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Escherichia albertii as a cause of cystitis in a dog - a case report

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Introduction

Bacterial cystitis in dogs is most commonly caused by *Escherichia coli* (1). The genetically very closely related species *Escherichia albertii* is known as an enteric pathogen in humans as well as a cause of enteritis and septicemia in certain bird species (2, 3). While it has been isolated from feces of healthy dogs, it has not been described as a canine pathogen to date (4). *E. albertii* is non-motile and occurs in two biogroups: biogroup 1 is indole-negative and lysine-positive while biogroup 2 is indole-positive and lysine-negative and was formerly known as *Shigella boydii* Serotype 13. Recently, a third biogroup was proposed for strains that are indole-positive and lysine-positive.(5)

Methods and Results

Urine of a 7 year-old male dog was sent for bacterial urinalysis and 10µl were cultured on Trypticase™ Soy II agar with 5% Sheep Blood (TSA-SB) (BD™) and chromAX Urine agar (Axonlab) at 37°C aerobically. After 24 hours incubation, >103 grey, non-hemolytic colonies grew on TSA-SB, which were lactose-negative and appeared colourless on chromAX Urine agar (*E. coli* is expected to be red). Identification using MALDI-TOF resulted in three species with a score above 2.0: *Escherichia coli*, *Escherichia marmotae* and *Escherichia albertii*. As the isolate was non-motile and MALDI-TOF analysis cannot distinguish between *E. coli* and *Shigella* spp., further identification was pursued. The isolate was subjected to 16S rRNA sequencing using universal primers, revealing a 99.5% sequence identity with *E. albertii* (NR_025569.1). Antibiotic susceptibility testing was performed (AST-GN96, Vitek®2, Biomérieux) and revealed no antibiotic resistance.

Conclusion

This is the first report of *E. albertii* as a pathogen causing cystitis in a dog, though previous canine infections with this species might have been missed due to misidentification. Shiga toxin-producing strains of this species have been described (3) indicating it may also act as an enteropathogen. Though this isolate was susceptible to all tested antibiotics, it is likely that this species can also acquire the notorious broad range of antibiotic resistances known to occur in *E. coli*. Further investigation into the occurrence of *E. albertii* in dogs is needed to assess the risk this species poses to dogs and their owners.