



## Uncommon presentation of CAPD-related peritonitis with unusual organism: *Kocuria kristinae*. Case report and review of the literature

Sürekli periton diyalizi ilişkili peritonit: *Kocuria kristinae*. Olgu sunumu ve literatür derlemesi

Dilek BARUTCU ATAS, Hakki ARIKAN, Basar AYKENT, Ebru ASICIOGLU, Arzu VELIOGLU, Serhan TUGLULAR, Cetin OZENER

### ABSTRACT

*Kocuria kristinae* is a gram-positive coccus of *Micrococcaceae* family. *Kocuria kristinae* inhabits the skin and mucous membranes. It can cause opportunistic infections in patients with indwelling devices and severe underlying diseases.

We describe here a case of acute peritonitis caused by *Kocuria kristinae* in a patient on continuous ambulatory peritoneal dialysis (CAPD). Additionally, a review of other reported CAPD related peritonitis by *Kocuria kristinae* is provided.

The importance of *Kocuria kristinae* as a pathogen in patients with CAPD peritonitis should not be underestimated.

**Keywords:** Back pain, *Kocuria kristinae*, Peritonitis, Peritoneal dialysis

### ÖZ

*Kocuria kristinae*, *Micrococcaceae* ailesinden gram pozitif kok şeklinde bir bakteridir *Kocuria kristinae* deride, mukoza ve orofarinkste kolonize olur. İmmünosüpre hastalarda oportünist bir patojen olarak enfeksiyonlara neden olabilir.

Bu yazıda sürekli ayaktan periton diyalizi (SAPD) tedavisi gören bir hastada *Kocuria kristinae* 'ye bağlı gelişen akut peritonit olgusu sunulmuştur. Diğer SAPD tedavisi gören hastalardaki *Kocuria kristinae* peritonitleri gözden geçirilmiştir.

SAPD tedavisi gören hastalarda *Kocuria kristinae* patojen olarak bildirildiğinde bu mikroorganizmanın klinik önemi küçümsenmemelidir.

**Anahtar kelimeler:** Bel ağrısı, *Kocuria kristinae*, Peritonit, Periton diyalizi

### Introduction

*Kocuria kristinae* is a gram positive coccus of a member of *Micrococcaceae* family. *Kocuria* species are ubiquitous in the environment and part of normal skin and oral flora of humans and other mammals [1]. *Kocuria* species can rarely be opportunistic pathogens; in particular, *Kocuria kristinae* is the species most frequently isolated from immunocompromised patients [2].

Currently, there are only two reported cases of *Kocuria kristinae*-related peritonitis in patients with peritoneal dialysis (PD) in the literature. Here, we report a case of *Kocuria kristinae* peritonitis in a patient undergoing CAPD.

### Case Report

A 56-year-old woman with end-stage renal disease due to hypertensive nephropathy who had been on CAPD four exchanges a day, for three years was admitted to our out-patient clinic for the first time because of fatigue, loss of appetite and back pain. The severe back pain had been present for four months. Three weeks ago, lumbar magnetic resonance (MR) imaging revealed only minimal disc herniation. On physical examination blood pressure was 131/78 mm/Hg, body temperature was 36.7 °C. Interestingly, there was no abdominal pain or tenderness. Laboratory data showed leukocytes count as 8,100/μL (normal) with 80.1% of polymorphonuclear cells, high C reactive protein (CRP) level [103 mg/L (N: 0-5)] and high sedimentation rate [111 mm/h (N: 0-30)]. We noticed that the dialysis effluent was turbid. The white cell count of dialysate was above 10,000/μL. Blood and peritoneal fluid cultures were taken. Direct gram stain showed gram-positive cocci in peritoneal fluid. Empirical antibiotic treatment with intraperitoneal sefuroxim

Dilek Barutcu Atas (✉), Hakki Arikan, Basar Aykent, Ebru Asicioglu, Arzu Velioglu, Serhan Tuglular, Cetin Ozener  
Division of Nephrology, Department of Internal Medicine, School of Medicine, Marmara University, Pendik, Istanbul, Turkey  
e-mail: drdilekb@gmail.com, dbarutcu@marmara.edu.tr

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axetil (750 mg twice a day) and oral ciprofloxacin (500 mg twice a day) was started. The peritoneal fluid culture revealed *Kocuria kristinae* which was sensitive to sefuroxim axetil and ciprofloxacin. By day seven of empirical treatment, the peritoneal fluid became clear, with dialysate white cell count completely normalized. After three weeks of intraperitoneal sefuroxim axetil and ciprofloxacin, the patient's complaints including back pain, fatigue and loss of appetite resolved completely. Control peritoneal fluid culture were negative and laboratory data showed normal CRP level [4 mg/L (N: 0-5)] and sedimentation rate [59 mm/h (N: 0-30)]. There was no relapse of peritonitis and back pain upon two months of follow-up.

## Discussion

*Kocuria kristinae* inhabits skin and mucous membranes. Even though it is considered to be non-pathogen, it can cause opportunistic infections in patients with indwelling devices and severe underlying diseases. Infections due to *Kocuria kristinae* are uncommon but are increasingly being recognized [3-6]. In recent years, *Kocuria kristinae* was reported as a primary pathogen in cases of catheter related bacteraemia and infective endocarditis [3], bacteremia with acute leukemia [4], pregnant female [5] and acute cholecystitis [6].

*Kocuria kristinae* was reported to be susceptible to many commonly used antibiotics including doxycycline, ceftriaxone, cefuroxime, amikacin, ciprofloxacin and amoxicillin with clavulanic acid. The emergence to ampicillin and erythromycin resistance has been reported in a small number of patients [7].

After careful review of the literature, we found only two cases of *Kocuria kristinae* infections in patients with CAPD-related peritonitis. The first case was a 78-year-old man from Italy who was admitted to hospital with abdominal pain, fever and cloudy peritoneal dialysate. He has been managed with combination therapy with ciprofloxacin, teicoplanin and amoxicillin/clavulanic acid for a total of three weeks duration [8]. The second case was a 69-year-old man from China who was presented with abdominal pain, turbid peritoneal dialysate fluid for three days. He has been managed successfully with cefazolin for two weeks [9]. Our patient was admitted to hospital with fatigue, loss of appetite and back pain and after three weeks of intraperitoneal sefuroxim axetil and ciprofloxacin her symptoms resolved completely (Table 1). In addition, our patient did not have any abdominal pain or tenderness expected in an acute peritonitis attack when she was admitted to outpatient clinic. No case of peritonitis presenting with long standing

**Table I:** CAPD-related peritonitis with *Kocuria kristinae*

Age	Sex	Type of dialysis	Presentation	Treatment	Response to therapy	References
78	Male	CAPD	Abdominal pain, fever, cloudy peritoneal dialysate.	Empirically: Cefotaxime plus tobramycin IP, tazobactam IV for 6 days. According to antibiotic susceptibility adjusted to ciprofloxacin plus teicoplanin IP and amoxicillin/ clavulanic acid IV for 10 days After 10 days of specific treatment discharged from hospital and 14 days ciprofloxacin orally	Without catheter removal or recurrence	Carlini et al.[8] 2011, Italy
69	Male	CAPD	Abdominal pain, turbid peritoneal dialysate fluid for 3 days	Empirically: cefazoline and cefepime IP for 4 days According to antibiotic susceptibility adjusted to cefazoline A total of two weeks cefazolin	Without catheter removal or recurrence	Cheung et al. [9] 2011, China
56	Female	CAPD	Back pain, fatigue, loss-of appetite, turbid peritoneal dialysate	Empirically: sefuroxim axetil IP and oral ciprofloxacin A total of three weeks sefuroxim axetil and ciprofloxacin.	Without catheter removal or recurrence	Index case 2015, Turkey

CAPD: Continuous ambulatory peritoneal dialysis; IP: intra-peritoneal

back pain has ever been reported. In this regard, our case is interesting because of uncommon presentation with unusual microorganism.

In conclusion, *Kocuria kristinae* had been rarely identified as a causative agent in CAPD-related peritonitis. However, we should not clinically underestimate the importance of *Kocuria kristinae* as a pathogen in patients with CAPD peritonitis when *Kocuria kristinae* is yielded from peritoneal effluent specimens. We need more reports about *Kocuria kristinae* infections in order to understand its clinical spectrum.

### Disclosure

The authors declare there are no conflicts of interest

### References

1. Szczerba I. Occurrence and number of bacteria from the *Micrococcus*, *Kocuria*, *Nesterenkonia*, *Kytococcus* and *Dermacoccus* genera on skin and mucous membranes in humans. *Med Dosw Mikrobiol* 2003; 55:67-74.
2. Stackebrandt E, Koch C, Gvozdiak O, Schumann P. Taxonomic dissection of the genus *Micrococcus*: *Kocuria* gen. nov., *Nesterenkonia* gen. nov., *Kytococcus* gen. nov., *Dermacoccus* gen. nov., and *Micrococcus Cohn* 1872 gen. emend. *Int J Syst Bacteriol* 1995;45:682-92. doi: 10.1099/00207713-45-4-682
3. Lai CC, Wang JY, Lin SH, et al. Catheter-related bacteraemia and infective endocarditis caused by *Kocuria* species. *Clin Microbiol Infect* 2011;17:190-2. doi:10.1111/j.1469-0691.2010.03211.x
4. Martinaud C, Gaillard T, Brisou P, Gisserot O, de Jaureguiberry JP. Bacteremia caused by *Kocuria kristinae* in a patient with acute leukaemia. *Med Mal Infect* 2008; 38:334-5. doi: 10.1016/j.medmal.2008.02.006
5. Dunn R, Bares S, David MZ. Central venous catheter-related bacteremia caused by *Kocuria kristinae*: case report and review of the literature. *Ann Clin Microbiol Antimicrob* 2011; 10:31. doi: 10.1186/1476-0711-10-31.
6. Ma ES, Wong CL, Lai KT, Chan EC, Yam WC, Chan AC. *Kocuria kristinae* infection associated with acute cholecystitis. *BMC Infect Dis* 2005; 5:60. doi:10.1186/1471-2334-5-60
7. Szczerba I. [Susceptibility to antibiotics of bacteria from genera *Micrococcus*, *Kocuria*, *Nesterenkonia*, *Kytococcus* and *Dermacoccus*]. *Med Dosw Mikrobiol* 2003; 55:75-80.
8. Carlini A, Mattei R, Lucarotti I, Bartelloni A, Rosati A. *Kocuria kristinae*: an unusual cause of acute peritoneal dialysis-related infection. *Perit Dial Int* 2011; 31:105-7. doi: 10.3747/pdi.2010.00132.
9. Cheung CY, Cheng NH, Chau KF, Li CS. An unusual organism for CAPD-related peritonitis: *Kocuria kristinae*. *Perit Dial Int* 2011; 31:107-8. doi: 10.3747/pdi.2010.00125