

In: **Recent Advances in Companion Animal Behavior**, K. Houpt (Ed.)

Publisher: International Veterinary Information Service (www.ivis.org), Ithaca, New York, USA.

Feline Aggression (19-Jun-2001)

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Introduction

In animal behavior aggression is a normal part of an animal's behavioral repertoire and necessary for survival. Aggressive behaviors may be used to settle disputes about territory, resources, and mating partners. In companion animals normal behaviors can often be problematic either for the pet or the owner. Aggressive behaviors in companion cats often result in problems and injuries to either other cats or their human caregivers. Individual animals' tendency to bite is usually the interplay of heredity, environment, early experience, maturation, learning, hormonal status, physiologic state and external circumstance [1].

Within the feline species, aggression is usually of the defensive nature with the presumed goal the diffusion of the threat [2]. Cats are generally solitary animals and it is therefore beneficial to end disputes without actual fighting and potential subsequent injury that could threaten the animal's ability to procure food. Therefore, cats will often use visual and vocal threats in an attempt to avoid a physical confrontation. Most commonly these consist of piloerection, enhancing body size by body placement, agonistic vocalizations (growls, hisses, and yowls) and ear positioning [2]. Aggressive behaviors however, can vary from subtle changes in body posture, ear position and facial expressions to violent attacks.

In applied animal behavior, aggression may be categorized as either defensive or offensive aggression. Aggression can also be categorized by target or victims, such as human directed or cat to cat aggression [1]. Other behavior practitioners use diagnostic categories to delineate aggressive behaviors. In veterinary behavioral medicine these may include: predatory aggression, intermale aggression, fear-induced aggression, irritable aggression, territorial aggression, maternal aggression, instrumental aggression, sex-related aggression, play aggression, redirected aggression, idiopathic aggression, social/dominance aggression, petting aggression [3-6]. Recently, discussion has focused on the social behavior of cats and whether traditional aggressive categories such as territorial aggression apply to the domestic cat [7,8].

Aggressive behaviors in cats are usually treated with a combination of the following therapies:

- Identification and avoidance of eliciting stimuli,
- behavior modification,
- confinement
- medication,
- surgeries such as castration or declawing.

Aggression in companion cats can have profound implications on animal welfare. Potential injury to humans or other cats may result in the subsequent breakdown of the relationship between the pet and owner. The consequence may be a reduced quality of life for the pet and owner and perhaps tragically relinquishment of the pet, euthanasia or inappropriate care.

Therefore the diagnosis and treatment of feline aggressive disorders is good veterinary medicine. For ease of diagnosis and treatment aggressive disorders are often grouped as either human directed or cat directed. The diagnostic categories most relevant to the veterinary practitioner include play aggression, fear motivated aggression to humans or other cats, territorial aggression to humans and other cats, and aggression while petting [1].

History Taking in Feline Aggressive Disorders

Underlying medical disorders and painful conditions can contribute to aggressive behaviors in all species. Therefore, it is essential that physical examinations and if necessary laboratory testing be undertaken as part of a comprehensive work up in feline aggressive disorders. Once the animal is determined to be healthy or underlying medical disorders identified and treated, a behavioral history and diagnosis obtained, behavioral therapy is appropriate.

History taking is often best begun by investigation of the household environment and interactions between the cat and the

owners. Questions might include feeding, play and grooming routines. Access to the outdoors both physically or visually should be investigated and explored. Outdoor stimuli have been implicated in cases of feline aggression [9]. The presence of other pets in the home, both canine and feline, should be examined as well as the relationship of the patient to those animals. Descriptions of the aggressive episodes should be thorough and detailed. Information as to who was present, time of day, where everyone was and what they did, contribute to an understanding of the aggression. What the patient did, their body postures, ear set, pupil size and reactions to intervention are all important. As many episodes as the owners can remember should be explored, each one may yield additional information or verify existing theories. Video footage can be useful if the owners can obtain it. Owners should be asked if they can remember repetitive eliciting stimuli that occurred prior to the aggressive episodes. Aggressive behaviors can be multifactorial with different types of aggression occurring at the same time.

Diagnosis

Diagnosis should be based on the circumstance of the aggression, the posture of the pet, the victim and perhaps location of the behavior. Treatment plans can then be designed to provide safety and behavior change.

Prognosis

Determining the prognosis of an aggressive disorder involves the evaluation of both the history obtained and the diagnosis. Each case should be evaluated considering all of the following: type of aggressive behavior, the age of onset, the duration of the problem behavior, severity of aggression to date, danger to people and/or pets, family composition, willingness to comply with and implement treatment and safety plans and how to prevent injury in the short term. A recent retrospective study examining types of aggression, sexes of fighting pairs and effectiveness of treatment found that male cats initiated aggression more often than female cats and that aggression was equally likely to be directed to either sex [9]. In the same study, while several treatment modalities were suggested, no one treatment modality was associated with a greater number of cures than any other.

Treatment

General treatment recommendations for aggressive disorders include changing the pet through counterconditioning and desensitization for fear based conditions, habituation to stimuli, avoidance of stimuli that evoke aggression, changing the relevance and intensity of the stimuli, changing the environment or removal of the pet from dangerous situations. Lindell et al. [9] investigated separation, positive reinforcement, odor exchange, medication, carrier confinement introductions and collar with a bell treatment recommendations and found that no one treatment resulted in a significantly greater number of cures than any other. Each aggressive disorder may require differing combinations of the above to achieve behavioral changes and safety.

Common Aggressive Disorders

Play Aggression Signalment and Diagnosis - Young cats can be very active and their activities include predatory and aggressive play interactions. Play behavior in cats is often the integration of predatory behaviors, fighting, exploration and investigation [10]. Pouncing and stalking behavioral sequences are commonly seen in the play behavior of kittens and young cats. While play aggression can be seen in any age cat, it most often occurs in singleton cats or cats less than 2 years of age [10]. Typically the history reveals aggressive displays directed toward humans. These include pouncing, swatting, grabbing and pawing behaviors typical of predatory behavior and play. Bites are usually inhibited [11] and the cats do not vocalize during predatory play. Attacks may only occur toward some family members and can be location specific [12]. Cats may wait and ambush humans by hiding under furniture, at the bottom of stairs or other commonly traveled areas. In other situations, the owner may have exacerbated the problem either by engaging in rough play, or lack of training in appropriate play methods [11]. Often owners of these cats may complain of excessive activity and curiosity. Other cats may present with excessive nocturnal activity that may be related to inadequate daytime play opportunity [13]. Some behavioral practitioners have called this type of aggression misdirected predatory behavior [14]. Play aggression becomes problematic when family members are injured, the behavior is directed toward youngsters, frail persons or immune compromised individuals or interferes with the ability of family members to have a pleasant relationship with their pet.

Prognosis - Generally the prognosis for play aggression is good especially with early intervention. If the bites are severe and uninhibited, the prognosis is more guarded.

Treatment of Play Aggression - Play aggression is best managed in the early stages by instituting appropriate and regular play opportunities. At no time should the owners allow their pet to play with them in an aggressive manner. This means wrestling behaviors, play using human body parts and teasing behaviors should be avoided. The cat should be provided with toys that move, flutter, bounce and stimulate chasing, stalking, pouncing, grabbing and swatting behaviors. Care should be exercised to choose toys that are small enough to be easily moved, but large enough so that they cannot be ingested. String and yarn should probably be avoided due to the possibility of foreign body ingestion. Regular playtime should become part of the daily

routine, and be instituted by the owner. In cases where the problem is more severe, other measures may be needed to treat the play aggression. The owner may need to use an aversive stimulus to interrupt the early signs of the aggressive behavior [5]. Early signs of aggression would include crouching, twitching of the tail and beginning stalking. At the initial onset of these signs the owner would administer a disruptive stimulus such as water from a water pistol, an audible alarm device or releasing compressed air from a canister used to clean photographic equipment [12]. Harsh physical reprimands must be strictly avoided as these may intensify the aggressive behavior by causing fear and defensive aggression. Finally, this may be one behavior problem where the addition of another pet could be helpful. Adoption of another cat of the same age and temperament may serve to redirect the playful behavior to a more willing participant. Predatory play may still persist however, and may need to be addressed using appropriate toys.

Fear Motivated Aggression to People or Other Cats - Fear reactions occur when the cat is exposed to a stimulus that it finds fearful and cannot escape. This can occur with a cat who has had limited exposure to new and novel things or was not well socialized as a kitten. Fear based behaviors can occur even towards people or cats that have lived together for some time. Not only the circumstance but also individual variation in temperament and reactivity level may dictate the intensity of the fear response. Often fear aggression is referred to as defensive aggression [12]. When a cat is behaving defensively it will crouch, the ears will be flattened to the head, and it may hiss, spit and piloerect the hair [10]. External stimuli can be the causation of a fear response [6]. The cat becomes aggressively aroused by an external stimulus and if a human or another cat approach the aroused cat it may respond aggressively. The cat may then become conditioned to associate that person or the other cat with fearful events. Cats also may become fearful of people through the inappropriate use of threats and/or punishment. Fear responses can be very discrete, i.e. to only one person or one situation or generalized to all people or every time the cat sees the other cat. At other times the aggression may not be fear based, but rather redirected aggression. Redirected aggression occurs when a cat that is already aggressively aroused in interrupted or interacted with and "redirects" the aggressive behavior to the person or animal that interrupted it [10]. Usually the stimuli that evoke redirected aggressive episodes can be identified and avoided and the episodes are infrequent.

Prognosis - Prognosis in fear based aggression is variable. When the behavior is of short duration, the eliciting stimulus is very discrete, predictable and exposure controllable prognosis is improved. If the fear is long standing, has generalized to several situations or people, is to a stimulus which is difficult to control or limit exposure then prognosis is more guarded. If the problem is aggression between household cats, the duration of the problem and severity of the aggression to date will need to be evaluated to give a prognosis. Finally, if the aggression has resulted in serious injury to humans or cats the prognosis is guarded as well.

Treatment - When a cat is aggressively aroused the first order of business is to isolate the cat so that it can calm down and people and other animals are not at risk of further aggressive attacks. Handling an aggressively aroused cat can be dangerous so care must be exercised. At times an aggressive cat will calm down if a blanket is dropped over it allowing the owner to pick the cat up and place it in a darkened room. At other times an aggressive cat will charge at people or animals that approach it. In that case the cat should be left alone or "herded" to an isolated room. In some cases several hours or days may be needed for the cat to calm down. Once the cat is calm, treatment is based on counterconditioning and desensitization to the fear-producing stimulus. If the fearful behavior is to a person, the cat can be provided with a bowl of delectable food and the feared person sits at a distance while the cat eats [6]. Gradually over time, the person attempts to move closer as long as the cat continues to eat and no aggression or anxiety is experienced. Aggression between household cats is treated the same way, but certain limitations to treatment may apply. First, if the cats become aggressive whenever they see one another, they must remain separated except for treatment sessions. Next, the cats are brought together several times a day and offered delectable food treats [6, 10,12]. The distance between the cats should be far enough so that neither cat shows aggression or anxiety. To facilitate owner control the cats probably should be wearing harnesses and leashes and be tethered. Finally over several days and weeks the food bowls can be moved closer together. The important component of the treatment is for each cat to experience the presence of the other cat without signs of aggression or anxiety. If the either cat will not eat, then the food bowls are probably too close together and should be moved further apart. In some cases cats are unable to be in the same room without aggression in which case introductions may need to be done through a closed door. Each cat is fed on opposite sides of the door while owners watch for signs of aggression. It also may be necessary to vary which cat is in the isolation area and which is out to facilitate the introductions. As the treatment progresses the cats are allowed to see each other by slightly opening the door. In other cases the use of a screen or net on the doorway can allow the cats to decide the distance between them and allow gradual re-acclimation to each other [11]. At other times introductions using cat carriers or cages may be a treatment option. The least fearful cat is put in a cage and food is used to attempt to get the more fearful cat to be in the same location as the other cat. The fearful cat may need to eat outside the room at first and gradually may venture closer [11]. Owners must be cautioned that desensitization programs are slow and when hurried may increase rather than decrease fearful behaviors. In some cases the fear reaction may be so severe that attempts at desensitization are unsuccessful. These cases may need the addition of psychotropic medication to decrease the fear response [3, 15]. Care should be exercised when

using anti-anxiety medication because of the possibility of disinhibition and the worsening of the aggression [6]. Lindell et al [9] did not find that medication to either the victim or the aggressor resulted in a greater number of cures when compared to cases where no medication was used.

Territorial Aggression to People and Other Cats - Fighting between cats can occur over territory and/or social status. Cats may fight when a resident cat reaches social maturity, which occurs between 1 - 2 years of age, or when an aging cat leaves the home or loses the ability to control the other cats.

Cats do have social interactions and a social structure. However, it is not based on the same threats and deference system as in dogs. Threats between cats can be more covert, such as blocking access to locations, staring or supplanting. Chasing and overt aggressive threats such as growling, hissing, biting are possible [6]. Cats show submission by crouching, turning the ears down and avoidance [6]. Often cats do not share space equally and additional cats in the household may result in some cats not having access to food bowls, resting places and litter boxes if placement of these resources is limited or restricted. Another hypothesis is that cats fight to increase individual distance between themselves, and not about territory [7]. In territorial disputes, one cat (the aggressor) will usually chase another (the victim). These chases are often accompanied by vocalizations such as hissing, growling and yowling. This can result in one cat living in a restricted area to keep away from the aggressor. When territorial aggression is severe, cats may need to be separated at all times to avoid injury or alternate living arrangements found for some of the cats in the home. Drug therapy alone is rarely curative and for many cases the prognosis for severe territorial aggression is poor [1].

In social status aggression, there may be only occasional fights if access to litter boxes resting-places and food bowls is adequate. Some studies indicate that cats do not share space equally and that within a group of cats, certain individuals appear to be dominant [16]. This behavior was most evident in the use and access to certain resources. Therefore, the way those resources are placed in the home can be important in treatment and prevention of territorial or social status aggression. Cats may show what appear to be territorial responses to visitors in the home with or without the owner being present. The aggressive cat may stalk and attack new people or strangers in the home and these attacks can be injurious and severe.

Prognosis - Prognosis is dependent on the aggression to date and the ability to control the environment so that all individuals can access the resources they need. If the aggression is directed toward humans, the ability to predict and avoid aggressive encounters will aid in determining the prognosis.

Treatment - Treatment focuses on avoiding aggressive encounters, reintroducing the cats as mentioned above and the creation of multiple "core areas" for food, water and litter boxes. This may allow each cat to have their own space and keep interactions and aggressive encounters to a minimum. Rubbing each cat with a towel and switching back and forth may help to create a familiar scent profile and reacclimatize cats to one another. If the aggression is directed toward visitors or strangers, the cat may need to be confined and separated while counterconditioning and desensitization are implemented.

Aggression While Petting - This type of aggression is very distressing to pet owners but not well understood. Often a cat will tolerate physical interaction for a period of time and then bite and/or scratch the person and leave. It is unclear whether this is a manifestation of some sort of social dominance conflict or a change from enjoying the encounter to finding it unpleasant [6]. While often owners indicate that the aggression is unpredictable, with detailed questioning, the cat will signal via changes in ear position, pupillary size, tail movement or even growling a change in "mood".

Prognosis - Generally the prognosis for this type of aggression can be good for avoiding the problem, but not for turning the cat into one whom tolerates long periods of physical manipulations.

Treatment - Treatment is twofold. First, the owner must learn to anticipate the change to aggressive behavior and either stop petting the cat or stand up and allow the cat to jump to the floor. In order to do this the owner must be vigilant and learn to identify the impending signs of aggression and cease all interactions at the very first indicator. Second, the owner can attempt to teach the cat to tolerate increased amounts of interaction by associating them with something pleasant. The owner is instructed to pet the cat for the predetermined amount of time that does not elicit the inappropriate response. If the cat stays calm (as evidenced by body posture, facial expressions and ear set) then the cat is rewarded with a food reward. Once the cat does well at that level, the owner attempts to increase interactions and reward calm behavior with food so that the cat learns to tolerate increased petting. Inherent in this approach is learning what type of petting the cat enjoys most. For some this might be just scratching around the head and neck as opposed to stroking down the entire body.

Pharmacological Intervention

For some cases, the addition of psychotropic medication can be helpful in resolving the aggression. The drugs that are presently being used are not approved for use in cats and therefore are extra label drug usage. Prior to use, all animals should have physical examinations, laboratory screenings for liver and kidney function and in some cases, electrocardiograms. Signed consent and release forms are advisable. Owners should be informed of potential side effects and plan to be home to monitor their pet for the first 1 - 2 days of treatment. Several classes of drugs have been used to treat aggression in cats. In

past, Benzodiazepines especially Valium® (1 - 2 mg. every 12 hours) had been shown to be useful in aggression, but care needs to be taken to watch for potential hepatotoxic reactions [17]. Also, cats on benzodiazepines could disinhibit and the aggression increase. Recently reports of hepatotoxic reactions have surfaced and this drug should be used with extreme caution [18]. Amitriptyline HCL (Elavil®) a tricyclic antidepressant has also been used in aggression in cats. Amitriptyline is a serotonin re-uptake inhibitor and also inhibits the reuptake of norepinephrine. In addition it has anti-histamine actions and can also interfere with thyroid medications. The medication must be given daily to be effective and can take 2 - 4 weeks to facilitate a change in behavior. Common side effects include tachycardia, urinary retention, sedation, G.I.T. upset, mydriasis and a dry mouth. Because of potential increases in heart rate, caution should be exercised in patients with cardiac disease and an EKG prior to use may be prudent. Common dosage is 0.5 - 2.0 mg/kg PO q 12 - 24 hours [15]. Recently, some veterinary behaviorists have used selective serotonin re-uptake inhibitors such as Fluoxetine (Prozac®) and Paroxetine (Paxil®) to treat aggression in cats. Medication is generally used for 6 - 12 weeks and if the behaviors have changed the animal is weaned off the medication by decreasing the dose 25 % a week while watching for a return of any aggressive indicators such as growling, hissing or chasing.

Aggressive behaviors in cats are not only dangerous for humans and other cats, they endanger the human animal bond. By attention to complete histories, the use of appropriate behavioral techniques and assessing risk and danger veterinarians can help cat owners safely live with their pets.

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