CHAPTER

13

Behavior Problems

Kersti Seksel

OUTLINE

Behavioral concerns of cat owners can be categorized into two main areas: problem behaviors and behavioral problems. It is important that veterinarians distinguish between the two so that they can recommend appropriate management and treatment programs.

Problem behaviors are classified as behaviors that are part of the cat's normal behavioral repertoire but are unacceptable to the owner or community. Although it is considered problematic by owners, the behavior itself is normal. The behavior may be exhibited because of the owner's failure to understand feline behavioral needs, lack of knowledge of feline social structure, or insufficient training of the cat. For example, a cat that jumps onto a kitchen counter may be doing this as part of the cat's normal preference to be up high, and there may be a lack of other, more appropriate locations in the house (e.g., shelves). It is also possible that the cat has never been taught that sitting elsewhere, such as on a scratching post or play center, is the behavior preferred by the owner.

Behavioral problems, on the other hand, fall into two categories: (1) behaviors that may be normal for the cat to exhibit but are excessive in duration or intensity and exhibited in response to stimuli that should not elicit this response and (2) behaviors that are abnormal and thus indicate that the cat is unwell and should be considered as mental health issues. Behavioral problems are generally maladaptive for the cat as well as problematic for the owner or community. Examples include compulsive disorders, self-mutilation, and phobias.

Although these two categories are not mutually exclusive, classifying any unacceptable behavior in this way helps determine not only what advice should be given but also where to refer the client, if necessary.

The most common problems that cat owners report include some of the risk factors for surrender. These problems include aggression, house soiling, scratching, and fear- and anxiety-related behaviors.[14] Some of these are normal behaviors and as such cannot be eliminated entirely. In fact, it is possibly detrimental to the cat's welfare to try to stop these normal behaviors. However, steps can be taken to manage the behaviors.

Some of these unacceptable, destructive, and nuisance behaviors are exacerbated by a lack of physical as well as mental activity. Cats are highly intelligent, active, social animals that need activity, company, and stimulation. Educating owners about the basic needs of cats should help address many behavioral concerns.

Veterinarians working in companion animal practice are increasingly recognizing that fear and anxiety are the underlying factors for many of the behavioral problems presented. The actual prevalence of anxiety-related conditions is unknown, but they are probably the most common class of behavioral disorders in pets. Anxiety disorders make up well over 90% of veterinary patients presented for referral.[4] Many cases that present in general practice with recurrent medical issues such as vomiting, diarrhea, or skin problems may be caused or influenced by underlying anxiety issues.

The way an animal behaves depends on three key factors: its genetic predisposition, previous experiences, and its environment. None of these factors acts in isolation. All need to be taken into consideration when dealing with animals that have behavioral issues.

All behavioral problems require a systematic approach so that the best outcome is achieved for the patient. Use of a questionnaire, which is sent to the owner and filled

in before the consultation, is one useful approach. The veterinarian is then prepared to ask specific questions about the behaviors during the consultation and begin to evaluate the environment, social interactions, and behavior of the cat. This permits the veterinarian to determine the possible cause (or causes) and prognosis (likelihood of success) and devise a treatment and management program.

The more detailed the information that is provided, the more specific the recommendations that can be made. The process of evaluating this behavioral history in the context of other clinical information about the cat may take a significant amount of time, often 2 to 3 hours. Most cats that have behavioral problems cannot be cured much as diabetes is managed not cured. However, with environmental management, behavior modification, and sometimes medication, the cat's quality of life can be greatly improved and the bond with its owners restored.

ANXIETY, FEAR, AND PHOBIA

Overview

Although the terms *anxiety* and *fear* are often used interchangeably, they are not the same. Fear is related to the specific behaviors of escape and avoidance, whereas anxiety is the result of threats that are perceived to be uncontrollable or unavoidable. Both fear and anxiety may be adaptive in some circumstances, whereas phobias are maladaptive. The prefrontal cortex, amygdala and limbic system, and hypothalamus (hypothalamic–pituitary–adrenal axis) is thought to be involved in the regulation of fear. Serotonin, noradrenaline, dopamine, and gamma-aminobutyric acid (GABA) are neurotransmitters involved in the development of fear and anxiety. Serotonin has been identified as a mediator of fear and anxiety.

Fear

Fear is a physiologic, behavioral, and emotional reaction to potentially injurious stimuli. The fear response is a complex physiologic response that involves several areas of the brain. Cognitive, musculoskeletal, and neuroendocrine responses occur when an animal perceives a frightening situation.[3] Experiencing fear is a survival mechanism and an adaptive response that usually occurs in response to a specific stimulus. Fear is often connected to pain or a traumatic event. For example, if a cat falls down a flight of stairs, it may develop a fear of stairs.

Fear-evoking situations lead to activation of the locus ceruleus, the key noradrenergic area of the brain. This stimulates neurotransmission in the noradrenergic pathways projecting to the cerebral cortex, limbic system, and spinal cord and prepares the cat physiologically to deal with the threat.

Various emotional stages of fear correspond with the physiologic effects of the sympathetic nervous system: the flight, fight, or freeze responses. The muscles used for physical movement are tightened and primed with oxygen and glucose in preparation for a physical fight-or-flight response. For example, a cat may try to run away from a fear-evoking stimulus (e.g., a veterinarian). However, if cornered, it may freeze or become defensively aggressive. There is also a fourth emotional response: the fiddle response (displacement behavior). In this case the cat faced with the fear-evoking stimulus may yawn or lick its lips.

The physiologic reaction results in increased heart rate, increased respiratory rate (panting), sweating, trembling, pacing, and possibly urination and defecation.

Cats exhibit changes in body posture and activity when afraid and may engage in an avoidance response such as fleeing or hiding. A fearful animal may assume body postures that are protective, such as lowering the body and head, placing the ears closer to the head, widening the eyes, and tucking the tail under the body. If the animal perceives a threat, the response can also include elements of defensive aggression. Whether an animal fights or flees when fearful or defensive depends on its genetic predisposition, its previous experiences, and its current environment. Normal fear is adaptive and transient.

Phobia

A *phobia* is defined as an irrational, intense, persistent fear of certain situations, activities, things, or people. The fear (or panic) response is out of proportion to the stimulus and is maladaptive. Animals with phobias do not habituate to the stimulus, even after many harmless contacts, and the response does not decrease with time.

Common phobias in animals involve noises and places. Phobic responses are physiologic, behavioral, and emotional responses similar to fear, but they are extremely exaggerated.

Anxiety

Fear should be distinguished from anxiety, which typically occurs without any external threat. *Anxiety* is defined as the anticipation of future danger or misfortune. The threat may be real or imagined, and the response of the cat may be normal or abnormal depending on the context. Anxiety may also be an adaptive response to a specific threat in some circumstances. However, whereas fear is usually of acute onset and transient in duration, anxiety is a more chronic state of nonspecific apprehension. Dysregulation of fear pathways plays a key role in anxiety. The changes in the activity of neurotransmitters in anxiety disorders results

in changes across many neurochemical systems, including the seratonergic, noradrenergic, dopaminergic, and GABAergic systems. Because these systems are closely integrated, changes in one system elicit effects in another. Corticotrophin-releasing factor (CRF) has been identified as a stress neurotransmitter that effects changes in the serotonergic system through changes to receptor function that contribute to the onset of anxiety.[9]

Chronic anxiety leads to sympathetic arousal and is usually accompanied by signs of hypervigilance, such as scanning; autonomic hyperactivity, such as gastrointestinal upsets; and increased motor activity, such as pacing.

Anxiety can occur after sensitization to a specific stimulus and can then become generalized to other situations. It may also be nonspecific in origin. It is problematic to the cat when it is out of context and occurs at a constant and elevated level or interferes with normal functioning. Although panic attacks are not experienced by every animal that suffers from anxiety, they are relatively common. Panic attacks usually come without warning, and although the fear is generally irrational, the perceived danger is very real.

Anxiety-Related Disorders

Anxiety-related disorders in cats may include excessive self-grooming, changes in appetite, and inappropriate elimination (e.g., urine spraying). Stress or anxiety in cats may manifest in many ways. The following are the most commonly seen behavioral signs:

- Changes in appetite (e.g., a decrease in appetite, pica)
- Changes in grooming habits (i.e., an increase or decrease)
- Changes in elimination (e.g., urine spraying, nonspraying marking)
- Changes in social interactions (e.g., vocalization)
- Changes in physical activity (i.e., an increase or decrease)

Many factors are reported to result in anxiety in cats. These include environmental changes such as moving house, a new baby or spouse, separation from the owner, an excessive number of cats in the household or area, presence of new cats in the area, loss of territory, punishment by the owner, lack of stimulation, and even the presence of attacking birds (e.g., magpies). However, it may not be possible to determine all factors. Medical conditions such as hyperthyroidism have also been associated with feline anxiety, as have some medications.

Feline anxiety disorders include some types of aggression, separation anxiety, noise phobias, pica, and obsessive–compulsive disorders (OCDs). Diagnosis is based on a complete behavioral history and thorough physical examination. It may involve complete blood work, dermatologic and neurologic workup, and radiography or other imaging modalities to rule out contributing or concurrent medical factors.

Treatment usually involves behavior-modification techniques, environmental management, and the use of psychotropic medications. Medications that influence serotonin metabolism, such as the selective serotonin reuptake inhibitors (SSRIs) and the tricyclic antidepressants (TCAs) have been used in the treatment of anxiety-related disorders (see Chapter 14). Anxiolytic medication (e.g., benzodiazepines) has also proved useful in some cases in combination with TCAs and SSRIs, especially if the cat has phobias or experiences panic attacks. The owner should set realistic goals and recognize that in most cases the behavioral problem can be successfully managed but not necessarily eliminated. This will require a lifetime commitment from the owner. Punishment is not recommended because it serves to further increase the anxiety as well as impede learning of appropriate behavior.

Obsessive–Compulsive Disorders

In cats OCDs include stereotypes and self-directed behaviors. These are defined as being constant and repetitive in form, appearing to serve no obvious purpose, and interfering with the animal's normal functioning. OCDs are often derived from otherwise normal behaviors such as grooming, eating, or walking, but they are abnormal in that they are excessive in duration, frequency, or intensity in the context in which they are performed. Thus some causes of overgrooming, pica, and vocalization may be considered part of the OCD complex.

The anatomic focus of OCD is believed to be the limbic system. Computed tomography indicates that the basal ganglia near the caudate nucleus are involved. Dopaminergic, serotonergic, and opioid pathways are thought to be involved in compulsive and self-injurious behaviors. Aberrant serotonin metabolism and possibly endorphin metabolism are also thought to contribute. Increased dopamine in the basal ganglia and relative increase in serotonin metabolite 5-hydroxyindoleacetic acid (5-HIAA) in the cerebrospinal fluid (CSF) have also been detected.[12,15b]

Diagnosis is based on a complete behavioral history and thorough physical examination. It may involve complete blood work, dermatologic and neurologic workup, and radiography or other imaging modalities to rule out contributing or concurrent medical factors (e.g., seizures).

Treatment usually involves behavior-modification techniques; environmental management; and in most cases, the use of psychotropic medications. Medications that influence serotonin metabolism, such as the SSRIs and the TCAs, have been used in the treatment of OCD (see Chapter 14).[12a,15a]

The cat should not be punished because its behavior is not deliberate and it may serve to further increase the anxiety and thus the behavior.

Overgrooming

Grooming is a normal behavior of cats and serves many purposes, including cleaning, removing parasites, regulating body temperature, and alleviating stress. It is often seen after punishment or after aggressive encounters between cats. Normal adult cats spend about 30% to 50% of their waking hours grooming. Currently, feline hyperesthesia, overgrooming, self-mutilation, and psychogenic alopecia are considered to be part of the anxiety response.

CLINICAL SIGNS

Hair loss and discoloration occur only on the parts of the body that can be reached by the teeth and tongue. This hair loss is usually most noticeable around the sides and rump, back legs, and groin. The head and back of the neck may still have a normal hair coat. Usually, the alopecia is nonsymmetrical, and the skin may look normal.

Hair can be removed by plucking, barbering, or just licking and excoriation. The plucked hair has evidence of shearing. In some cats the grooming becomes excessive, and self-mutilation and ulceration occur in the affected areas. Secondary bacterial infections may then occur that also need treatment. Occasionally, the overgrooming is so severe that ulcers develop in the mouth (tongue and pharynx), making eating very difficult or even impossible.

DIFFERENTIAL DIAGNOSES

Many conditions, such as flea allergy, dietary allergy, and sensitivity to dust mites, have been known to trigger the initial grooming episodes. These must be eliminated as causes or contributing factors. In the case of fleas, treatment must be instigated even when no evidence of fleas is seen.[18]

Conditions causing pain, such as feline lower urinary tract disease (which may lead to abdominal grooming), as well as any source of trauma or infection, must be eliminated as contributing factors.

MANAGEMENT

Treatment of any concurrent or underlying medical problem, such as fleas, or resolution of food allergy by changing the diet is essential. If anxiety is suspected as a factor, the cause of the anxiety should be minimized or removed, if possible. Pain should always be a consideration in feline patients and should be addressed in any management program.

The cat should be provided with a regular, predictable routine. This includes feeding and playing at a set time each day. In many cases medication is also necessary. Medications that influence serotonin metabolism, such as the SSRIs and the TCAs, have been used in the treatment of anxiety-related disorders. Other anxiolytic medications have also proved useful in some cases. At this stage the comparative effectiveness of each medication remains to be evaluated and may depend on the underlying factors or eliciting causes.

Complete blood work, including a biochemistry panel, should be done before administering medication to determine a baseline, especially for liver and kidney parameters. Many cats may require medication for a prolonged period (at least 6 to 12 months, to allow hair regrowth and for the condition to be assessed), and then slow withdrawal of medication should be attempted. If cats require longer-term or lifetime medication, monitoring of a biochemistry panel should be carried out every 6 to 12 months or more often if indicated by clinical signs.

Punishment is not effective in changing these behaviors. It serves only to increase the anxiety, as well as impede learning of non-anxious behavior, and should be avoided.

Pica

Pica involves the ingestion of non-nutritive substances. However, eating substances other than food is not always abnormal. Consumption of plant material may be caused by lack of access to grass or vegetation or normal investigatory behavior. Young cats in particular may chew, but not necessarily ingest, nonfood substances as part of their normal exploratory behavior.

CLINICAL SIGNS

Cats have been reported to ingest many substances, including soil, rubber, paper, wood, string, house plants, wool, and fabric. Individual cats tend to ingest one type of substance only. Some of these behaviors may be more annoying than damaging until they start interfering with the cat's normal functioning.

Fabric-eating cats appear to start by eating woolen fabrics (Figure 13-1). They may then proceed to other fabrics, such as cotton, silk, and synthetics, but this is not

FIGURE 13-1 Fabric eating is a form of pica often seen in Siamese cats. If large quantities are ingested, intestinal obstruction may occur.

always the case. While the cat is chewing, it appears to be totally engrossed. The cat pulls and tugs on the wool and then grinds it with its molars. Quite large quantities can be ingested, and this is a problem if blankets, socks, and sweaters are eaten because these items may cause an intestinal obstruction.

This behavior is reportedly more common in oriental breeds such as Siamese and Burmese, although it has been reported in all breeds, as well as nonpedigreed cats. No gender predisposition for wool eating has been reported, and the behavior can occur between the ages of 2 to 8 months to 1 to 2 years. It is believed to be more common in cats that are kept exclusively indoors. Some cats appear to grow out of it, and the problem resolves during early adulthood without treatment.[2a]

The following are among the many postulated causes:

- Early weaning (at 2 to 4 weeks; feral cats may suckle until 6 months of age)
- Insufficient handling of kittens before homing
- Insufficient fiber in the diet
- Separation anxiety
- Lack of opportunity to develop exploratory and hunting behaviors
- A malfunction in the neural control of appetitive behavior

DIFFERENTIAL DIAGNOSES

Several medical conditions can also lead to pica. These include hyperthyroidism, lead intoxication, dietary deficiencies, intestinal parasites, and anemia. It may also be normal investigative behavior, which is more common in young cats.

MANAGEMENT

It is important that medical conditions be addressed. If the behavior is causing problems, the cat must be kept away from potentially harmful ingestible materials. Taste deterrents such as Grannick's Bitter Apple or chili pepper have been reported as helpful in deterring some cats. These substances may be more potent if they are paired with a distinctive scent such as eucalyptus oil or cologne to provide an additional (olfactory) cue that the substance is to be avoided. The cat learns to associate the smell of the oil with an unpleasant taste, and eventually the scent alone is sufficient to make the cat avoid the material. This technique appears to deter some cats if the behavior is of recent origin and the substances ingested are limited.

Establishing a predictable routine appears to help many cats by minimizing stress. This may mean having set times to feed the cat and play or otherwise interact with the cat. Providing an enriched environment by supplying the cat with toys and other forms of mental and physical stimulation has also been reported to be helpful. Planting an indoor garden with grass, catnip, or cat mint can provide a safe source of vegetation (fiber), as well as a means of enriching the cat's environment. The following suggestions may also help:

- Allowing the cat access to dried food all day
- Increasing the fiber content of the diet by adding bran or vegetables
- Providing gristly meat and raw bones to chew on to increase time spent chewing and eating

Direct punishment is not helpful; it may increase anxiety and exacerbate the problem.

Treatment with psychotropic medication such as SSRIs and TCAs may be necessary if a diagnosis of OCD is made. Premedication blood work (complete blood count and serum biochemistry panel) is recommended to provide baseline values, especially if the cat stays on long-term or lifetime medication. These tests should be repeated every 6 to 12 months depending on the age and health status of the cat. A minimum treatment period of 6 months is recommended because some medications may take 6 to 8 weeks to reach therapeutic levels. Gradual weaning off medication may be attempted when the behavior has been successfully managed for at least 3 months.

Separation Anxiety

Separation anxiety is a term that is used to describe cats that are overly attached or dependent on people, especially family members. They become extremely anxious and show distress behaviors of vocalization, destruction, house soiling, inappetence, inactivity, and even vomiting or diarrhea when separated from their owners.

CLINICAL SIGNS

Cats with separation anxiety tend to follow their owners from room to room and begin to display signs of anxiety as soon as their owners prepare to leave. This can occur as early as when the alarm clock rings in the morning. Some affected cats also exhibit excessive attention-seeking behaviors and may seek physical contact with their owners. During these separations the cat may vocalize, eliminate, and refuse to eat or become very quiet and withdrawn. Not all cats exhibit all of the signs; however, in general, the more signs that are exhibited, the more difficult it is to manage the case. Although the behavior usually occurs every time the owner leaves, it sometimes happens only on selected departures, such as when the owner leaves for work or when the owner leaves again after coming home from work.

DIFFERENTIAL DIAGNOSES

Because the separation anxiety complex involves many different signs, a complete physical examination is necessary to rule out other causes for the signs exhibited. For example, this should include other causes of elimination outside the litter box or any condition causing pain that may lead to vocalization.

MANAGEMENT

The aim of management is to teach the cat to cope without human company. This process may be very slow, and the owner must be patient as well as consistent. The earlier steps are taken to reduce the cat's anxiety, the easier it should be to manage.

The first step involves teaching the cat to be relaxed while the owner is present. When the cat learns to be relaxed in one place (e.g., in its bed or special mat) rather than constantly following the owner around, it will be possible to teach the cat to accept even the shortest of separations. It can also be useful to help the cat associate a particular scent or odor with the bed or mat and being calm. Whenever the cat is lying quietly anywhere, it should always be rewarded with quiet praise.

The owner should establish a predictable routine, feeding and playing with the cat at a set time each day, and enrich the cat's environment by providing toys (and rotating them regularly), hiding places, and play opportunities. However, care should be taken not to provide too many choices, which may exacerbate the anxiety.

Medication is often needed, especially in severe cases. Medication is often best started early in treatment rather than after the anxiety has increased to a level that makes it difficult to manage. According to studies, dogs improve about three to four times faster when antidepressant medication (e.g., clomipramine) is used in combination with behavior modification than when behavior modification is used alone.[6a] The same is likely to be true for cats.

Medications that influence serotonin metabolism, such as the SSRIs and the TCAs, have been used in the treatment of anxiety-related disorders. Anxiolytic medication (e.g., benzodiazepines) has also proved useful in some cases in combination with TCAs and SSRIs, especially if the cat exhibits panic attacks. They should be given before the potentially stressful event. However, long-term use is not recommended.

The synthetic facial pheromone analog Feliway has been reported to be useful in decreasing anxiety in some cats. Physical or verbal punishment is discouraged because it increases anxiety and impedes learning of more appropriate behavior.

Complete blood work should be done before medication is administered to determine a baseline, especially for liver and kidney parameters. The cat may require medication for prolonged periods (up to 12 months) or even for life. Owners should be informed of the possibility of lifelong medication at the outset of a management program.

Excessive Vocalization

Vocalization is a normal behavior of cats. Cats make many sounds, including purring, trilling, and meowing, and each may indicate a different purpose or function, such as a need for social contact, attention, or food. Excessive vocalization may be a normal innate behavior in some breeds, such as the Siamese. It has also been reported in cats that are on restricted calorie diets, which may indicate hunger.

CLINICAL SIGNS

The problem vocalization is of changed duration, frequency, or intensity. It may be a nocturnal behavior, or perhaps it is just more noticeable to owners at night. It is relatively common in older cats with decreased perceptual and locomotor abilities. Anxiety is also said to increase in older animals in general. It may also be due to reduced cognitive function (e.g., senility).

DIFFERENTIAL DIAGNOSES

Vocalization may be a normal behavioral response to physical stressors such as cold and hunger. Hyperthyroidism, cognitive dysfunction (e.g., aging, senility), feline hyperesthesia syndrome, and any condition leading to pain should be considered as contributing factors. Cats in estrus also vocalize. The presence of classical behavioral signs of restlessness, frequent urination, spraying, rolling, and lordosis during the breeding season help differentiate this as a diagnosis.

MANAGEMENT

Concurrent or underlying medical problems should be treated. Normal feline behavior should be explained to owners to help them understand that some vocalizations cannot be eliminated but may be managed. Ignoring the cat when it is vocalizing may decrease some attention-seeking behavior. Concurrent or underlying medical problems should be treated. If possible, triggers for anxiety should be removed or minimized. A regular, predictable routine should be established, with the owner feeding and playing with the cat at a set time each day. The cat's environment should be enriched by providing toys (and rotating them regularly), hiding places, and play opportunities.

In cases of severe anxiety, treatment may also include medication. Medications that influence serotonin metabolism, such as the SSRIs and the TCAs, have been used in the treatment of anxiety-related disorders. Treatment for cognitive decline may also be necessary with natural supplements such as Senilife (CEVA Animal Health), the nutraceutical Aktivait (a combination of phosphatidylserine and antioxidants), or S-adenosylmethionine (SAMe). Selegiline (Anipryl, Pfizer Animal Health [also known as L-deprenyl]) at 0.5 to 1 mg/kg per day orally has been reported to be effective but is not licensed for use in cats. Other anxiolytic medication has proved useful in some cases. It should be noted that the benzodiazepines can lead to increased vocalization in some cats. Feliway has been reported to be useful in decreasing anxiety in some cats. Physical or verbal punishment

should not be used because it increases anxiety and impedes learning of appropriate behavior.

Complete blood work should be done before medication is administered to determine a baseline, especially for liver and kidney parameters. The cat may require medication for prolonged periods (up 12 months).

Elimination in Unacceptable Locations[15c]

Elimination problems are the most common behavioral condition reported in cats, accounting for between 40% and 75% of reported behavioral problems. Both males and females, neutered and intact, present with elimination problems, and elimination problems have been reported in all breeds and across all age groups. Elimination problems must be differentiated from spraying or marking behavior.

CLINICAL SIGNS

Clinical signs include urination, defecation, or both outside the litter box. The elimination is of changed amount, frequency, or location and may be associated with an underlying medical condition. It may also be a normal response. Urination or defecation outside the litter box is generally unacceptable to owners. It usually involves the cat passing normal amounts of urine or feces and is associated with the elimination of waste. The cat usually squats to produce a normal quantity of urine. The cat uses a horizontal surface and often scratches afterwards. Defecation outside the litter box is only rarely a marking behavior. Predisposing factors include the following:

1. Litter box aversion (substrate and/or location)
   - This may be due to a new type of litter or a dirty box.
   - Cats that experience pain while urinating or defecating (e.g., because of constipation, arthritic pain) may develop an aversion to using the litter box.
   - Aversion can also be induced by "catching" the cat in the litter box before performing potentially unpleasant procedures such as medicating or grooming.
2. Litter box preference (substrate and/or location)
   - This may be influenced by fear and/or anxiety.
   - Separation anxiety can lead to elimination problems, and this is usually seen when the owner is absent. The cat may choose to eliminate on the objects associated with the owner (e.g., clothes, bedding, briefcases, shoes). It is usually seen after separation longer than 12 hours or immediately after the owner returns.
   - Fearful cats may eliminate in the place where they are frightened because they often are too frightened to go to the litter box.
   - The presence of another cat can also lead to elimination problems, as they may increase anxiety or block access to litter boxes.

DIFFERENTIAL DIAGNOSES

Medical conditions such as arthritis, diarrhea, constipation, lower urinary tract disease, and any cause of polyuria have been implicated as factors contributing to elimination problems.

MANAGEMENT

Careful questioning of the owner is important to differentiate urine marking from urination in inappropriate locations. After obtaining a complete behavioral history, the veterinarian should perform a thorough physical examination, complete blood cell count and biochemistry panel, urinalysis, and possibly radiography or other imaging procedures to exclude medical causes.

After any concurrent or contributing medical problems are addressed, the treatment involves two aspects:

1. Increasing the attractiveness of the area the owner wants the cat to use
2. Decreasing the attractiveness of the area that the cat wants to use

Punishment is discouraged because it increases the cat's anxiety and impedes learning of appropriate behavior.

LITTER BOX PROBLEMS The following recommendations have proved useful to help make the litter box more attractive to the cat:

- Change the type of litter by changing brand, or to sawdust, shredded newspaper (or recycled paper litter), clumping litter, or sand.
- Increase the frequency with which the litter box is cleaned and changed.
- Change the cleaning agent used to clean the litter box, and avoid disinfectants or bleaches when cleaning the litter box.
- Increase the number of litter boxes (a good rule of thumb is one litter box per cat and one extra).
- Place litter boxes in easily accessible, separate locations separated from food and water bowls.
- Provide a litter box that is large enough for the cat (at least 1½ times the length of the cat).
- Make sure the cat can enter the litter box. For example, if the sides are too high, small cats or older cats may have trouble climbing inside.

LOCATION PROBLEMS To make the location of the litter box more acceptable to the cat, the following suggestions may be helpful:

- Place a litter box over the area that is being used by the cat. Then very gradually change the location of

FIGURE 13-2 A cat with substrate aversion perches on the sides of the litter box to keep from touching the litter. *(Courtesy Dr. Susan Little.)*

the litter box until it is in an area that is more acceptable to the owner. This may mean gradual increments of movement as small as 5 cm (2 inches) daily.
- Cover the litter box to make it more private for the cat. For example, put a cardboard box, with appropriate openings, over the litter box.
- Change the type of litter box (e.g., one with higher or lower sides).
- Place the box away from noisy or high-traffic areas.

Cats may be discouraged from using specific locations to eliminate by the following suggestions:

- Feed or play with the cat in these areas.
- Place dry cat food in these areas (because it takes longer to consume than canned food).
- Leave the cat's toys or bedding in the area.
- Make the area less accessible and less pleasant to the cat by covering the area with thick plastic, aluminum foil, or double-sided sticky tape.

SUBSTRATE PROBLEMS Make the substrate the owner wants the cat to use more readily acceptable to the cat by implementing the following suggestions:

- Changing the litter type to one the cat prefers
- Cleaning the litter box as soon as it is used
- Using an empty litter box for cats that prefer smooth surfaces such as bathtubs and sinks (Figure 13-2)

ANXIETY-RELATED PROBLEMS Removing or minimizing the cause of the anxiety, if possible, is important. Providing a predictable routine, such as feeding and playing at a set time each day, can be helpful. In some cases the cat must be confined to a small area to be retrained. However, because this can increase anxiety in some cats, it must be carefully managed. Access to larger areas should happen very gradually, when the cat starts to use the litter box consistently.

CLEANING The soiled areas should be cleaned with non–ammonia-based products such as enzymatic washing powders. Additionally, neutralizers such as A.O.E. Animal Odor Eliminator (Thornell Corporation; Smithville, Missouri) or Urine Off (Bio-Pro Research; Hickory, North Carolina) used after cleaning the area with water can be effective in removing the odor.

Urine Spraying

Urine spraying is a marking behavior and is often associated with anxiety. It may be territorial, sexual, or agonistic. In multicat households it may be associated with overt or covert aggression. Intact cats spray more than neutered cats, and male cats spray more than female cats. It is estimated that 10% of castrated males and 5% of spayed females spray.[6] Spraying appears to be more common in multicat households, with a reported 100% chance of at least one cat spraying in a household with more than 10 cats. Male cats that live with a female cat are reported to be more likely to spray than those living with another male cat.

CLINICAL SIGNS

Cats that spray usually stand (but may squat), usually produce only a small quantity of urine, and frequently use vertical surfaces (but may use horizontal surfaces), and rarely scratch afterwards.

DIFFERENTIAL DIAGNOSES

Predisposing factors include medical conditions ranging from those associated with the urogenital system (e.g., renal calculi, renal failure, lower urinary tract disease), viral diseases (e.g., feline immunodeficiency virus, feline leukemia virus), to impacted anal glands. It is reported that up to 30% of cats that present for spraying may have a concurrent medical condition.[5]

Territorial, agonistic encounters or any highly arousing circumstances such as environmental stimuli (e.g., the sight, sound, or smell of another cat, within the household as well as outside) have been reported to be associated with spraying. Anxiety-related problems, including separation anxiety, and changes in routine (e.g., moving house, the introduction of a new spouse, new baby, or new cat in the area) have also been implicated.[15a]

MANAGEMENT

After a complete behavioral history and a thorough physical examination, diagnostic testing such as a complete blood cell count and biochemistry panel, urinalysis, and radiography (or other imaging or diagnostic

techniques) may be required to exclude medical causes.

Careful questioning of the owner is important to differentiate urine marking from urination in unacceptable locations. Medical problems must be dealt with before, or at least concurrently with, any behavioral therapy that is instigated. Neutering the intact cat has been shown to be successful in many cases of spraying.

Educating owners about normal feline behavior is important so that they understand the behavior may not be completely eliminated but can usually be managed successfully. If possible, any anxiety-provoking stimuli should be removed or minimized. Provision of a regular predictable routine, such as feeding the cat or playing with the cat at a set time each day, has proved helpful in many cases. Punishment is not recommended because it increases the anxiety and impedes the learning of appropriate behavior.

ENVIRONMENTAL MANAGEMENT Environmental manipulation may be difficult to achieve in practice, although in theory it should work well. It is rarely possible or practical to remove the cat next door, the new baby, or the new spouse or entirely prevent other anxiety-provoking circumstances, such as moving house. Other recommendations that have been suggested include the following:

- Decreasing the number of cats in the household
- Decreasing access to windows and doors to decrease sight, sound, and smell stimuli
- Changing the amount of time spent indoors or outdoors
- Preventing access to arousing stimuli
- Making the sprayed areas less attractive to the cat by making them feeding or play areas instead
- Using Feliway (Ceva Animal Health) diffuser or spray

PHARMACOLOGIC TREATMENTS Pharmacologic treatments are generally aimed at reducing the anxiety level of the cat by altering the neurochemical environment in conjunction with behavior modification and environmental management. Potential side effects should be explained to the owner before instigating any therapy because most of the medications are not registered for use in cats. Complete blood work should be carried out before beginning drug therapy. All medication should be gradually withdrawn under veterinary supervision. The most commonly used medications are TCAs such as clomipramine and SSRIs such as fluoxetine. However, benzodiazepines, azapirones, and antihistamines have proved useful in some cases.

CLEANING The soiled areas should be cleaned with non–ammonia-based products such as enzymatic washing powders. Additionally, neutralizers such as A.O.E. Animal Odor Eliminator (Thornell Corporation; Smithville, Missouri) or Urine Off (Bio-Pro Research; Hickory, North Carolina) used after cleaning can be effective in removing the odor.

AGGRESSION

Overview

Aggression is not a diagnosis but a description of what is happening at a particular time. *Aggression* can be defined as a threat, challenge, or attack that is directed toward one or more individuals. It can be intraspecific (between cats) or interspecific (between a cat and another animal).[15] Aggression may be normal or abnormal depending on the context in which it occurs.[12]

Aggression is a nonspecific sign—that is, it may be exhibited in many different situations. It may be passive (covert) or active (overt), and it is important to recognize that several different "categories" of aggression may occur concurrently. The more "categories" of aggression that co-occur, generally the more guarded the prognosis, unless there is a common underlying trigger (e.g., pain).

The signs of aggression may be visual (e.g., changes in body posture, changes in ear and eye position, piloerection), auditory (e.g., growling, hissing, spitting), olfactory (e.g., spraying, scratching), or tactile (e.g., scratching) and may involve use of teeth and claws (Figure 13-3).

Although many diagnostic categories of aggression are recognized, there is some variation in the classification of aggression into various categories among authors,

FIGURE 13-3 Signs of aggression include changes in body position, ear and eye position, piloerection, and growling.

countries, and continents. Aggression may be classified by its target or by its presumed function. The actual prevalence of each category of aggression in the cat population is unknown.

Medical conditions such as toxoplasmosis, ischemic vascular problems, hepatoencephalopathy, encephalitis, meningioma, lead poisoning, arthritis, sensory (hearing, sight) deficits, hyperthyroidism, epilepsy, lower urinary tract disease, feline immunodeficiency virus infection, rabies, and any condition leading to pain or discomfort have all been associated with aggression, as has the use of medications such as anesthetic agents and corticosteroids. A thorough physical examination and appropriate medical workup is therefore always necessary.

Fear Aggression

Clinical Signs

Cats can be fearful of people, places, other cats, and various stimuli such as noises and odors. The signs of aggression may be a combination of offense and defense. The fearful cat will initially attempt to avoid the stimulus and exhibit many warning signals. Fearful cats typically hiss, spit, growl, piloerect, or flatten their ears against the head and show a low or crouched body position. Pupillary dilation is common. They may try to flee, but if they have learned that this has not been successful in the past, they may attack. Aggression is usually the last resort but is generally very violent, and the behavior may become learned.

Differential Diagnoses

Genetically, two types of cat personalities have been recognized—timid, fearful cats and confident, friendly cats—and it appears that the temperament of the tom may have the greatest influence on the personality of kittens. This may account for some fearful behavior seen in cats. Inadequate or lack of socialization and handling before 12 weeks of age may also contribute to the cat's responses to people. Inadequate or lack of socialization with other cats early in life may contribute to the cat's responses to other cats. Cats learn to be fearful in certain situations, especially if they have had a bad experience with no opportunity to escape (e.g., rough handling, loud noises, unpleasant odors at veterinary hospitals).

Management Options

Depending on the severity of the problem, the cat may need no treatment or may need behavior modification, such as desensitization and counterconditioning, in combination with psychopharmacologic intervention in severe or long-standing cases. Behavior modification includes desensitization and counterconditioning, which involves slowly introducing the cat to the fearful situation in a gradual, controlled sequence.

The first step is to teach the cat to be calm and relaxed. This can be done by offering the cat a tasty treat such as Vegemite (Kraft Foods, Australia), chicken, baby food, or dehydrated liver. If the cat eats, it is usually a good indication that it is not too anxious. Then, while the cat is eating, the fearful stimulus (e.g., a person) is gradually introduced at a distance. The initial distance should be great enough not to elicit a fearful response from the cat. If the cat continues to take food, the person may approach the cat very slowly. The time frame for the gradual approach may vary from days to months depending on the severity of the problem. The cat should not be forced to interact in any way because that will exacerbate its fear.

Anxiolytic medication may also be needed. TCAs, SSRIs, or benzodiazepines may be necessary. The cat may require medication for a prolonged period (up to 12 months). Attempts to wean the cat off medication should be slow, and some cats may need lifelong treatment. A serum biochemistry panel should be obtained before prescribing medication. Feliway (spray and diffuser) may also be beneficial. Feliway can be used at home, as well as in the veterinary hospital. It can be sprayed onto wrists and hands before handling to help decrease arousal levels. The diffuser is useful in the environment. Punishment or forced restraint will aggravate the situation and should not be used to manage fearful cats.[1a] It may increase the cat's anxiety and impede learning.

Intercat Aggression

Clinical Signs

Intercat aggression is a very common problem. In intact male cats, it usually starts at approximately 2 to 4 years of age, when they reach social maturity. In some cases it may be normal male–male aggression associated with mating. This increases during the breeding season and with overcrowding. In male–male aggression, the cat flattens its ears, howls, hisses, piloerects, and uses both the teeth and claws in fights (Figure 13-4). Male–male aggression involves hormonal changes associated with sexual maturity and neurochemical changes associated with social maturity.

In neutered cats it tends to appear later in life and may be associated with social role. The signs depend on the mode and may be active (threatening) or passive (blocking access). Outright fighting appears to be rare.

Management Options

Prepubertal and postpubertal castration reduces or stops the frequency of fights in about 90% of cases occurring between intact males.[6] Management may involve changing the social environment. Cats in the same household should be reintroduced slowly, as described later in this chapter with regard to redirected aggression. It is important not to try to introduce them too quickly or too soon.

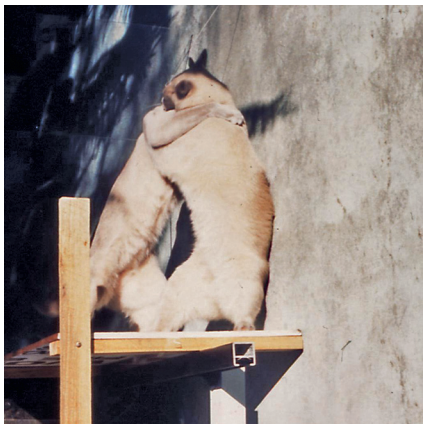

FIGURE 13-4 Intercat aggression is common between intact male cats and may lead to fighting with use of teeth and claws.

Anxiolytic medication may also be necessary for one or both cats to alter the neurochemical environment. Blood biochemistry analysis should be obtained before prescribing medication to determine a baseline, especially for liver and kidney parameters, and these levels should be checked every 6 to 12 months depending on the age and general health status of the cat. Patients may require medication for a prolonged period (up to 12 months) and then should be slowly weaned off. Feliway, has been anecdotally reported to be beneficial in managing intercat aggression in multicat households.

Maternal Aggression

Clinical Signs

The queen will threaten, hiss, and give other long-distance signals when she, the kittens, or the nesting area are approached. She will attack if cornered. Maternal aggression usually involves threatening behavior more than actual attack and usually is directed toward unfamiliar individuals. Attack tends to be a last resort when the queen is cornered.

Some queens may cannibalize their own kittens, and this is considered to be abnormal. This may happen if the queen is stressed or malnourished, and the incidence has been reported to increase with very large litters, second pregnancies, or sickly kittens. However, it can be normal if the queen eats stillborn or aborted fetuses. Cannibalization may also occur during overzealous eating of the placenta after birth.

Maternal aggression occurs in the periparturient period and may involve protecting the nest area as well as the kittens. This aggression may be the normal result of hormonal influences on the hypothalamus and is associated with the presence and the proximity of the kittens. The queen may be aggressive in the presence of male cats, and this may be related to the fact that free-ranging males have been reported to kill kittens. The response may also be anxiety related.

Management

People should avoid approaching the queen during this period to minimize her stress. She should be separated from other cats, especially males, at this time. Queens that kill their kittens should not be used for breeding. The aggression should resolve when the kittens are removed from the queen but may recur with the next litter.

Play Aggression

Clinical Signs

A cat may stalk, chase, pounce, and lie in wait for people to pass by while playing, but it rarely vocalizes. Play aggression may involve biting as well as scratching. Targets are usually moving objects or people and may be another cat, especially an older one, in the household. Young cats, especially those that are orphaned, hand raised, or weaned early, are more likely to show this type of aggression, and in many cases it may be normal behavior.[2b,12]

It is sometimes difficult to recognize play aggression because some cats play more roughly than others and do not retract their claws when they swat. In cats social play is seen between 4 and 12 weeks of age, and by 14 weeks of age may progress to social fighting.

Management Options

The aim of treatment is to redirect the play behavior onto more suitable objects, rather than trying to stop the behavior completely. One way to redirect the behavior is to provide the cat with appropriate toys (e.g., toys on poles) so that the cat can pounce without hurting anyone. However, the toys must be changed at regular intervals, even daily, for the cat to maintain interest. Additionally, the cat may need to be taught how to play with toys and then encouraged to do so.

Rough play, especially involving hands or other body parts, is discouraged. Whenever the cat plays in this manner, play should be interrupted or suspended and the cat's attention directed to appropriate toys instead.

Any punishment, such as smacking or squirting the cat with a water pistol, may actually encourage the behavior and increase the cat's arousal. Punishment is discouraged because it may lead to other problems, such as fear aggression. Providing the cat with a regular routine that involves interactive play involving toys 2 to 3 times daily for 5 to 10 minutes is important to provide a natural outlet for the behavior. In some cases a second kitten, preferably one that is not very young, may also help teach more appropriate play behavior, but this is not recommended unless the clients really want another cat, because the introduction of another cat may lead to additional problems.

Redirected Aggression

Clinical Signs

Redirected aggression occurs when the original target of the aggression is not accessible and the cat directs its aggression toward an unrelated target. This target may be a person or another cat that enters the area soon after the provocative event. The eliciting factors of the aggression are different in the initial and subsequent episodes. The first episode is triggered by a stimulus that the cat is in some way thwarted in its attempt to respond. This episode is commonly missed. The highly aroused cat now may direct its attention to the next (usually moving) thing that it encounters. For example, a cat may see another cat through the window and be unable to reach it. Another cat in the household then enters the room, and the cat redirects the aggression to the second cat. In the second and subsequent episodes, the initial stimulus no longer has to be present to elicit the aggression, just the target of the first attack. Commonly, the behavior of the target also changes, and this then results in a prolonged conflict, with the second cat now acting warily, running away, and showing avoidance behavior (victim behavior) whenever the first cat enters the room or approaches.

Cats have been used as models for "kindling" (a change in brain function in which seizures may be induced by repeated chemical or electrical stimuli). Once stimulated, the cells of the nervous system then have a very low threshold for stimulation, and cats may stay reactive for up to 48 hours (or even longer).

Management Options

The cat should be left alone until it is calmer. It is never advisable to approach any highly aroused cat, especially to try to calm or reassure it. If another cat is involved, the cats should be separated immediately (provided it is safe to do so) regardless of which cat is the victim or the instigator of the aggression. Treatment then involves slowly reintroducing the cats to each other. They should be placed in separate rooms so that they can hear and smell each other, but no visual contact should occur. The cats should be rotated around all the rooms until they have left their scent in all the rooms. This may take up to 2 weeks. While the cats are separated, a regular routine should be established with each cat so that certain events, such as feeding and playing, occur at a set time each day. Ideally, the cats are fed 5 or 6 small meals daily.

The cats are then slowly re-introduced but only after they are calm and displaying no signs of anxiety to the sounds and odors of the other cat. The aim is for them to have a positive association with each other. This essentially means that "good" things such as play or feeding happen only in the presence of the other cat. Initially they are in the same room only during meal times. They are placed in cages at opposite ends of the room and are fed at this time. This should create a positive association with food and the presence of the other cat, although it has been suggested that food may not always be a suitable reward insofar as cats do not share food. If no hissing or spitting occurs and the cats eat the food, the cages are gradually brought closer and closer to each other over a period of days and meals. This may take several weeks or even months. Then one cat at a time is allowed out of its cage to explore, and if no aggression occurs, both are allowed to interact under supervision. The re-introduction must be very gradual.

In some cases anxiolytic medication may also be needed to treat one or both cats to help decrease the reactivity. Blood biochemistry analysis should be obtained before prescribing medication to determine a baseline, especially for liver and kidney parameters. TCAs such as amitriptyline and clomipramine or SSRIs such as fluoxetine may be useful for the aggressor. Benzodiazepines such as diazepam or an azapirone such as buspirone may be necessary for the victim. The owners should be informed that the cats may require medication for a prolonged period, up to 12 months or even lifelong if the anxiety induced by the presence of the other cat persists. Gradual reduction and weaning off medication can be attempted only if the cats have learned to tolerate each other's presence for at least 6 months.

When sprayed into the cages during the desensitization process, Feliway can also be beneficial to decrease anxiety. Additionally, the Feliway diffuser can be plugged into the rooms in which the cats spend most of their time, which may also help decrease anxiety. Feliway should be used for at least 2 to 3 months.

Aggression Directed Toward Owners

Clinical Signs

The signs of aggression directed toward owners may be active (overt) or passive (covert). The cat may bite when the owner attempts to approach, lift, move, or handle the cat (overt aggression). It may also involve behaviors, such as soliciting attention by biting. The cat may bite when approached or handled or solicit attention and then bite if it is or is not given. Biting may also occur when the attention ceases. The cat may also block access to areas, possibly by sitting in doorways and staring (covert aggression). This type of aggression may be anxiety based when the cat is not given clear and consistent signals by owners.

Management Options

The veterinarian's role is to help the owner identify all situations that may be provocative and provide advice re strategies so that these situations can be avoided (e.g., approaching, stroking, handling the cat). Then it is important to instigate a behavior modification program where the cat is taught to perform a behavior (such as come or sit) to gain attention. The cat should come or sit

at the owner's request before any interaction with the owner. If the cat solicits attention, the owner should completely ignore the cat or walk away. No reward or attention is given until the cat defers and responds to a verbal cue (e.g., "sit" or "come"; see Chapter 11).

Desensitization and counterconditioning to handling, moving, and other provoking actions can be done and the cat rewarded for appropriate acceptable behavior. If the cat shows any sign of aggression, the owner should move away and stop all interactions. The cat should not be physically punished because that will exacerbate the problem. Psychotropic medication may also be needed to manage the cat. Feliway can also be helpful in decreasing reactivity in some cats.

Territorial Aggression

Clinical Signs

Territorial aggression can be intraspecific as well as interspecific, and this includes aggression toward people. The cat may patrol its territory and mark it by rubbing or spraying to maintain social distance as well as define hierarchy. The aggression may be directed toward another cat, or a person, that approaches or enters its territory. The behavior may be more marked in intact toms during the breeding season. Unfamiliar cats are less well tolerated than familiar or neighboring cats. The aggression decreases with increased distance away from the cat's core (home) territory.

Management Options

Management options involve attempting to avoid all potentially provocative situations so as not to reinforce the behavior. If the aggression is directed toward another cat within the home, the cats should be separated and slowly re-introduced, as described in a previous section. A Feliway diffuser plugged into the room in which the cats spend most of their time may also be helpful. Psychotropic medication to decrease any associated anxiety may also be necessary.

If the aggression is directed toward people, the cat should be denied access to all areas that may be guarded. If the cat shows any signs of aggression, the owner should move away slowly and stop all interactions. Physical punishment is never recommended because it may exacerbate the problem.

Petting Aggression

Clinical Signs

Some cats have a very low tolerance to being patted or stroked. Although the cat may seek out attention and jump on the owner's lap, it may still not tolerate being stroked. The cat may suddenly bite or scratch after tactile stimulation of variable duration. The cat may swipe or bite if the petting stops or if the stroking is carried out for a prolonged period. The cat may stiffen, lash its tail, or give a warning bite while being patted. Some cats appear to enjoy sitting on a lap as long as no stroking or other tactile stimulation occurs. Owners are most commonly bitten or scratched on the hands and arms. The behavior is reported to be more common in intact males and is thought to relate to social grooming behavior.

Management Options

Some of these cats can be taught to gradually tolerate longer periods of stroking, but this takes time and patience. Some cats never learn to tolerate patting, and this must be explained to owners. It is also important to teach owners how to stroke or pat cats in an appropriate way, where to stroke the cat, and how to keep from overstimulating the cat. Medical conditions that cause pain or skin irritation should be investigated and treated.

Once owners understand that some cats never tolerate handling, no treatment may be necessary. What owners find distressing is that some of these cats actually solicit attention and then attack when it is given.

Before starting a desensitization program, the veterinarian must determine how long the cat can tolerate attention. If the cat usually tolerates a short period of stimulation (e.g., 3 minutes but not 4 minutes), the cat should be slowly stroked for only 2 minutes. The period of time used should always be below the cat's current stimulation threshold. The cat should be rewarded with food treats or play. The time can be gradually increased over a period of days to weeks until the cat tolerates increasingly longer periods. The owner should be instructed always to stop the stroking before the cat shows signs of arousal. The training session should be held at a predictable time each day. Punishment is not effective because it tends to lead to more aggression, insofar as the cat is already aroused and overstimulated.

Anxiolytic medication has been used to treat some cats. Feliway has been useful in some cases when sprayed on the owner's hands before handling the cat.

Pain Aggression

Clinical Signs

When the aggression is due to pain, the cat may respond to being handled or approached in an aggressive manner. The cat may show signs of offensive (e.g., direct eye contact; forward body position; back-and-forth tail flagging, especially of the tail tip) or defensive (e.g. "Halloween" cat posture—arched back, piloerection, flattened ears, dilated pupils) aggression or avoidance with handling, or the signs may be exhibited before any manipulation or when the cat is approached.

Management Options

The aim of treatment is to relieve the source of the pain (e.g., by using analgesics). Then the anxiety associated

with the pain should be treated. This may require the use of anxiolytics, TCAs, or other agents. All potentially painful situations should be avoided. Inadvertent reinforcement by patting, telling the cat "It's okay" in an effort to calm it, and similar responses should be avoided, unless it helps decrease the cat's arousal level. Unfortunately, in many of these cases some learned aggression may result. In other words, the cat has associated previous handling with pain, so desensitization and counterconditioning may be necessary so that the cat learns to relax when handled.

Prevention is more practical than resolution. Ideally, aggression should be prevented from developing by providing appropriate analgesia with all potentially painful manipulations, especially surgery. Punishment is never recommended because it may exacerbate the aggression.

Predatory Aggression

Clinical Signs

Although the behaviors are the same as those exhibited in predatory behavior, which is normal, the context in which predatory aggression is exhibited make this behavior abnormal. Signs of predatory behavior include stalking in silence, a lowered body posture, and a sudden lunge or pounce when the target moves suddenly, but the aggression is directed toward nonprey. The cat stalks and lies in wait for the "victim," then pounces when the target moves. No preceding threat is apparent. In other words, the cat shows all the contextual behaviors of predatory behavior, but it is out of context. There are no warning signs, and it may be directed toward people as well as other animals. Predatory aggression must be differentiated from predatory behavior, which is normal and instinctive. The focus of predatory aggression (e.g., nonprey item, body part) and outcome (the "victim" is not eaten) are different.

Management Options

The aim is to avoid all potentially problematic situations. The following options may help minimize predatory behavior directed toward prey:

- Confine the cat indoors to prevent predation.
- Confine the cat outdoors in runs and tunnels, such as modular cat parks or cat enclosures.
- Supervise when outside with the use of a harness or collar and lead.
- Provide appropriate toys for mental stimulation (see the section on enrichment in Chapter 14).
- If the cat is outside unsupervised, place several bells at intervals on the cat's collar to provide warning to prey.
- Use distracters such as loud noises when the cat is about to pounce. Then reward the cat for relaxed behavior. Please note this is *not* used to punish the cat, and the cat may learn only that it should not hunt while in the owner's presence.

In cases of predatory aggression directed toward nonprey (e.g., humans or other cats), the following suggestions may be helpful:

- Provide appropriate toys for mental stimulation.
- Place several bells on the cat's collar at varying intervals so that the victim is warned of the cat's presence.
- Use distracters such as loud noises when the cat is about to pounce. Then reward the cat for relaxed behavior.

Predatory aggression can be dangerous, especially when the targets are children and elderly people, on whom a cat can inflict severe damage. Euthanasia or careful rehoming may be necessary in some cases.

Idiopathic Aggression

Clinical Signs

Idiopathic aggression is unpredictable and appears to be unprovoked. Sudden mood changes and aggressive episodes, with neither provocation nor predictability, have been reported. It has been described as "toggle-switch" aggression, insofar as it may start suddenly, as if a switch has been turned on. This is a diagnosis of exclusion, and it is very rare. It is not well understood, but it reflects truly abnormal behavior. It may reflect seizure activity.

Management Options

Idiopathic aggression is difficult to treat using standard behavior-modification techniques because it is unpredictable. Additionally, it is impossible to avoid potentially provocative situations because there is no true provocation. Treatment with anticonvulsants such as phenobarbital should be considered if seizures are likely. No physical punishment should be used.

ONYCHECTOMY AND BEHAVIOR

Onychectomy (declawing) is a controversial surgery that is allowed in some countries and banned in others. Many owners and veterinarians are concerned that the procedure causes permanent physical and behavioral changes. Common reasons for considering onychectomy are to prevent damage from scratching and to prevent injury to humans (particularly seniors and people with diabetes, cancer, and compromised immune systems) or other pets. For some owners onychectomy may be an alternative to relinquishment to a shelter, a change to an outdoor lifestyle, or euthanasia.[7,10] Studies have shown that

owners of declawed cats have a positive attitude about the procedure and perceive an increase in the quality of the bond to their pet.[7,8,13,19] Numerous studies have failed to show an increase in behavioral problems in declawed cats.[1,2,11,13] In countries where onychectomy is not performed, the ability to resolve behavioral problems associated with the cat's use of its claws appears to be no less successful than in countries where onychectomy is performed. Onychectomy should not be routinely recommended as a solution to scratching and clawing behaviors. It should be recommended only when all other means of addressing the problem have been attempted. Furthermore, onychectomy does not address the underlying reasons for the problem behavior.

Onychectomy is a painful procedure, and adequate analgesia must be provided both in the immediate postoperative period and for as long afterward as the patient requires. Complications associated with onychectomy include pain, lameness, hemorrhage, wound dehiscence, claw regrowth, paralysis, wound infection, and ischemia of the paw and distal limb caused by improper bandaging.[8,13,17] However, these are almost entirely avoidable with proper attention to instrumentation and technique.

Alternatives to onychectomy include behavior modification and the provision of suitable scratching materials, frequent claw trimming, and nail caps. Deep digital flexor tenectomy is an alternative surgical procedure that is similar to onychectomy in terms of recovery time but is not as well accepted by owners.[19] The claws may overgrow if they are not regularly trimmed. In addition, long-term complications have been reported, such as stiff and painful forelimbs.[16]

Both the American Veterinary Medical Association (AVMA) and the Canadian Veterinary Medical Association recommend that onychectomy be performed only after other options have been exhausted or when the risk of an injury presents a human health risk. For more information, the reader is referred to the AVMA's 2009 background article on the welfare implications of declawing of domestic cats (http://www.avma.org/issues/animal_welfare/declawing_bgnd.asp).

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