FLUTD: NUTRITION'S ROLE IN MANAGMENT

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Any condition affecting the urinary bladder or urethra of cats is known as feline lower urinary tract disease (FLUTD). FLUTD is a common reason for which cats present to the veterinary hospital. Regardless of underlying cause, FLUTD is characterized by the following signs: dysuria, pollakiuria, stranguria, hematuria, and/or periuria (urination in inappropriate places). It is vital that veterinary technicians are aware of signs and symptoms of FLUTD when talking with clients.

For a number of years, information regarding specific causes of FLUTD has increased in the veterinary profession, which allows for diagnostic and therapeutic efforts to be directed toward identification and elimination of specific underlying disorders. The most common cause of FLUTD in cats < 10 years of age is feline idiopathic cystitis (FIC). This is followed by uroliths, and urethral plugs. A diagnosis of FIC is made by excluding all other causes of FLUTD. In older cats (> 10 years), urinary tract infection and/or uroliths are the most common cause of FLUTD.

In 1981, 78% of feline uroliths were composed of struvite and only 2% were calcium oxalate. In the mid- to late-1980s, the occurrence of calcium oxalate uroliths began to increase. Between 1994 and 2002, approximately 55% of uroliths were calcium oxalate and only 33% were struvite. Since 2001, however, the number of struvite uroliths has continued to increase while occurrence of calcium oxalate uroliths has decreased. Based on 10,093 feline uroliths analyzed at the Minnesota Urolith Center in 2006, the most common mineral types were struvite (50%) and calcium oxalate (39%), followed by purine (5%). These trends have continued into 2011. In 2006, 88% of urethral plugs evaluated at the Minnesota Urolith Center were composed of struvite, 9% were matrix, < 1% were calcium oxalate, and 2% were of other mineral compositions.

Diagnostic Evaluation

Veterinary nurses assisting with the diagnostic evaluation of cats with recurrent or persistent lower urinary tract signs should include a urinalysis and diagnostic imaging. A urine culture should be performed if there is a history of urinary tract manipulation (e.g., urethral catheterization), evidence of urinary tract infection (e.g., pyuria, bacteriuria, malodorous urine), or the cat is older (usually > 10 years). More advanced procedures (e.g., contrast radiography) may be appropriate in some cases.

When evaluating patients with signs of lower urinary tract disease, urinalysis is considered one of the most important parts of the evaluation. If possible, the veterinary technician should perform the urinalysis in-house since fresh urine samples analyzed within 30 minutes of collection are preferred. Urine specimens evaluated after this time may form crystals that are not in fact present in the patient. Samples may be refrigerated for up to 8 hours and then evaluated (after the sample has returned to room temperature). This method is not best for evaluating crystalluria and should be avoided as much as possible by the veterinary technician.

While it may be tempting to only perform dipstick analysis, measure urine specific gravity, and ignore urine sediment examination, it is crucial for the veterinary team to perform a complete urinalysis. The only way to accurately detect pyuria, hematuria, bacteriuria, and crystalluria is by sediment examination. Veterinary teams cannot rely solely on urine dipstick analysis because results for detection of pyuria are often false positive in cats and the occult blood reagent pad on the dipstick is not specific for hematuria (in addition to red blood cells, it also becomes positive with hemoglobin and myoglobin). Pyuria (> 5 WBCs/hpf) indicates inflammation and it may be caused by several disorders (urolithiasis, bacterial infection); it is less commonly observed in cats with FIC. If you see increased numbers of white cells, you should look carefully for bacteria. Take care not to misinterpret presence of cellular debris and Brownian motion as bacteriuria.

Several different types of crystals may be identified on urine sediment examination, although struvite (triple phosphate) and calcium oxalate are the most common. The presence of crystals indicates that the urine is supersaturated with that substance and the patient is at risk for forming uroliths. Remember that cats also may have crystals and never develop uroliths. In the absence of other findings such as uroliths or urethral plugs, the presence of crystals alone is not diagnostic of urolithiasis or struvite disease. Struvite crystals may be present in normal cats and cats with struvite uroliths (sterile or infection-induced), non-struvite urolithis (including some cats with calcium oxalate uroliths), urethral plugs, or other urinary disorders such as FIC.

Survey radiographs are helpful for identifying radiopaque uroliths and crystalline-matrix urethral plugs. Remember during positioning to include the caudal abdomen (urethra) in the radiograph, or you risk missing potentially important information. Normal survey radiographs do not exclude FIC, radiolucent uroliths (urate/purine), small uroliths (< 2 mm), neoplasia, blood clots, or anatomic defects. Abdominal ultrasonography and/or contrast urethrocystography is helpful in these cases. If no cause is identified after thorough diagnostic evaluation, a diagnosis of FIC is very likely.

Treatment of Cats with Feline Idiopathic Cystitis

The goals of managing cats with FIC are to decrease severity of clinical signs and increase the interval between episodes of lower urinary tract disease. Over the past 40 years, many different treatments have been recommended to control signs in cats with FIC, yet only a few have been evaluated in clinical trials of cats with FIC.

Nutritional Management

It has been found that feeding moist food (>60% moisture) has been associated with a decreased recurrence of clinical signs in cats with FIC. During a 1-year study, clinical signs recurred less often in cats with FIC when fed a moist food compared with cats fed the dry formulation of the same food. Beneficial effects have been observed in cats with FIC when urine specific gravity values decrease from 1.050 to values between 1.032 and 1.041. Veterinary technicians should be aware of and discuss with clients, additional methods for increasing water intake (eg, adding broth to foods, placing ice cubes in the cat's water, and providing water fountains) as these may be useful for some cats.

A recent study shows that consistently feeding a therapeutic urinary food was associated with a reduction in recurrent episodes of FIC signs. This is the first study to definitively show that foods of different nutritional profiles impact the expression of acute episodes of FIC signs in cats.

Likewise, the addition of L-tryptophan, a precursor of serotonin that inhibits neurotransmitters in the brain to balance mood, as well as hydrolyzed casein, a bioactive peptide that helps relieve anxiety in cats has been identified as nutrients that will aid in managing the stress component of FIC.

Increasing salt content of food is an effective method of causing urine dilution in cats. However, the potential for adverse effects should be considered. At this time, there are differing opinions regarding role of sodium in cats with kidney disease. In a recent study, the effects of high-salt [1.2% sodium, dry matter basis (DMB)] intake for 3 months were evaluated in 6 cats with mild azotemia due to naturally occurring chronic kidney disease. These cats had progressive increases in BUN, serum creatinine, and serum phosphorus compared with consumption of food with 0.4% sodium (DMB). Based on all findings to date, further study is needed to better determine the role of sodium in healthy cats fed long-term as well as cats with hypertension, chronic kidney disease, and calcium oxalate uroliths. Pending further studies, it is sensible to avoid high-salt foods in cats with chronic kidney disease and monitor kidney function when high-salt foods are fed to cats at risk for kidney disease.

Inflammation plays a role in many causes of FLUTD, especially FIC and urolithiasis. Therefore, a key nutritional factor for managing cats with FLUTD includes omega-3 fatty acids, which are known to have potent anti-inflammatory effects. In addition, vitamin E and beta-carotene are helpful for counteracting oxidative stress and reducing free radical damage, conditions that often accompany inflammation.

Environmental Enrichment

In addition to nutritional management, the currently recommended treatment for cats with FIC also includes environmental enrichment and stress reduction. This is crucial in a FIC treatment plan and the veterinary technician should be readily able to discuss environmental enrichment with the client.

A prospective study assessing effects of multimodal environmental modification was reported in 46 client-owned cats with FIC. The findings showed significant reductions in lower urinary tract signs, fearfulness, and nervousness after treatment for 10 months. With cats that are suffering with FIC, stressful situations (e.g., conflict with other cats in the home) should be avoided or minimized. Owners should provide opportunities for play/resting (horizontal and vertical surfaces for scratching, hiding places, and climbing platforms). Any changes (eg, switching to a new food) should be made gradually so the cat has adequate time to adapt and avoid becoming stressed.

Another critical component of managing cats with FLUTD, especially FIC, involves appropriate use and maintenance of litter boxes in the home. Most cats prefer clumping, unscented litter; however, it may be necessary to give cats several choices and let them select their preference. It may be possible to have cats within the home that prefer different types of litter or litter boxes.

In general, uncovered litter boxes are recommended because they are less likely to trap odors inside. For older cats with mobility issues, the owner should select a litter box with low sides to facilitate the cat getting in and out of the box. Litter boxes should be scooped daily and washed every few weeks with warm, soapy water. Because plastic can absorb odors over time (months to years), owners should consider replacing litter boxes with new ones periodically. Finally, there should be an adequate number of litter boxes (the 1 + 1 rule = 1 more than the number of cats) in the home and they should be located on multiple floors where cats can enter and exit readily. More detailed information about environmental enrichment and litter box management is available in the suggested reading. It may be helpful to encourage owners to read this additional information as well because their involvement is critical for a successful outcome. Finally, health care team members, especially technicians, play a crucial role in educating cat owners about the importance of environmental enrichment and litter box management.

Summary

Increased understanding of specific causes of FLUTD has allowed diagnostic and therapeutic efforts to be directed toward identification and elimination of specific underlying disorders. The most common cause of FLUTD in cats < 10 years of age is feline idiopathic cystitis (FIC), followed by uroliths, and urethral plugs. A diagnosis of FIC is made by excluding all other causes of FLUTD. In older cats (> 10 years), urinary tract infection and/or uroliths are the most common cause of FLUTD. It is imperative that veterinary technicians have a thorough understanding of FLUTD and the how the various treatments affect the different types of FLUTD. Veterinary nurses play a very important role in the treatment of FLUTD. The history obtained from discussions with the pet owner aids in the diagnosis of FLUTD. The veterinary nurses' discussion of the treatment plan with the client is key to the client's understanding and compliance with the veterinarian's recommendation and ultimately the health of the pet.

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