

# INTERSTITIAL CYSTITIS

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## CYSTITIS

A syndrome is a group of symptoms frequently seen together that can be caused by several different diseases. Feline Lower Urinary Tract Disease (FLUTD) is a syndrome of cystitis. *Cystitis does not mean bladder infection.* The term "cystitis" literally means inflammation of the urinary bladder; infection is merely one cause of inflammation, but there are other more common causes of inflammation as well. The classic symptoms of this syndrome include blood in the urine, straining to urinate, urinating in places other than the litterbox, and increased frequency of urination. Some of the diseases that can produce this syndrome include non-specific inflammation, infection, bladder stones, trauma, and cancer.

## PREVALENCE

In cats less than ten years of age, the single most common cause of FLUTD is an idiopathic disease (disease of unknown origin) that goes by several different names, including idiopathic cystitis, interstitial cystitis (IC), idiopathic FLUTD, and Feline Urologic Syndrome (FUS). Depending on the report one reads the prevalence of this disease may involve one in every thousand cats. Although different studies vary in actual numbers, 80 to 90% of cats under ten years of age presenting with these symptoms have IC, 10 to 20% have bladder stones, fewer than 3% have true infections, and fewer than 1% have miscellaneous diseases that do not fit the above categories. In cats over ten years of age, this disease is still common, but the percentage decreases while the likelihood of other diseases increases. Male and female cats get this disease equally, but male cats are much more likely by far to develop a severe complication, urethral obstruction (see below).

## CAUSES

Despite extensive research, the cause of IC is unknown. To date, no specific infectious agents, dietary imbalances, hormonal imbalances, or other

causes have as yet been identified although several factors have been identified that may influence the occurrence and outcome of the disease. Some of these factors include diet composition, type of diet (dry versus wet), water consumption, and stress factors (environmental, medical, etc.).

## DIAGNOSIS

Diagnosis of uncomplicated IC is straightforward. On a first time episode, the diagnosis is usually made based on history, clinical signs, and urine analysis. In cases of frequent recurrences, persistence, or urethral obstruction, blood tests, urine culture, regular and special x-rays, and ultrasound evaluation may be recommended to rule out other causes of FLUTD which might warrant different treatment.

## THERAPY

If specific diseases, such as infection, bladder stones or cancer are identified, then they are treated accordingly. In the case of IC, since the cause is unknown, there is no specific therapy. Fortunately, however, the signs of this disease will usually resolve of their own accord within several days if no complications occur. Non-specific therapy is aimed at addressing those factors, such as diet, which influence (but do not cause) the disease.

Historically, most research for treatment of this disease has centered on diet. This is because some cats with IC have struvite crystals in their urine. Struvite crystals are composed of minerals, especially magnesium. Excessive crystal formation, therefore, suggests the presence of increased minerals/magnesium in the urine. However, not every cat with this disease has struvite crystals and not every cat with even large amounts of struvite crystals has this disease. Additionally, in test studies involving large groups of cats that have been fed the same diets in the same environment under the same conditions, IC has appeared only sporadically. The implication is that *diet does not cause interstitial cystitis.*

Dietary research did lead to the discovery that although diet does not cause IC, it certainly has a profound influence on disease recurrences, persistence, and the development of urethral obstruction (see below). Patients on diets that

produce decreased urine pH, mineral content, and urine concentration are less likely to have episodes of IC. And, when these patients do have episodes, they are usually less severe, shorter lived and infrequently accompanied by urethral obstruction.

Specific treatments for IC are being evaluated constantly, but although results have shown some promise, at this time there are no approved medications for this disease. Some symptomatic therapies, such as analgesics and anti-inflammatory medications, are being used with some success at alleviating discomfort and distress.

## URETHRAL OBSTRUCTION

IC is generally a mild disease, but for some cats, especially male cats, it can be complicated by the devastating side effect of urethral obstruction. During inflammation anywhere in the body from any cause, the body's response includes the leakage of blood cells, serum, and mucus into the surrounding tissue. In cystitis these materials are leaked into the urine from the bladder wall. In some cats, crystals are also present. These substances can then mix together forming clumps that are then passed out in the urine. Female cats have a short, dilated urethra and these clumps pass right through without a problem. Male cats have a long urethra that becomes narrower and narrower as it approaches the end. The consequence is that these clumps/plugs will get caught in the bottleneck very easily. Consequently, although male cats and female cats get IC in equal numbers, it is mostly the male cats that get the more serious complication of urethral obstruction.

Urethral obstruction is an extremely life-threatening emergency. Urine that cannot get out of the urethra begins to back up in the bladder, then the ureters, and finally the kidneys. Several adverse events can occur as a result of this sequence of events:

1. The bladder becomes very enlarged and stretched out of shape leading to extreme pain, loss of bladder muscle tone, and possible bladder rupture.
2. Failure to eliminate urine results in a build up of toxic waste products in the body (called uremia) which will cause systemic illness and ultimately

death if not corrected. The most toxic substance is potassium, excesses of which can very quickly lead to cardiac arrest in as little as twelve to twenty-four hours, depending on how fast urine is produced by the cat.

3. Increased fluid pressures in the kidneys caused by backed up urine can lead to permanent damage to the kidneys and can cause permanent chronic kidney failure.

If the patient is already severely uremic, the first step is to prevent death from waste product intoxication. This can be done by administering medications and fluids to rapidly decrease the concentration of these substances until the urinary tract can be opened. This is important because most cats require some degree of sedation in order to have the obstruction removed, and anesthesia is very dangerous in the uremic patient.

The second step is to prevent further accumulation of toxic waste products by eliminating urine from the body. If the patient is too uremic to safely sedate, this can be done by performing *cystocentesis*. This procedure removes urine safely, quickly, and relatively painlessly directly from the bladder by simply drawing it out with a syringe and needle apparatus. This technique allows the patient time to respond to other treatments for uremia until sedation can safely be performed and the urethral obstruction can be removed.

Once the patient is at a point when sedation can safely be administered, a urinary catheter is passed into the urethra to remove the obstruction and to drain the bladder. After the obstruction has been removed, the urinary catheter is left in place for 24 to 48 hours to continue to drain the urine and allow bladder conditions to improve. When this time has passed the catheter is removed, and the patient is observed for an additional 24 to 48 hours to ensure that the cat can urinate without re-obstructing.

Complications of treatment include mechanical obstruction (re-plugging) of the urethra after catheter removal, functional obstruction (caused by pain-induced spasms of the muscles surrounding the urethra which shut down urine flow), infection, urethral trauma, loss of bladder tone, and permanent kidney failure. Most of these complications can be treated successfully with

appropriate time, medicine, and management, but they can add to the hospitalization stay, expenses, and frustrations involved with treating this disease. Patients nearly always do well eventually. For most cats this may take as little as 2 to 4 days, but for the unlucky few it may take as long as 2 weeks or more.

## **SURGERY**

Removing some urethral obstructions can be difficult and time consuming, and is not without potential for complication. Two severe complications of catheter-induced urethral trauma are rupture and scarring (stricture). If these complications occur, surgery must be a consideration. Surgery should also be considered for cats with frequent urethral obstructions and for those cats in which the obstruction simply cannot be successfully removed.

Cats with these problems may benefit from a surgical procedure called a perineal urethrostomy. Basically, the surgery is an amputation of the last part of the penis and the included urethra. The purpose of this is to remove the narrow part of the urethra that is the typical site of the obstruction. *This surgery does not prevent recurrences of the cystitis*—it prevents the more serious side effect of urethral obstruction when they have an episode of cystitis.

Like any surgery, potential complications exist with this one; therefore, this surgery is only recommended when the potential risks are outweighed by the potential benefits. Fortunately this surgery only has to be recommended for a small number of cats, but it can be life saving for those in need.

## **PROGNOSIS**

The prognosis is generally good for cats with IC if they have no complications. The disease is considered to be self-limiting in most cats; that is, most cats will resolve their symptoms within several days with minimal therapy. Although IC can be a persistent or recurrent problem, recurrences tend to fade in most cats as they get older. Although the prognosis is more uncertain if the cat has developed urethral obstruction or problems stemming from such obstruction, even most of these cats will do well in the long run.

## **PREVENTION**

Prevention of this disease can be frustrating because we do not know what causes it yet. However, we do know what influences, so if we “treat the treatable” we can at least blunt the frequency and severity of IC when it occurs.

Special diets are available to help with this disease. These diets are highly effective at helping cats with IC. The most effective diets are those that are sold as prescription diets (as opposed to those you can buy over-the-counter). These diets, however, are not recommended for all cats; they should only be used for those cats that have previously been diagnosed with IC. They should be treated as any prescription medicine. They have indications, contraindications, and potential for side effects. As an example, one side effect that has been noted with some of these diets, which are designed to reduce the incidence of struvite crystals, is the development of a different type of mineral accumulation, calcium oxalate, which may result in bladder stones. Therefore, all due caution is warranted in placing patients on these diets. Several brands of these foods are available. Typically, when it comes to pet foods, “you get what you pay for.” Once a cat is started on one of these diets, they should be kept on it strictly unless they are otherwise advised by their veterinarian.

Stress reduction is also important to prevent IC. Although knowing what may be stressful to cats is sometimes difficult to know, we can at least reduce the effects of those things that we can identify. Examples include treating other illnesses in a timely and appropriate fashion and reducing environmental stresses, such as moving or the addition of other pets, and so on.