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Feline Elimination Disorders

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Introduction:

Feline elimination problems are the leading behavioral complaint of feline owners to referral behavioral practices. As with any presenting problem, it is important to first arrive at a diagnosis before implementing treatment. When presented with a feline elimination problem there are three main diagnostic categories: medical problems; urine marking or a toileting problems.

Elimination in Cats and Kittens:

The queen stimulates the kittens to eliminate by licking the perineum until they exhibit voluntary elimination at about 5-6 weeks of age. Then kittens naturally seek out sand-like material for elimination purposes. An adult cat without elimination problems will use the litterbox on average 5 times per day. Urine marking is considered a normal communication behavior in both male and female cats. Sexual sterilization drastically reduces the incidence of urine marking. (Hart and Barrett, 1973)

Diagnostics:

It is important to first perform diagnostic tests to rule out and/or address underlying medical issues. Medical problems that could be involved in an elimination encompass include a wide range of diseases including

pathology of the bladder, gastrointestinal tract, endocrine system and musculo-skeletal system. All feline housesoiling patients should initially receive a comprehensive physical examination and then laboratory testing as indicated by the presenting complaint and physical examination findings.

History:

A complete history is essential for the proper diagnosis and treatment of feline elimination problems. All of the historical information is valuable and important, however, it is extremely important to ask questions about litterbox cleanliness and social interactions. In addition to asking the client how often they scoop the litterbox, the client should be specifically asked how often they dump, wash and replace the litterbox with new litter. Social interactions between cats can often be one of the precipitating factors for urine marking *or* toileting problems. A cat may avoid the litterbox because he gets attacked when he attempts to use the litterbox or is trapped after using the box. This cat may just develop a safer elimination area (toileting problem). Alternatively, a cat who lives in a hostile environment may start urine marking secondary to territorial issues/anxiety. The client should be carefully questioned regarding relationships between animals and for signs of covert tension such as staring and overt tension such as hissing, growling and fighting. Since social tension between cats may be very subtle and therefore missed by owners, first-hand observation of the cats or detailed questioning may be necessary to properly assess the social atmosphere in multi-cat households.

Behavioral Diagnosis:

When the elimination problem persists after a medical problem has either been ruled out or remedied, a behavioral diagnosis should be obtained. The primary distinction that must be made in a behavioral diagnosis is whether the cat is engaging in marking behavior or selecting a spot other than the litterbox for elimination (a toileting problem).

The motivation for urine marking may be due to territorial behavior or anxiety/stress (reactionary marking). Urine marking is a normal behavior which is considered unacceptable in our homes. About 10% of prepubertally castrated male cats and 5% of prepubertally spayed female cats show problem urine marking (Hart and Cooper, 1984). Territorial marking behavior may be stimulated by multiple cats sharing a common living area, breeding season or the arrival of new cats into a territory.

Situations that evoke anxiety or stress in a cat such as the addition of a new family member or a dramatic change in work schedules, may also lead to urine marking.

Toileting problems are often triggered by medical causes, aversions, preferences or anxiety. Any disease that causes polyuria may result in a cat urinating outside the litterbox because of the frequency or urgency associated with elimination. Geriatric cats with arthritis may have problems associated with access to the litterbox. For example, the arthritic cat may have trouble climbing over the edge of a high-sided litterbox.

Litterbox aversion is a common cause of inappropriate toileting. Cats are known for their fastidious nature. Therefore if the litterbox is dirty, cats will often choose another, cleaner, spot to eliminate. Each cat will tolerate a different level of litterbox cleanliness. However, in a cat where you suspect litterbox aversion, the litterbox should be kept scrupulously clean. In addition to litterbox cleanliness, other aspects of the litterbox environment can result in litterbox aversion including the location of the box, the style of the box and the brand of litter.

Preferences may involve substrate preferences and location preferences. When a cat develops a substrate preference it is selecting a substrate (e.g. carpet) that is more pleasing to the cat than the substrate that the owner is providing in the litterbox. If the historical information suggests that the cat is always choosing a certain substrate for elimination then this possible cause should be explored more carefully. Finally, anxiety is sometimes the cause of inappropriate elimination.

To discern between the two main behavioral diagnosis of urine marking and toileting problems there are several diagnostic criteria. Marking is a communication tool that often involves urine sprayed on vertical surfaces or small puddles of urine deposited on horizontal surfaces with special social significance. One tends *not* to see a particular pattern of substrate use, in fact the urine is often found in areas with different substrates underfoot. Inappropriate defecation is rarely involved. The cat continues to use the litterbox for both urination and defecation and there is no evidence of litterbox avoidance. Social problems between cats are often present with urine marking.

In contrast, the cat with a toileting problem usually deposits significant

quantities of urine and/or feces on horizontal surfaces. A substrate-use pattern is often identified. For example, the cat always targets a certain type of carpet. The cat shows avoidance of the litterbox and decreased or absent usage of the litterbox. Historical collection may reveal a pattern of inappropriate litterbox cleaning, box type, litter type or box placement.

Treatment for Urine Marking:

In some situations where the culprit is unknown, you may need to identify the culprit(s) so that the treatment is targeted at the correct cat. Confinement may help to identify the guilty cat. Alternatively, the fluorescein dye test can be used. Place six fluorescein dye strips in a gelatin capsule and give orally to cat. The cat will eliminate bright yellow-green fluorescent urine for 24 hours after administration when viewed with a fluorescent black light (Hart and Leedy, 1982). Since untreated urine will also fluoresce, the owner must become familiar with normal fluorescence so they can appreciate enhanced fluorescence.

Marking animals should be neutered. Ninety percent of intact males show a significant decrease in marking behavior after castration (Hart and Barrett, 1973). Since estrus female cats show an increase in urine marking, ovariectomy will minimize this marking.

To treat urine marking the clinician should be trying to reduce conflict and stress in the environment. Stray cats and neighborhood cats should be discouraged from entering the territory of the resident cat. For example, if the owner feeds stray animals in the yard, this should be discontinued. The owner may need to block the view from windows if their cat is aroused by the presence of other cats outside the home. If there is tension between cats in a household, the cats may need to be separated for time periods during the day or one cat may need to wear a bell so that the other cat can avoid interactions. An "environment of plenty" should be created in multiple cat households. This involves creating multiple feeding areas, multiple elimination areas and multiple single cat sleeping perches at different vertical heights throughout the home. Positive interaction time (e.g. playing with a feather, grooming) should be spent with each cat on a daily basis.

Adequate environmental management of soiled areas and litterboxes may help to reduce marking. The UC Davis Behavior Service examined the effects of environmental management on the frequency of urine marking (Pryor, 2001). Forty-seven cats exhibiting vertical urine marking were enrolled in the study. Owners collected baseline frequency of urine marking for two weeks without making any changes in home management. Owners were then given instructions to clean urine marked spots with an enzymatic cleanser (Anti-Icky-Poo™, Mister Max Quality Products 1-800-745-1671) for 2 weeks. Additional instructions included providing one litterbox per cat plus one additional, scooping the box daily and changing the box weekly. The number of urine marks recorded during the baseline phase (11.7 +/- 1 marks) was significantly higher than the number of urine marks recorded during the environmental management phase (9.7 +/- 1.3 marks). This indicates that environmental management should be considered as part of the treatment for feline urine marking.

If there are only a few target spots then the owner can attempt to make those areas aversive by covering them with aluminum foil, placing upside down contact paper (sticky side up), placing vinyl carpet runner (nub side up) or potpourri at the sites. Alternatively, the cats food and water can be placed at the soiled site after proper cleaning. The owner should be cautioned that making the areas aversive may result in the cat choosing another location to mark.

Other forms of marking such as bunting (facial marking) and scratch marking should be encouraged. To encourage scratch marking, scratching posts and/or pads should be placed around the home, with the highest concentration in areas where the marking is occurring.

To encourage facial marking, there is a product available called Feliway. Feliway is a synthetic analog of the feline facial pheromone. Pageat, the veterinarian that holds the patent on Feliway, has proposed that there are three principal functions of facial pheromone: 1)spatial organization 2)relationships with other cats and 3)emotional stabilization. He also maintains that cats will not urine mark in locations where they have previously performed facial marking. It is proposed that by increasing emotional stabilization Feliway results in the resolution or decrease of urine marking.

Treatment is performed by spraying the facial pheromone directly on places soiled by the cat and also any prominent locations in the environment. A daily application is necessary until the cat is noted to exhibit facial rubbing on the site. If the cat does not exhibit facial rubbing, then daily application to the environment should be continued for one month.

Pageat reports 96.7% efficacy in eliminating recent onset (less than 3 months duration) urine marking with Feliway treatment in a clinical trial involving 61 cats (29 castrated males, 22 spayed females, 9 intact females and 1 intact male). Environmental treatment with Feliway was done for 28 days and the cats were monitored for an additional 21 days after treatment had ceased for signs of relapse. Pageat noted that most cats had significant decreases in urine marking after 7 days of treatment with Feliway .

White and Mills performed a similar study examining the effectiveness of Feliway in treating 57 cats with chronic (greater than 4 months duration) urine marking. After 35 days of treatment with Feliway the owners reported a decrease in urine marking in 91% of the cats. 57% of the cats had did not exhibit any urine marking during the last 7 days of the trial.

Hunthausen reported the results of using Feliway in a open label fashion to treat urine marking. Fifty-seven households were included in the study. The mean number of urine marks per week prior to treatment with Feliway was 13.9. After 4 weeks of daily treatment with Feliway the mean # of urine marks 2.9/week, a significant decline in number of urine marks. Although the overall number of urine marks decreased, 2/3 of the households continued to experience some urine marking.

Although Feliway sounds promising, it has yet to withstand the rigors of a double blind placebo controlled clinical trial.

Drug therapy has been long used to help control urine marking. Recent studies have furthered our knowledge about the most appropriate treatments. Lately, the concentration of experimental efforts has been using the serotonin enhancing drugs to manage urine marking. Prior to instituting drug therapy a physical examination, complete blood count, chemistry panel and urinalysis should be conducted on the cat.

Although there is anecdotal information about the efficacy of amitriptyline (Elavil) (5-10 mg/cat SID to BID), there are no published controlled studies documenting its efficacy. One limiting factor when using amitriptyline is the extremely bitter taste, making it difficult to orally administer the medication. Another drawback to treatment with amitriptyline is the significant sedative side effects. Owners are often unhappy with the "drugged" appearance of their pet while taking this medication.

Paroxetine (Paxil) is selective serotonin enhancing medication that is used to manage urine marking at a dose of 2.5 - 5 mg/cat SID to EOD. Clinical studies are lacking on this medication but anecdotal reports as positive.

Clomipramine (Anafranil, Clomicalm) has received attention as a possible treatment for urine marking in several independent studies and the results have been promising. Although none of these studies have employed the "gold-standard" double-blind placebo controlled protocol, they make attempts to account for bias. Dehasse published a paper in 1997 investigating 23 vertical urine spraying cats. All cats were put on a placebo (5 days)-drug (7 days)-placebo (3 days) trial with the owner being blinded as to what phase of treatment the cats were receiving. During the drug phase (clomipramine 5 mg/cat once daily) the average number of urine marks per day dropped significantly from the first placebo stage (first placebo stage average number of urine marks = 2.16 marks /day ; drug phase average number of urine marks = 0.49 marks/day). Eighty percent of the cats had a significant (>75% reduction in urine marking) during the drug treatment phase. Of those, 35% completely ceased urine marking during the treatment phase.

A study by Landsberg (2001) examined the effects of clomipramine dosed at approximately 0.5 mg/kg once daily on vertical urine marking in cats. The treatment duration was one month. Twenty-one of twenty-five cats enrolled in the study had a significant (>75%) reduction in urine marking during treatment with the medication. The remaining four cats showed a 50-75% reduction in urine marking. Side effects reported included lethargy, decreased appetite, stool and urine retention and decreased affection. There were no changes in blood or urine parameters comparing pre-treatment to post-treatment samples.

Kroll and Houpt (2001) performed a double blind crossover study in eighteen client-owned cats evaluating the comparative efficacy of clomipramine (5 mg/cat/day) versus cyproheptadine (2mg/cat/day) in the treatment of urine marking. Treatment with clomipramine was significantly more efficacious in reducing/resolving urine marking than was treatment with cyproheptadine.

A double-blind placebo controlled study evaluating the efficacy of fluoxetine (Prozac) (1mg/kg/day) in the treatment of urine marking behavior in cats was presented by Pryor (2001). Seventeen cats completed the study and there was a significant reduction in weekly number of vertical sprays in the drug group (8.6 marks per week pre-treatment to 1.4 marks per week while receiving drug) as compared to the placebo group (no change in average number of urine marks between pre-treatment and treatment phase).

Treatment of Toileting Problems:

The treatment for toileting problems should focus on providing a very attractive litterbox while reducing the attractiveness or accessibility of inappropriate target spots. The soiled areas should be cleansed with an enzymatic cleanser. Sometimes the cat will have to be confined away from areas in the house where he has chosen to eliminate. Alternatively, those soiled areas can be made aversive with plastic, upside down contact paper, aluminum foil, food, etc. If the cat has chosen one or two areas in the house to eliminate, the new attractive litterbox should be placed at those locations. If the cat uses the box, it can gradually (1 inch per day) be moved to a more appropriate location, if necessary. If anxiety is associated with the inappropriate elimination, anxiolytic drug therapy may be instituted.

Educating clients about proper litterbox cleanliness is imperative. Boxes should be scooped at least once daily. The frequency of complete litterbox changing (dump, wash with soap and water, fill with new litter) depends on the type of litter, the number of cats and the individual cat (s). However, a minimum cleaning schedule involves changing clay litters weekly and scoopable litters once every other week.

The minimum number of litterboxes in a home should equal the number of cats plus one. The litterboxes should be the correct size. For

example, a 16 lb. cat will need a jumbo sized litterbox. Uncovered litterboxes are preferable to covered boxes because "out of sight is out of mind" and owners will often forget to clean the covered boxes. The litterboxes should be placed in easily accessible locations around the home.

It may be beneficial to identify the favorite litter by conducting litter trials. Cats are offered a choice of litters and the litter that is preferentially chosen is then used in the boxes. One study (Borchelt, 1991) showed that unscented, finely particulate matter ("clumping" or "scoopable") litter is preferred by most cats. To help determine the attractiveness of the new silica ("pearl") litters a preference study was conducted on shelter cats (Neilson, 2001). Fifty-four shelter cats were given two novel litter options (clumping and pearl) for a 12-hour overnight period and usage was recorded. A total of 74 uses were recorded, 58 (36 urination/22 defecation) were in clumping litter, 13 (11 urination/2 defecation) were in pearl litter and 3 (1 urination/2 defecation) were out of the litterbox. These results suggest that most cats prefer a clumping type litter compared to pearl litters for elimination. Identification of a favored location or box style can also be determined by giving the cat multiple options. Uncovered boxes are recommended.

Finally, owners should be cautioned against disturbing the cat when it is using the litterbox. Owners should not attempt to give medications when the cat is using the litterbox. Children and other pets should not be allowed to harass the cat when it is using the litterbox.

With both marking and inappropriate elimination, the owner should avoid punishing the cat when soiled areas are discovered. If the animal is caught during the event, the owner can use a startle technique to stop the behavior, but realize that this will not solve the problem.

Conclusion

Although getting the cat back into the litterbox is challenging, it is possible. The cat should have a complete historical evaluation and physical examination. After a diagnosis is made, a rational therapeutic plan can be pursued. Veterinarians should be providing preventative educational information to clients during the initial kitten visits to help avoid the development of these problem behaviors.

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