Catheter-related bloodstream infection caused by *Burkholderia cepacia* in a pediatric oncology patient

Oğuzhan Kandemir[1,], Fatih Erbey[2], Fikret Asarcıklı[3], Banu Oflaz Sözmen[4], Mehmet Ali Özen[5], Hacer Aktürk[6]*

Catheter-related bloodstream infection caused by *Burkholderia* spp. is very rare in oncology patients, with only few cases reported in the literature.[1-4] Removal of the central venous catheter is reported to be the key in the treatment.[1-4]

A 3-year-old male with acute lymphoblastic leukemia (ALL) was admitted to the hospital with febrile neutropenia five days after the induction chemotherapy. On physical examination, there was no sign of infection around the port and in the tunnel. He was started on cefepime empirically after blood was drawn from the periphery and the catheter. On the fourth day of his admission, antimicrobial therapy was switched to meropenem plus teicoplanin due to prolonged fever.[5] Blood cultures drawn on the first day of fever from the central venous catheter (mediport) and periphery as well as the blood culture drawn on the second day of fever from the central venous catheter yielded *Burkholderia cepacia*. Antibiotic susceptibility testing detected resistance to meropenem and susceptibility to trimethoprim/sulfamethoxazole (TMP-SMX). Clinical improvement with the resolution of fever was achieved after the initiation of meropenem despite the antibiogram result suggested in vivo susceptibility to meropenem. TMP-SMX was added to meropenem in order to provide a combination therapy against *Burkholderia cepacia*, each were given for 14 days. Teicoplanin was stopped on the 3rd day. Since recurrent central and peripheral blood cultures remained sterile and the patient was in a good condition, the port catheter was preserved. One month later, the patient had another febrile neutropenia episode seven days after the chemotherapy. On the sixth day of febrile neutropenia, antibiotherapy was changed from cefepime to teicoplanin and meropenem. The blood culture drawn from port catheter on the 5th day of fever yielded again *Burkholderia cepacia*. TMP/SMX was added to meropenem and the port catheter was removed. The patient was given a 14-day treatment of meropenem and TMP-SMX. Twelve months after the second *Burkholderia* infection episode, the patient is still being followed at our department and is receiving maintenance chemotherapy for ALL, and there has been no recurrent *Burkholderia* bacteremia.

Febrile neutropenia is a common complication of cancer treatment. Although the mortality rate from febrile neutropenia has decreased steadily, it remains important. In addition, it is still an important cause of morbidity.[6] Today, almost all pediatric cancer patients need a central venous catheter during their treatment. In a neutropenic situation, when a catheter infection is detected, it is important to remove the catheter in addition to iv antibiotics.[6]

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[1]MD, Koç University School of Medicine, Department of Pediatrics, Koç University Hospital, 4 Davutpaşa str. 34010, Istanbul, Turkey; [2]Associate Professor, Koç University School of Medicine, Department of Pediatrics, Division of Pediatric Hematology/Oncology, Koç University Hospital, 4 Davutpaşa str. 34010, Istanbul, Turkey; [3]MD, Koç University School of Medicine, Department of Pediatrics, Division of Pediatric Hematology/Oncology, Koç University Hospital, 4 Davutpaşa str. 34010, Istanbul, Turkey; [4]MD, Koç University School of Medicine, Department of Pediatrics, Division of Pediatric Hematology/Oncology, Koç University Hospital, 4 Davutpaşa str. 34010, Istanbul, Turkey; [5]Associate Professor, Koç University School of Medicine, Department of Pediatric Surgery, Koç University Hospital, Davutpaşa str. 34010, Istanbul, Turkey; [6]Associate Professor, Koç University School of Medicine, Department of Pediatrics, Division of Pediatric Infectious Disease, Koç University Hospital, 4 Davutpaşa str. 34010, Istanbul, Turkey.

*Corresponding author: Oğuzhan Kandemir, oguzhan.kandemir@icloud.com

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However, sometimes it is not easy to give up the catheter.

Catheter-related bloodstream infection caused by *Burkholderia* spp. is very rare in oncology patients, with only few cases reported in the literature.[1-4] Mann et al. reported 17 patients with underlying malignancies.[1] Six pediatric patients were included, three had hematologic cancers and three had solid tumors and three of them were neutropenic. All six pediatric patients had central venous catheters and recovered with ceftazidime therapy and removal of the catheter. Heo et al. described 8 cases including 3 pediatric oncology patients,[2] all of whom had indwelling central venous catheters. Central catheters were removed in all 8 patients. Kim et al. reported 14 pediatric and 55 adult patients.[3] Four of the pediatric patients had underlying malignancy. The authors stated that after removing catheters, blood cultures remined sterile, even though they did not change antibiotic treatment.

Durham et al. reported an 11-year-old boy with bone marrow transplantation due to aplastic anemia,[4] who had indwelling catheter and was infected with *B. cepacia*. The patient received 14 days of appropriate antibiotherapy, however he had recurrence of infection with positive blood culture for *B. cepacia* after discharge from the hospital. Similar to our patient, he recovered with removal of the catheter and another course of antibiotherapy.

In conclusion, catheter-related bloodstream infection caused by *Burkholderia* spp. is difficult to treat without catheter removal, due to production of biofilm within the catheter.[7] Although antibiotic treatment can suppress the bacterial growth transiently, recurrence seems to be inevitable due to inadequate killing of bacteria that reside in biofilm. Despite it being a hard decision for an oncology patient to remove his/her totally functional port catheter, similar to other reports in the literature, our experience supports removal of the catheter, infected with *B. cepacia*.

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