

From Crystals to Crisis: Feline Lower Urinary Tract Diseases

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Lower urinary tract signs (LUTS) such as dysuria, haematuria, periuria, pollakiuria and stranguria can occur as the result of a variety of underlying conditions and diagnostic investigation is required to uncover the underlying cause and select appropriate treatment. The fact that LUTS are similar despite different underlying causes creates a diagnostic challenge. The most common cause of LUTS, FIC, is challenging to manage due to a complex pathogenesis involving organs outside the LUT. Urethral obstruction is a life-threatening complication of various underlying LUT diseases and recurrent LUTS can lead to relinquishment or euthanasia of affected cats.

As presenting LUTS often may not differ between the various underlying causes of LUT diseases, a logical approach to investigation is essential, though may be tailored according to the severity of clinical signs, patient history and number of similar episodes that have occurred previously, as well as caregiver finances. In addition to recording the LUTS and signs referable to other organ systems (inappetence, vomiting, etc) reported by the caregiver, environmental and behavioral aspects may be pertinent, warranting a more thorough history.

Serum biochemistry and a complete blood count may be indicated. Although rarely providing a diagnosis of LUT disease, comorbidities may be detected as well as abnormalities that may influence further tests and treatment choices. Urinalysis is a vital part of the investigation of all LUT diseases. Results should be assessed in the light of the cat's diet (wet or dry), urine collection method, and sample storage and handling, to avoid any misinterpretation. Imaging can be very valuable for the assessment of cats with recurrent or severe LUTS. It is also indicated for diagnosing or excluding urolithiasis and is recommended for cats with signalment, clinical signs or physical examination findings that are atypical for FIC (eg, older cats, or cats with palpable bladder abnormalities or incontinence). Survey abdominal radiographs may be useful for detection of radiodense uroliths and should include lateral and dorsoventral views that span the abdomen and incorporate the pelvic and penile urethra.

FIC is the most common cause of LUTS in cats. Diagnosis of FIC is one of exclusion, taking into consideration the number and type of episodes, severity of clinical signs (including comorbidities) and financial resources of the caregiver. In most cases, LUTS will resolve in 2-7 days (with or without treatment), but recurrence is common. Given the multifactorial nature of FIC, individual interventions (nutritional modifications or medications) are unlikely to be effective as sole therapy, but may be helpful as part of a multimodal approach. Appropriate multimodal environmental modification (MEMO) has been shown to be effective in reducing the recurrence of all disease signs in cats with FIC and is now the standard of practice in veterinary medicine for management of this condition. Analgesia is strongly recommended as this is a painful condition.

Urolithiasis is an important cause of LUTS in cats, accounting for 10-23% of cases. The most common types of urolith are calcium oxalate and struvite (magnesium ammonium phosphate) and these are typically sterile. Together, calcium oxalate and struvite make up around 90% of feline uroliths.

Urinary tract infection (UTI) is uncommon as a cause of LUTS in otherwise healthy adult cats (<3%), but the prevalence is higher in certain groups, such as cats with CKD and those over 10 years of age, where infection should be considered a potential underlying cause.

Urinary obstruction (UO) is a potentially life-threatening consequence of any type of LUT disease. FIC is the most commonly reported cause of obstruction, but urolithiasis should be considered and excluded. Urethral

plugs (comprising combinations of proteinaceous material, inflammatory cells and crystals) can occur as sequelae of underlying LUT diseases such as FIC and less commonly UTI or urolithiasis (or a combination). Other causes of UO include anatomical abnormalities (strictures, spasm, congenital defects) and occasionally neoplasia.

Tumors anywhere in the urinary tract can result in clinical signs of hematuria, stranguria and dysuria, with the bladder being the most frequently affected location. Other clinical signs of LUT neoplasia may include lethargy, abdominal pain and vomiting. Overall, tumors of the bladder are rare in cats, with the most common being invasive urothelial carcinoma (previously termed transitional cell carcinoma).

Congenital defects of the urinary tract are rare in cats, but can occur in all locations of the urinary system. Usually, they manifest at a young age, with LUTS and incontinence. Such defects include abnormalities of the bladder (agenesis, hypoplasia, herniation), urethra (ectopic ureters, aplasia, hypoplasia, duplication, prolapse), urachus and genitalia (fistulas, hypospadias).

References:

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