

Management of Complicated UTI -- Michigan State University Vet School.

Most urinary tract infections in pets respond relatively quickly to treatment. However, infections associated with a defect in the host immune system often fail to respond, or recur after antibiotic withdrawal, and these can be difficult to manage. Examples of altered host defenses include processes that result in urine retention or altered sphincter competence, anatomic defects like deeply hooded vulva, focuses for infection (ie stone, tumor, or chronic prostatitis), damage to mucosal barriers, alterations in urine volume or composition (such as excessive dilution), or systemic immunocompromise as might be seen with Cushing's or diabetes.

Complicated UTIs fall into the categories of relapse or reinfection. Relapse is defined as the recurrence of UTI with the same species of microorganism usually within weeks of cessation of antibiotics. Relapse usually results from inappropriate antibiotic type or duration, persistence of organism within a focus for infection (stone, tumor, pyelonephritis, prostatitis), or development of antimicrobial resistance. Reinfection is defined as recurrence of UTI with a different organism than previously. Common causes of reinfection include failure to eliminate predisposing causes (perivulvar hooding with perivulvar dermatitis, morbid obesity), systemic illness (CKD, diabetes mellitus, hyperadrenocorticism), and spontaneous reinfection.

Management of complicated UTIs in dogs may consist of the following steps:

1. Workup of underlying causes as described above.
2. Obtain urine culture and initiate treatment based upon susceptibility.
3. When a nidus for infection is suspected to be of renal or prostatic origin, consider fluoroquinolones which penetrate these tissues well. Other antibiotic choices could include trimethoprim or chloramphenicol. For pyelonephritis or prostatitis, treatment courses of 6 weeks are typically recommended.
4. Consider obtaining a urine culture after 7 days of initiating antibiotics to ensure a good therapeutic effect and to assess for drug resistance.
5. Ideally obtain a culture again in 4 weeks to assess for development of resistant superinfection.
6. Obtain a culture 5-7 days after cessation of antibiotics to ensure urine remains sterile.

Strategies to decrease reinfection may include:

1. Cranberry extract, shown to reduce adherence of E.coli in women with recurrent UTI. While in vitro studies suggest the possibility of efficacy in dogs, clinical data in support of this is currently lacking. Dose: approximately 10 mg/lb body weight 3 times daily. Alternately, cranberry D-mannose (150 mg) tabs may be used. Dosing is 1/2 tab once daily for <20 lb, 1 tab once daily for 20-40 lb, 2 tabs daily for 40-80 lb, and 3 tabs daily for >80 lb.
2. Chronic low dose antibiotic therapy may reduce reinfection in the short term when recurrences are extremely frequent. There may be an increased risk of drug resistance with long term use, and given concerns about the deleterious effects of chronic antibiotic therapy on the gut microbiome, this should only be used as a last resort.

A chronic low dose antibiotic strategy has been proposed by nephrologist, Dr. John Kruger, as a way to control rapidly recurrent types of urinary tract infections. These consists of the following steps:

1. Treat with antibiotics at normal dosing based on results of culture.
2. Culture while still on antibiotics at 10 days. If culture negative:
3. Transition to amoxicillin at ½ the therapeutic dose in the evening only. This antibiotic is excreted in the urine, so this strategy allows the antibiotic to remain at high concentrations in the urine for a long duration as the pet sleeps.
4. Culture every 4 weeks to make sure remains culture negative.
5. Continue for a minimum of 3 months, then reassess.
6. If cultures are ever positive, return to full antibiotic dosing based on culture results.

Many young dogs will ultimately outgrow this condition. (Vet Clinics 45 (2015) 721-746.