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Actinobaculum Schaalii as a Uropathogen in Immunocompromised Hosts

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After kidney transplantation, the rate of infections will increase, and unusual organisms and rare infections can be seen with increased incidence such as fungal infections.[1] It is known that mortality of these infections is higher in kidney transplant recipients than in the general population.[2] Urinary tract infection (UTI) is the most common infection after kidney transplant, and it is of interest that its etiology, clinical presentation, and prognosis will change.[3] Although viruses are among the most common causes of opportunistic infections after transplantation, rare and life-threatening infections are the most important.[4]

In 1997, Lawson and colleagues reported *Actinobaculum* as a new genus of *Actinomyces suis* and called the human strains as *Actinobaculum schaalii*.[5] In 2003, Greub and Fendukly added *A urinale* (isolated from the urine of 2 patients with UTI) and *A massiliae* (isolated from the urine of a patient with UTI and from the pus of a superficial skin infection) to this genus.[6,7] *Actinobaculum* species are gram-positive, straight to slightly curved, nonmotile, facultatively anaerobic coccoid rods. They grow well after 48 hours at 37°C in an anaerobic atmosphere as circular grey colonies. They are catalase, urease, and oxidase negative, have been isolated from urine, blood, and pus, and predominantly cause UTI and also abscess, osteomyelitis, bacteremia, and superficial skin infections.[8-11]

It appears that *Actinobaculum* infection happens only in patients with underlying urological pathologic disorders or immunodeficient patients. It seems that the prevalence of *Actinobaculum* species

is underestimated and may be much more common than what we think because some microbiological laboratories do not perform urine gram stains and miss the direct detection of the bacteria.[11] It is better to consider specifically *A schaalii* in the microbiological search of pathogens in cases involving leukocyturia with a negative nitrite test but gram-positive rods in the gram stain and an underlying genitourinary tract pathology, instead of dismissing its presence as clinically irrelevant colonization by *Corynebacteria* or *Lactobacillus spp*. Microbiology laboratory management should include a native urine gram stain and selective blood agar plates and incubation should be extended to 2 to 3 days.[12] Urine gram stain is an important diagnostic tool for patients with a high suspicion of urinary tract infection, but negative routine urinary culture, especially in the presence of structural abnormalities of the urinary tract.[11]

In the genitourinary system, the spectrum of infection ranges from benign cystitis to severe pyelonephritis with bacteremia, indicating that this pathogen may become invasive.[8] In the current issue of the *Iranian Journal of Kidney Diseases*, Gupta and coworkers[13] reported an elderly kidney transplant recipient infected with *A schaalii* that presented as a UTI episode. They concluded that in a kidney transplant patient with a UTI episode that deteriorates clinically on conventional treatment, all causes including *A schaalii* should be kept as differential diagnosis. As published previously, *A schaalii* shows diminished susceptibility to the commonly used antibiotics in UTI (ciprofloxacin and trimethoprim-sulfamethoxazole), but is highly susceptible to beta-lactams, aminoglycosides, and nitrofurantoin.[8,12,14] The open question is the duration of treatment, but it seems that administration of proper agents for 3 weeks is optimal.

In conclusion, *A schaalii* is most likely a common cause of UTI, especially among elderly male patients. The spectrum of infections extends from benign cystitis to pyelonephritis with bacteremia, indicating that the pathogen can be invasive. Furthermore, Gupta and coworkers[13] has pointed out that proper management of infection by this overlooked organism warrants correct identification and sensitivity testing of such isolates.

CONFLICT OF INTEREST

None declared.

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