

Urinary Tract Infections

Treatment/Comparative Therapeutics

Shelly J. Olin, DVM^{a,*}, Joseph W. Bartges, DVM, PhD^b

KEYWORDS

- Veterinary medicine • Canine • Feline • Cystitis • Pyelonephritis • Prostatitis
- Urinary tract infection

KEY POINTS

- Determining whether an infection is uncomplicated or complicated is essential to guide the diagnostic and therapeutic plan.
- Recurrent infections are complicated infections and may be relapsing, refractory/persistent, reinfection, or superinfection.
- Antimicrobials are the cornerstone of treatment of bacterial UTI and, ideally, are selected based on culture and sensitivity.
- There is limited literature to support preventative therapies; identification and resolution of underlying causes are essential.

INTRODUCTION

Urinary tract infection (UTI) occurs when there is a compromise of host defense mechanisms and a virulent microbe adheres, multiplies, and persists in a portion of the urinary tract. Host defenses include normal micturition, anatomic structures, the mucosal barrier, properties of urine, and systemic immunocompetence. Most commonly UTIs are caused by bacteria, but fungi and viruses also may infect the urinary tract. UTIs may involve more than one anatomic location, and the infection should be categorized as upper urinary tract (kidneys and ureters) versus lower urinary tract (bladder, urethra, and vagina). Most bacterial UTI occur as a consequence of ascending migration of pathogens through the genital tract and urethra to the bladder, ureters, and one or both kidneys. Rectal, perineal, and genital bacteria serve as the principal reservoirs for infection.^{1,2}

Disclosure Statement: The authors disclose no commercial or financial conflicts of interest.

^a Department of Small Animal Clinical Science, College of Veterinary Medicine, University of Tennessee, 2407 River Drive, Knoxville, TN 37996, USA; ^b Cornell University Veterinary Specialists, 880 Canal Street, Stamford, CT 06902, USA

* Corresponding author.

E-mail address: solin@utk.edu

Vet Clin Small Anim ■ (2015) ■–■
<http://dx.doi.org/10.1016/j.cvsm.2015.02.005>

vetsmall.theclinics.com

0195-5616/15/\$ – see front matter © 2015 Elsevier Inc. All rights reserved.

Bacterial Isolates

A single bacterial pathogen is isolated from approximately 75% infections; 20% of UTIs are caused by 2 coinfecting species, and approximately 5% are caused by 3 species.^{3–5}

The bacteria that most commonly cause UTIs are similar in dogs and cats (**Fig. 1**).^{3,6–8} *Escherichia coli* is most common, followed by gram-positive cocci, and then various others, including *Proteus*, *Klebsiella*, *Pasteurella*, *Pseudomonas*, *Corynebacterium*, and several other rarely reported genera.^{3,6} *Mycoplasma* spp are isolated from urine of dogs with clinical signs of lower urinary tract in less than 5% of samples; whether *Mycoplasma* spp are associated with urinary tract disease in cats is controversial.^{3,9–11}

Cats may be infected with a unique strain of *Staphylococcus*, *Staphylococcus felis*, and commercial phenotypic identification systems may not differentiate between *S felis* and other coagulase-negative *Staphylococcus* spp.^{7,8} One study found that *S felis* was the third most common isolate based on 16S rDNA sequencing (n = 25/106, 19.8% of bacterial isolates cultured), suggesting *S felis* is the most common Staphylococcal species causing UTI in cats.⁷

Pyelonephritis

Pyelonephritis, or infection of the renal pelvis and parenchyma, is most commonly due to ascending infections from the lower urinary tract in dogs and cats (**Fig. 2**). In addition to the components of immunity that protect urinary tract in general, the kidneys are protected from bacterial infection by vesicoureteral flap valves, relatively long ureters that usually allow only one-way flow of urine via peristalsis, and generally hypoxic environment of the renal medulla.

Prostatitis

Inherent prostatic defense mechanisms against infection include local immune factors, such as immunoglobulin A and antibacterial proteins, retrograde flow of prostatic

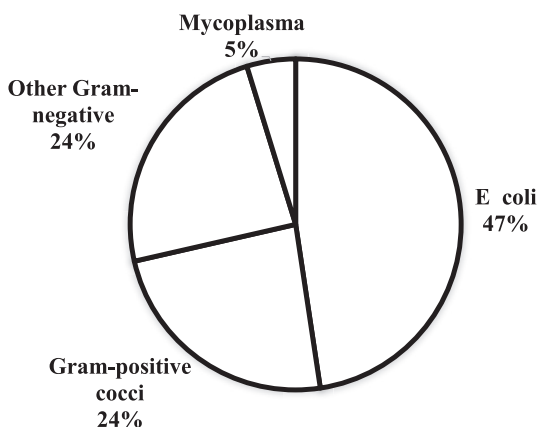


Fig. 1. Prevalence of common urinary pathogens: 33%–50% *E coli*, 25%–33% gram-positive cocci (*Staphylococcus* sp, *Streptococcus* sp, *Enterococcus* sp), 25%–33% other gram-negative (*Proteus* sp, *Klebsiella* sp, *Pasteurella* sp, *Pseudomonas* sp, *Corynebacterium* sp), less than 5% *Mycoplasma* sp. (Data from Ling GV, Norris CR, Franti CE, et al. Interrelations of organism prevalence, specimen collection method, and host age, sex, and breed among 8,354 canine urinary tract infections (1969–1995). *J Vet Intern Med* 2001;15:341–7; and Barsanti J. Genitourinary infections. In: Greene CE, editor. Infectious diseases of the dog and cat. 4th edition. St Louis (MO): Elsevier Saunders; 2012. p. 1013–31.)

Download English Version:

<https://daneshyari.com/en/article/2460046>

Download Persian Version:

<https://daneshyari.com/article/2460046>

[Daneshyari.com](https://daneshyari.com)