidious, gram-negative aerobic coccoid to medium-sized rod. It belongs to the family *Neisseriaceae*, which also includes the genera *Neisseria*, *Moraxella*, *Acinetobacter*, and *Oligella*. There are 4 known species: *Kingella kingae*, *Kingella indologenes*, *Kingella denitrificans*, and *Kingella oralis*. Of these, *K. kingae* has been found to be the most common human pathogen. The incidence of infections due to *K. kingae* has been reported with increasing frequency in recent years. Less common presentations of *K. kingae* infection reported include abscesses, meningitis, osteomyelitis, ophthalmic infections, cellulitis, epiglottitis, and peritonitis (3,4).

Although *K. denitrificans* is not a pathogenic micro-organism, it occasionally causes serious opportunistic infections. These include endocarditis (5–8), empyema (9), chorioamnionitis (10), and granulomatous disease secondary to AIDS (11). Nothing is known of the factors that contribute to the virulence of this organism. However, a previous study has shown that *K. denitrificans* possesses type 4 pili and phenotypes associated with this trait (1).

There is only 1 such case report with peritonitis caused by the *Kingella* family. In this case report, a 55-year-old man with liver disease and tense ascites performed a paracentesis on himself and developed *K. kingae* peritonitis and bacteremia (3). However, to the best of our knowledge, peritoneal dialysis-related peritonitis caused by *Kingella denitrificans* has not been reported. The source of peritoneal infection in this patient was

not determined. He had no history of upper respiratory tract infections, dental abnormalities, evidence of stomatitis, or damage to the oropharyngeal mucosa. Also, he had not taken an immunosuppressive medication and a human immunodeficiency virus (HIV) test was negative. In addition, no significant findings consistent with infection were observed in the exit site or tunnel of the peritoneal catheter. No microorganism was isolated from blood cultures.

In conclusion, CAPD effluent may be contaminated by *Kingella denitrificans*, causing CAPD-related peritonitis. On the other hand, it can be successfully treated with intraperitoneal antimicrobials without removal of the Tenckhoff catheter.

DISCLOSURES

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I. Kocyigit¹*
F. Öztürk²
S. Kargi²
I. Uzun²
A. Unal¹
B. Tokgoz¹

Department of Nephrology¹
Department of Internal Medicine²
Erciyes University Medical Faculty
Kayseri, Turkey

*email: iikocyigit@gmail.com

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