Isolation of Fungi From Urine and Dialysis Filter in Patients on Hemodialysis in Dialysis Centers of Ahvaz, Iran

IJKD 2009;3:174-9
www.ijkd.org

SIR,

Patients with kidney failure who are on maintenance hemodialysis are more frequently at risk of opportunistic fungal infections. Infection is the most common cause of death in patients with acute kidney failure.[1,2] These patients have also limited urinary excretion that makes them susceptible to infectious diseases. One of the major causes of morbidity and mortality in patients undergoing hemodialysis is candidemia.[3] We identified infected in dialysis filters by fungi and assessed candiduria in patients on hemodialysis at our centers in Ahvaz, Iran. Urine samples of 74 patients were collected and immediately transferred to medical mycology laboratory. Then microliters of each sample were cultured on CHROMAgar *Candida* plates (CHROMAgar Candida Co, Paris, France) and incubated at 37°C for 1 week in an aerobic environment. In addition, 101 dialysis filters used for a session of hemodialysis were sampled. Positive urine cultures for *Candida* species were yielded in 3 patients (4.1%). The isolated species were *C albicans* (1700 CFU/mL), *C glabrata* (600 CFU/mL), and *C tropicalis* (3600 CFU/mL). Four of the of dialysis filters (4.0%) were contaminated by *Penicillium*, *Aspergillus niger*, *A flavus*, and *Rhizopus*.

Zaini and colleagues believe that even 1 colony of *Candida* in urine culture of men is considerable and should be taken seriously by clinicians.[4] The most common risk factors of candiduria are urinary indwelling catheters, antibiotics therapy, elderly age, urogenital tract abnormality, and diabetes mellitus. Kathresal and coworkers reported a case of arthritis due to *C albicans* in a patient on hemodialysis.[5] Wang and Line described a case of disseminated trichosporonosis in a patient on maintenance hemodialysis.[6] Drozdowska isolated several species of *C albicans*, *C glabrata*, and *C tropicalis* from urine in patients on hemodialysis.[7] Arvanitidou and colleagues isolated *Aspergillus* and *Penicillium* species, as well as *Candida* from the feed water, treated water, and dialysis solution samples.[8] Filters, tanks, and taps are favorable environments for fungi growth and are suitable sites for biofilm formation. The presence of fungi in treated water can contaminate dialysis filters as well as blood during hemodialysis. In the present study, 4% of filters were contaminated by saprophytic fungi. Probably, this contamination originates from treated water or dialysis solution. In conclusion, the recovery of saprophytic fungi from dialysis filters implies a potential risk for patients on hemodialysis. Further studies on fungi in feed water, treated water, and dialysis solution are required to investigate their clinical significance. In addition, candiduria in patients on hemodialysis needs to be discussed as a risk for these patients.

Ali Zarei Mahmoudabadi,[1]
Heshmatolla Shahbazyan,[2]
Maryam Zahiry[3]

[1]Department of Medical Mycoparasitology, School of Medicine and Infectious Diseases and Tropical Research Centre, Ahvaz Jundishapur University of Medical Sciences, Ahvaz, Iran
[2]Department of Internal Medicine, School of Medicine, Ahvaz Jundishapur University of Medical Sciences, Ahvaz, Iran
[3]School of Medicine, Ahvaz Jundishapur University of Medical Sciences, Ahvaz, Iran
E-mail: zarei40@hotmail.com

REFERENCES

1. Onder AM, Chandar J, Coakley S, Abitbol C, Montane B, Zilleruelo G. Predictors and outcome of catheter-related bacteremia in children on chronic hemodialysis. Pediatr Nephrol. 2006;21:1452-8.
2. Farinas MC, Garcia-Palomo JD, Gutierrez-Cuadra M. [Infection associated with hemodialysis and peritoneal dialysis catheters]. Enferm Infecc Microbiol Clin. 2008;26:518-26. Spanish.
3. Pyrgos V, Ratanavanich K, Donegan N, Veis J, Walsh TJ, Shoham S. Candida bloodstream infections in hemodialysis recipients. Med Mycol. 20081-5.
4. Zaini F, Azordegan F, Chabavizadeh J. Study of fungal infection in urine. Iran J Public Health. 1993;22:13-31.
5. Kathresal A, Biundo J, Blais CM, Morse S, Reisin E. A rare

case of Candida arthritis in a hemodialysis patient. Am J Med Sci. 2008;336:437-40.

6. Wang HY, Lin JL. Trichosporon beigelii fungaemia in a patient with haemodialysis. Nephrol Dial Transplant. 1999;14:2017-8.
7. Drozdowska A. [Morphological and biochemical features of fungi isolated from patients with renal failure]. Wiad Parazytol. 2007;53:145-8. Polish.
8. Arvanitidou M, Spaia S, Velegraki A, et al. High level of recovery of fungi from water and dialysate in haemodialysis units. J Hosp Infect. 2000;45:225-30.