

A Rare Cause of Peritonitis in a Patient on Continuous Ambulatory Peritoneal Dialysis: *Kytococcus Sedentarius*

Sürekli Ayaktan Periton Diyalizi Hastasında Nadir Bir Peritonit Etkeni: Kytococcus Sedentarius

ABSTRACT

Peritonitis is the most common complication associated with continuous ambulatory peritoneal dialysis (CAPD). The aim of this case report was to present a rare case of peritonitis due to *Kytococcus sedentarius*.

A 27-year-old male patient on CAPD presented to our clinic with a 2-day history of nausea, abdominal pain and cloudy peritoneal fluid. Intraperitoneal (ip) ceftazidime and vancomycin were empirically initiated based on the diagnosis of peritonitis. Microbiological examination of peritoneal fluid showed that *Kytococcus sedentarius* was the causative agent. On day 3, ceftazidime was discontinued. After 14 days of vancomycin treatment the patient was discharged with complete recovery.

Kytococcus sedentarius is an aerobic, catalase-positive, oxidase-negative, gram-positive bacterium, which is a rare cause of peritonitis and to the best of our knowledge has been previously reported only once in a patient that had complete recovery with ip vancomycin treatment. Clinicians should be aware of monitoring the hygiene protocol and re-training patients, especially in such rare cases.

KEY WORDS: *Kytococcus sedentarius*, Peritoneal dialysis, Peritonitis

ÖZ

Peritonit, sürekli ayaktan periton diyalizi (SAPD) hastalarında en sık görülen komplikasyondur. Makalede, nadir bir etken olarak *Kytococcus sedentarius*'a bağlı peritonit gelişen bir SAPD olgusu sunulmuştur.

İki gündür devam eden bulantı, karın ağrısı ve bulanık periton sıvısı şikayetleri ile polikliniğimize başvuran 27 yaşındaki erkek hastada, peritonit tanısı koyularak ampirik intraperitoneal (ip) seftazidim ve vankomisin tedavileri başlandı. Periton sıvısının mikrobiyolojik incelemesi sonucu *Kytococcus sedentarius* peritonit etkeni olarak izole edildi. Tedavinin 3. gününde ip seftazidim tedavisi kesildi. İp vankomisin tedavisi 14 güne tamamlanan hasta tam iyileşme ile taburcu edildi.

Aerobic, katalaz-pozitif, oksidaz-negatif, gram-pozitif bir bakteri olan *Kytococcus sedentarius*, peritonitin nadir etkenleri arasındadır. Bildiğimiz kadarıyla geçmişte bildirilen tek olguda ip vankomisin tedavisi ile tam iyileşme sağlanmıştır. Sunduğumuz olguda da benzer olarak ip vankomisin tedavisi ile, peritonit başarıyla tedavi edilmiştir.

Klinisyenler, özellikle bu tip nadir olgularda hijyen protokollerinin izlemi ve hasta eğitiminin gözden geçirilmesi konusunda daha dikkatli olmalıdırlar.

ANAHTAR SÖZCÜKLER: *Kytococcus sedentarius*, Periton diyalizi, Peritonit

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INTRODUCTION

Peritonitis is the most common complication associated with continuous ambulatory peritoneal dialysis (CAPD) (1). It can cause increased morbidity and mortality, permanent membrane damage and transfer to hemodialysis (2, 3). Although overall peritonitis rates were reduced through technical improvements and prophylactic antibiotics over the past 20 years, the incidence varies from 0.66 to 1.66 episodes per patient-year (4). Patients are usually unaware of the event that led to peritonitis. The most common symptoms and signs of peritonitis are abdominal pain and cloudy peritoneal fluid (5). The main laboratory finding is an increase in peritoneal fluid white cell count to above 100 cells/mm³. Most common cause of peritonitis with CAPD are gram-positive bacteria, presumably due to touch contamination or infection via the pericatheter route (1)

Kytococcus sedentarius, which is a part of the normal skin flora, was originally described as *Micrococcus sedentarius* in 1944 and was subsequently referred to as *Kytococcus sedentarius* in 1955 (6). Pitted keratolysis, fatal hemorrhagic pneumonia, cerebral shunt infection, endocarditis, and opportunistic infections are associated with *Kytococcus sedentarius* infection (7-10); however, to the best of our knowledge the literature includes only one case of peritonitis due to *Kytococcus sedentarius* (11). The aim of the present case report was to describe another case of peritonitis associated with *Kytococcus sedentarius*.

CASE REPORT

A 27-year-old male patient that had been followed-up with the diagnosis of chronic kidney disease secondary to hypertension for 3 years and had started CAPD 1 year earlier was referred to our clinic with a 2-day history of nausea, abdominal pain, and cloudy peritoneal fluid. The history revealed that he had previously experienced an attack of peritonitis. Physical examination showed blood pressure of 140/80 mmHg, body temperature of 37.8 °C, and heart rate of 78 bpm. Abdominal examination was normal, except for tenderness and muscular defense with palpation. Hyperemia and discharge around the catheter were not observed. Laboratory findings were as follows: urea: 110 mg/dL, creatinine: 10.8 mg/dL; Na: 137 mmol/L; K: 4.2 mmol/L; white blood cell count (WBC): 10.200 mm³ (85% PMNLs, 10% lymphocytes, 5% monocytes); C-reactive protein (CRP) 8.4 mg/L; and erythrocyte sedimentation rate: 76 mm/h. Peritoneal fluid investigation showed 2400 cells/mm³.

A sample of peritoneal fluid was collected for microbiological examination, and then empiric intraperitoneal (ip) vancomycin 1 g on the first day and repeated doses every 5 days plus ceftazidime 1 g in one exchange per day were initiated based on the diagnosis of peritonitis. The peritoneal fluid sample was incubated for 24 h at 37 °C in blood agar and EMG agar media plates, and non-hemolyzed slow-growing S type colonies were observed in blood agar medium that following Gram staining

were determined to be gram-positive cocci. Fingerprint analysis performed using a MALDI Biotyper (Bruker, UK) showed that the bacterium was *Kytococcus sedentarius*. The bacterium did not grow in the antibiogram.

Following identification of *Kytococcus sedentarius*, ceftazidime was withdrawn on day 3 of treatment. A progressive decrease in the number of white blood cell count was observed in daily peritoneal fluid examination. No bacterial growth in the culture and fingerprint analysis was detected in the follow-up cultures on the 2nd and 3rd days of the treatment. On 7th day of treatment, the serum CRP level was 2 mg/L and WBC was 5700/mm³, and there were no cells in the peritoneal fluid. Ip vancomycin treatment was completed after 14 days, and then the patient was discharged with complete recovery. He did not have any other peritonitis attack during the follow-up period of 13 months.

DISCUSSION

Peritonitis is the most common cause of hospital admissions and accounts for 1%-6% of mortality in patients on CAPD. In patients treated with CAPD, contamination during fluid exchange leads to the development of peritonitis via the tunnel and the surrounding microorganisms. Gram-positive bacteria such as *Staphylococcus epidermis* that are a part of the normal skin flora account for 60%-70% of pathogens associated with CAPD peritonitis (1). *Kytococcus sedentarius*, which is commonly localized on the skin, is a rare cause of peritonitis (12). It is an aerobic, catalase-positive, oxidase-negative, gram-positive bacterium. *Kytococcus sedentarius* cells are spherical/cocci and occur predominantly in tetrads, which can be arranged in cubical packets (6). It is a slow-growing microorganism and can only grow when several amino acids are provided. Genome sequencing is an alternative technique to determine the bacteria (13). *Kytococcus* spp. are usually resistant to methicillin and penicillin, but are sensitive to vancomycin (14). To the best of our knowledge, peritonitis related with *Kytococcus sedentarius* has been previously reported only once in a patient that had complete recovery with ip vancomycin treatment and without removal of the CAPD catheter. Similarly, in the present case, peritonitis was successfully treated with ip vancomycin.

The presented case was discharged with complete recovery, but evaluation of the administration of peritoneal dialysis showed that it was performed under suboptimal conditions and the patient was re-trained. Clinicians should be aware that *Kytococcus sedentarius* can be an agent of peritonitis in patients receiving peritoneal dialysis when the hygienic protocol is not carefully monitored.

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