



Actinobaculum schaalii as a Uropathogen in Children



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Background

In recent years *Actinobaculum schaalii* has been found to be a uropathogen in infected predisposed elderly patients with urinary tract infection (UTI).

In 2003 Pajkrt et al. (1) reported a case of a 5 year old boy with pyelonephritis caused by *A. schaalii*.

In 2011 two children, one with nocturnal enuresis and one with chronic UTI, were infected with *A. schaalii*. That led to the screening of 29 consecutive urines from hospitalised children aged 0-15 years. (2)

Method

Urine samples were examined by phase-contrast microscopy. 5% sheep blood agar (SBA) was inoculated with 1 and 10 µl urine and incubated in 5% CO₂ for 2 days.

Species-specific real-time polymerase chain reaction (PCR) for *A. schaalii* was performed according to the method described by Bank et al. (3)

Results

A 13-year-old boy with nocturnal enuresis had UTI and *A. schaalii* was detected by culture as well as PCR in 10⁶ CFU/mL.

A 3-year-old girl with chronic UTI tested positive for *A. schaalii* by culture and PCR in quantities > 10⁶ CFU/mL.

In 5 asymptomatic children, all < 4 years old, *A. schaalii* was found by real-time PCR in quantities ≥ 10⁴-10⁵ CFU/mL. Urine cultures were negative. The remaining 24 tested negative for *A. schaalii* by PCR and culture.

Conclusion

Children as well as elderly can be colonized with *A. schaalii* and can get UTI with *A. schaalii*. It is important that clinicians, laboratory technologists and clinical microbiologists are aware that only by incubation in 5% CO₂ and/or molecular diagnostics, is it possible to detect and identify *A. schaalii*.

References

1. Pajkrt D, Simoons-Smit AM, Savelkoul PHM, van den Hoek J, Hack WWM, van Furth AM. Pyelonephritis Caused by *Actinobaculum schaalii* in a Child with Pyeloureteral Junction Obstruction. Eur J Clin Microbiol Infect Dis 2003; 22: 438-40.
2. Andersen LB, Bank S, Hertz B, Søby KM, Prag J. *Actinobaculum schaalii*, a cause of urinary tract infections in children?. Acta Paediatr 2012; 101(5): e232-4.
3. Bank S, Jensen A, Hansen TM, Søby KM, Prag J. *Actinobaculum schaalii*, a common uropathogen in elderly patients, Denmark. Emerg Infect Dis 2010; 16: 76-80.
4. Reinhard M, Prag J, Kemp M, Andresen K, Klemmensen B, Højlyng N, et al. Ten cases of *Actinobaculum schaalii* infection: clinical relevance, bacterial identification, and antibiotic susceptibility. J Clin Microbiol 2005; 43: 5305-8.

Detective work in the laboratory

Day 1

What is that?
A urine culture on a 13 year old boy with nocturnal enuresis and UTI. But there is no growth! I'd better consult my angels.

5% SBA incubated 24 h in ambient air.

Gram stain

The poor bacteria needs CO₂ and/or you can do a PCR.

Day 2

Oh! Now I have weak growth and it is catalase negative. I will incubate the plate again and do a species specific real-time PCR.

5% SBA incubated 24 h in ambient air + 24 h in 5% CO₂.

It needs more time to recover before doing biochemistry tests. (4)

Real-time PCR as described by Bank et al. Positive in 4 h. Treatment with a β-Lactam can be initiated.

Day 3

What a beautiful growth !!!

5% SBA incubated 24 h in ambient air + 48 h in 5% CO₂.

Maybe you should consider cultivating your urine specimens in 5% CO₂.

Molecular diagnostics is required for identifying *A. schaalii*. Maybe MALDI-TOF will be an option in the near future.