

Urinary Tract Infections and Bladder Stones

Urinary tract infections (UTI) are common in female dogs and occur less frequently in male dog; this is secondary to anatomical differences of the male and female urethra, with the latter being shorter and wider. Bacteria can more easily ascend the female urethra and establish an infection in the bladder. Male dogs can get UTIs as well, but underlying or concurrent conditions that may have predisposed to the infection should be ruled-out.

Urinary tract abnormalities including abnormal ureteral anatomy, bladder stones, bladder tumors, and prostatic diseases can lead to secondary infections. Similarly, metabolic and endocrine diseases including kidney disease, Cushing's disease, and diabetes mellitus can associated with UTIs. Finally, immunosuppression from certain diseases or medications can predispose to UTIs. Importantly, urinary tract infections in females should also prompt further investigation for underlying anatomical or conformational issues or concurrent disease processes.

Clinical signs of UTIs include frequent urination, malodorous urine, blood in the urine, and vocalizing with urination. Straining to urinate may also be evident, but straining to urinate without any urine production should prompt an emergent evaluation for stones or another cause of urinary obstruction.

UTIs are diagnosed with a combination of urine testing, including urinalysis and urine culture. They're most commonly caused by fecal bacteria. Ideally, the urine is cultured to confirm a bacterial infection, to identify the species of bacteria causing the infection, and to determine the best antibiotic choice to treat the infection. In some cases of first-time UTIs, an adequate urine sample is difficult to obtain or a culture is not performed; in these cases, empirical treatment with antibiotics may be elected but a culture should be considered 5-7 days after the antibiotics are finished to ensure the UTI has cleared.

In cases of recurrent urinary tract infections, urine cultures before and after treatment are imperative; they guide appropriate antibiotic therapy, confirm resolution of the infection, and assist in cases in which bacteria have become multidrug resistant.

Dogs can develop bladder stones (cystoliths) which may be a consequence of chronic UTIs or- conversely- may be the cause of chronic infection. Bladder stones should be

ruled-out in male dogs with urinary tract signs and in female dogs with urinary tract signs that do not improve with treatment. Certain stones can be seen on radiographs (x-ray), while others cannot; the latter stone types may be seen with ultrasound or as a filling defect with specific imaging techniques.

Stones can become acutely life-threatening if they block the urethra and create a urinary obstruction. While this is far more common in male dogs because of their longer and more narrow urethra, female dogs can become obstructed by stones, as well. Following a diagnosis of bladder stones, treatment options may be guided by the number, size, and suspected type of stone. In some cases, stones can be medically dissolved, while other cases require surgical removal. Whenever possible, stones should be submitted for analysis to better guide therapy.

If your pet is straining but unable to urinate or becomes acutely lethargic or distressed, seek emergent evaluation.

