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FELINE LOWER URINARY TRACT DISEASE

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A spectrum of disease

Feline lower urinary tract disease (FLUTD) is a spectrum of different diseases that present with a common set of clinical signs irrespective of the underlying cause:

Table 1: Major potential cause of FLUTD	Approximate frequency
Idiopathic cystitis (FIC)	50-70%
Urolithiasis	10-25%
Urethral blockage	20-30%
Bacterial cystitis	2-10%
Anatomical defects (e.g. urethral stricture)	<10%
Neoplasia	<2%
Behavioural problem	<5%

Bacterial cystitis

While most surveys suggest bacterial cystitis is rare in cats (<2-3% of cases of FLUTD) and while it is undoubtedly vastly less common than in dogs, the low prevalence in some studies may reflect biases seen in referral populations. Some studies suggest that up to 10% (or possibly more) of first-opinion cases may have bacterial cystitis.

Urolithiasis

Calcium oxalate and struvite uroliths occur with approximately equal frequency in cats and together account for around 90% of all uroliths. While struvite stones can be dissolved with appropriate dietary management, oxalate cannot and require surgical removal. Long-term prevention of recurrence depends on modifying the urine composition to reduce the risk of further crystalluria and stone formation.

Urethral plugs and crystalluria

Urethral plugs are possibly the single most common cause of urethral obstruction in cats. Most plugs have a high matrix content (>50%) in which crystalline material, cells and cellular debris becomes trapped. It is likely that in at least a proportion of these cases, the underlying cause is idiopathic cystitis (creating the mucoprotein matrix). The crystalline component of plugs is usually struvite. In this situation, although crystalluria is not the cause of the disease, it does contribute to the formation of a plug that cannot be passed through the urethra. Thus dietary modification to eliminate struvite crystalluria may help prevent recurrence.

1 Scientific Proceedings: Companion Animals Programme

Urethral spasm

Not just with urethral plugs, but in many other forms of FLUTD, urethral inflammation may occur. This may also be exacerbated by iatrogenic damage to the urethra or irritation of the urethra with the use of indwelling catheters. Where urethral spasm is suspected a combination of smooth and striated muscle relaxants should be used to relax both the internal and external sphincter muscles. Common recommendations are to use either dantrolene (2-10 mg/cat PO tid) or diazepam (2-5mg/cat PO bid/tid) together with either prazosin (0.5 mg/cat sid-bid) or phenoxybenzamine (2.5-7.5 mg/cat sid/bid).

Idiopathic cystitis

The majority of cases of idiopathic FLUTD (iFLUTD) spontaneously resolve within a few days irrespective of therapy, making response to treatment very hard to assess. Often, what is taken to be improvement due to therapy is in fact simply spontaneous recovery. A plethora of drugs are used to treat iFLUTD, many of which have not been the subject of any clinical trials, and of the few published well-controlled studies, regrettably no interventional medical therapy has been shown to be of significant benefit in these cases.

The importance of diet in idiopathic cystitis

Although the use of diets to specifically to minimise production of urinary crystals has little or no scientific rationale in the management of iFLUTD, dietary manipulation is the single most important component of long-term management of this disease.

Dietary change is the only form of therapy that has consistently been shown to be of real benefit in cases of iFLUTD. Based on our current knowledge, this forms the most important part of long-term management. Several studies have now confirmed the results of an earlier investigation that showed cats fed a wet (tinned) diet had a much lower rate of recurrent signs of idiopathic cystitis than those fed a dry diet. Encouraging water intake without salt supplementation is preferred and the use of 'pet fountains', flavoured waters and other methods of enhancing water intake (beyond just the use of wet diets) also has a role to play. In cases of recurrent iFLUTD, a primary aim should be to reduce the urine SG to 1.035 or less, and avoid abnormal acidification or alkalinisation.

Drug therapy in idiopathic cystitis

Recent evidence from investigation of iFLUTD cases has revealed a number of similarities to interstitial cystitis in humans. There is evidence from careful studies that both conditions may be associated with decreased urinary excretion of glycosaminoglycans, an increased bladder wall permeability, and increased circulating

catecholamine levels (although paradoxically relatively low cortisol levels and blunted cortisol responses to ACTH).

Glycosaminoglycan (GAG) replacers are now commonly used in cats with iFLUTD. However, in two long-term controlled studies, GAG replacers did not make a significant difference to the recurrence of iFLUTD in affected cats although both studies identified some individual cats that did seem to consistently respond to GAG-replacer use.

Amitriptyline has also been used - it has some central nervous system effects which may help in controlling iFLUTD, especially as stress factors appear to be involved in at least some cats. However, the drug has a number of other potential beneficial effects in terms of reducing neurogenic inflammation in the bladder and controlling the discomfort associated with the disease. Generally, amitriptyline has been used at a dose of 2.5-10 mg per cat, given once daily in the evening (as administration may cause temporary sedation). Although short-term studies have not been able to demonstrate a benefit, one long-term open uncontrolled study did suggest genuine benefit in some cats with long-standing intractable cystitis. Again, in severe, intractable cases this drug is worth considering.

Consideration should also be given to environmental factors and potential stress factors that could impact on affected cats. Inter-cat aggression and dominance may be an important trigger factor in some and the use of environmental enrichment/modification together with feline pheromone sprays/diffusers could also be a consideration in some situations.