Separation Anxiety in Dogs

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About This Column

Behavior problems are a significant cause of death (euthanasia) in companion animals. While most veterinary practices are necessarily geared toward the medical aspect of care, there are many opportunities to bring behavior awareness into the clinic for the benefit of the pet, the owner, and ourselves. This column acknowledges the importance of behavior as part of veterinary medicine and speaks practically about using it effectively in daily practice.

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Separation anxiety is a behavioral syndrome of dogs characterized by signs of distress when the affected dog is left alone or is separated from the person or people to whom it is attached.[1] Signs expressed in the owner's absence include destructiveness (Figure 1), urination or defecation (in an otherwise house-trained dog), and excessive salivation.[2,3] A recent marketing survey of dog owners indicated that 17% of dogs that receive regular veterinary care exhibit clinical signs consistent with separation anxiety.[a] The disorder is diagnosed in 20% to 40% of dogs that present to specialty behavior clinics.[2,4]

Signs associated with separation anxiety can erode the human–animal bond.[5] Because of its financial and emotional cost, unresolved separation anxiety is a common cause of relinquishment to animal shelters[6–10] and subsequent patient loss. Therefore, at the first sign or client complaint, veterinarians should initiate treatment. Specific behavior-targeted questions, such as, "Are you having any problems with destructiveness or housesoiling?" should be a routine part of the wellness interview. At puppy visits, a technician who specializes in behavior should review positive-based confinement training with each client to prevent subsequent management problems. Early experiences as a puppy play a critical role in subsequent canine behavior.[11]

CLINICAL SIGNS

In addition to destructiveness, elimination in the home, and hypersalivation, signs of separation anxiety may include distress vocalizations and escape behaviors that result in self-trauma[2,3,11,12] (Figures 2 and 3). Some signs may be evident on the owner's return or be reported by neighbors. Other behavioral signs, such as pacing, circling, or other repetitive actions, may best be identified on a video recorded during the owner's absence.[12] Autonomic signs include tachycardia, tachypnea, and trembling. Typically, the dog's behavior when alone is in marked contrast to its behavior in the presence of the owner, when it may never exhibit anxiety-related behaviors. In fact, the owner may be unaware that the dog's behavior is due to an anxiety disorder and may attribute the behavioral signs to spite.

Dogs with separation anxiety may also exhibit signs of what is often termed *hyperattachment*.[13] Hyperattachment includes behaviors oriented to the owner, such as following the owner around the house and staying in close proximity to and touching the owner (e.g., leaning against, resting on foot). These dogs may express apparent distress when their owner shuts them out of a room (e.g., the bathroom) or goes to bed or to the mailbox without allowing the dog to accompany him or her, even though actual departure is not imminent. Although owners may reinforce such "attachment" behaviors by, for example, allowing the dog to sleep on their bed and talking to the dog as if it were a person, "spoiling" dogs in this way does not lead to behavior problems.[14]

Many dogs with separation anxiety appear restless, clingy, or immobile as the owner initiates his or her departure ritual, such as taking a shower, dressing in work clothes, or put-

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[a]Lilly Companion Animal Health, unpublished data, 2006.

Billie Pierce

Figure 1. Damage to a door through which the owner departs, caused by a dog with separation anxiety and thunderstorm phobia.

ting on particular shoes. More immediate signs of departure by the owner include picking up a purse or briefcase, putting on a coat, jangling keys, or turning on the alarm system. Occasionally, dogs with separation anxiety express aggression toward a departing owner, grabbing clothing or biting the hand that reaches for the doorknob in an apparent attempt to actively prevent departure and subsequent separation.

The range of clinical signs has prompted a close evaluation of the underlying motivation for what might best be called *separation-related disorder*.[13] Affected dogs fall into three subclasses, which suggest different motivations.[13] Dogs in subclass A are those with primary hyperattachment to at least one person; when these dogs are left alone, signs of destructiveness are often oriented toward the door through which the owner leaves or toward items impregnated with the owner's scent. Dogs in subclass B are upset by change in familiarity or routine (e.g., a move to a new home) or as a result of aging; when these dogs are separated from a person on whom they depend, signs of anxiety include departure distress, agitation or depression, and escape attempts. Dogs in subclass C do not demonstrate dependency behaviors. In these dogs, separation-anxiety onset coincides with a fearful or phobic experience when left alone; signs include urination or defecation or attempts to hide. Identifying the subtype may permit the clinician to optimize a treatment regimen for each case.[13] Salient historical questions include the following: Does the dog follow the owner and remain in physical contact even when departure is not imminent? Did a recent household change coincide with the development of separation anxiety? Is the dog afraid of thunderstorms or other noises?

SIGNALMENT

Dogs with separation anxiety may be of any breed or mix. No single breed or breed class is consistently overrepresented except mixed breed. In most studies, approximately 50% of affected dogs are mixed breed. Also, in studies that compare the demographic data of dogs with separation anxiety with those of controls (all behavior cases or medical cases presented for treatment), the pool of dogs with separation anxiety contains a larger percentage of mixed-breed animals.[2] The mixed-breed bias may correlate with source: dogs from shelters or rescue organizations are overrepresented in studies of separation anxiety compared with control populations. These dogs may be more resistant than purebred dogs to improvement with treatment.[15]

In most separation anxiety studies,[2,4,15–17] males (intact and neutered combined) represent 60% to 70% of the subjects. In other studies,[18–20] the male:female ratio is approximately equal.

DIAGNOSIS

The diagnosis is made on the basis of a behavioral history and the exclusion of diagnostic differentials, which may be medical or behavioral (Table 1). A behavioral history is imperative; history forms can be obtained from a number of sources.[21,22] Dogs with separation anxiety cannot be reliably differentiated from dogs with other behavior diagnoses on the basis of physical or behavior traits when examined in the veterinary hospital. As described above, not all dogs with separation anxiety express generalized anxiety or hyperattachment to the owner.

Behaviors characteristic of canine separation anxiety include destructiveness, housesoiling, hypersalivation, vocalization, and pacing. To satisfy a definitive diagnosis of separation anxiety, these behaviors must be restricted to times when the dog is left alone or separated from an attachment figure. Dogs may exhibit one or more of

Jen Kelley

Figure 2. This dog had to be confined in a sturdy crate after it leaped through a second-story screen to escape home confinement when it was left alone.

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Figure 3. Dental self-trauma incurred by the dog in Figure 2 during successful attempts to chew its way out of previous crates.

these signs, often within minutes of the owner's departure.[2,12] In confusing cases, a video or audio record of the dog's behavior in the owner's absence may be helpful to confirm the diagnosis.[12]

MANAGEMENT

Management consists of environmental control, behavior modification, and medication. *Environmental management* refers to strategies to reduce repetitive "panic attacks" that maintain a conditioned response to the owner's departure and the establishment of a safe place for the dog that reduces self-injury and damage to the home. The use of a crate or safe, restricted area is effective for dogs that are trained to this confinement. However, dogs unaccustomed to restricted confinement are likely to hypersalivate, eliminate in the confined space, or attempt to escape, causing self-injury (Figures 2 and 3). Boarding these dogs at dog day care facilities while the owner is at work may be helpful until the behavior management program is in place. The presence of a conspecific at home may be helpful in some cases but does not necessarily alleviate separation distress.

The first tenet of behavior modification is to cease retrospective scolding and physical punishment (see the box on page 31). The second tenet is to ignore clingy and attention-seeking behavior and to teach the dog, using positive methods, to be calm and obedient when the owner is home and sedentary and, later, when the owner moves around the house but does not depart. This is especially important in dogs that exhibit hyperattachment. Eventually, the dog is taught to lie down on a comfortable resting place on the floor as the owner practices departure cues but does not depart. Dogs that exhibit hyperattachment or separation-related aggression need behavior plans that address those issues[13] (see the box on page 31). Dogs with concomitant thunderstorm or noise phobias should be desensitized to those stimuli. To date, no specific behavior recommendations have been subjected to scientific validation.

Finally, medication can be used to reduce anxiety and promote learning (Table 2). In several studies, when used with a behavior plan, behavior medication increased the number of animals that responded in the first weeks to months of treatment compared with controls.[19,20] Over several months' time, the number of animals that show improvement with behavior modification alone approaches the number that shows improvement with behavior modification and medication.[19,20] Because separation anxiety is a condition of extreme distress, reducing anxiety by using medication before behavior modification can be fully implemented is recommended from a welfare perspective.

A number of medications can be used to treat separation anxiety in dogs (Table 2). The mechanisms of action of these drugs are reported elsewhere.[23,24] Two agents, clomipramine (Clomicalm, Novartis) and fluoxetine (Reconcile, Lilly), are now approved by the US FDA for canine separation anxiety. Both drugs are accompanied by well-designed behavioral instructions targeted to pet owners; both are label restricted for aggression.

Table 1. Diagnostic Differentials for Signs Associated with Separation Anxiety[2,3]

Clinical Sign[a]	Medical Diagnostic Differentials	Behavioral Diagnostic Differentials
Destructiveness/ disarrangement/ escape attempts	Hepatic encephalopathy	Play/unruliness Frustration/overactivity related to inadequate exercise or play Territorial aggression (to outside stimuli) Thunderstorm/noise phobia Generalized anxiety Cognitive dysfunction
Urination in the house	Seizures Cystitis and other lower urinary tract disorders Neoplasia (especially if hypercalcemia is present) Endocrine disorder (e.g., diabetes) Inadequate urinary bladder capacity	Insufficient housetraining Inadequate opportunity for elimination Submissive display Excitement urination Urine marking Thunderstorm/noise/other phobia Cognitive dysfunction
Defecation in the house	Cholitis Diet Parasites Causes of increased fecal volume or frequency	Insufficient housetraining Inadequate opportunity for elimination Thunderstorm/noise/other phobia Cognitive dysfunction
Hypersalivation	Toxin exposure	Thunderstorm/noise phobia Inadequate opportunity for elimination
Pacing, circling	Central neurologic disorder	Thunderstorm/noise phobia Canine compulsive disorder
Self trauma (acral lick)	Neuritis Dermatitis Foreign body Hepatic encephalopathy Other primary dermatologic disorder	Canine compulsive disorder
Vocalization	Dementia	Social communication Play Territorial barking Arousal barking (response to outside stimuli) Thunderstorm/noise/other phobia

[a]Present on owner's return after absence or recorded on video.

Clomipramine, a tricyclic antidepressant, has been approved since 1999.[19,25–27] One large US clinical trial (N = 99) demonstrated that, after 12 weeks, 73% of dogs that received clomipramine (1 to 2 mg/kg q12h) with behavior modification improved significantly compared with 41% of control animals that received behavior modification only.[19] Dogs that received clomipramine improved more quickly with regard to signs of destruction, defecation, and urination.[19] A smaller UK study with a more intensive behavior treatment program showed a more modest effect of medication.[16] Another study concluded that a dog appeasement pheromone, available as a plug-in spray or impregnated collar (DAP, Ceva Animal Health USA, Inc., Lenexa, KS), was as effective as clomipramine with fewer side effects.[18] I have found individual results with pheromone treatment alone to be variable and have used pheromone products concurrently with medication.

Fluoxetine, a selective serotonin reuptake inhibitor, was recently approved for the treatment of separation anxiety in dogs. Results of a large clinical trial (N = 242) have been published.[20] More animals in the treatment group (fluoxetine plus behavior modification) showed improve-

ment compared with placebo controls (behavior modification only) during all weeks except one of the 8-week trial. After 8 weeks of treatment, 72% of fluoxetine-treated dogs had shown improvement in overall severity score compared with 50% of placebo-treated dogs. Significant improvement was observed for the incidence of destructiveness/rearranging and excessive vocalization. Inappropriate urination and inappropriate defecation comparative values were numerically but not consistently statistically significant. There were no apparent differences between the groups with regard to hypersalivation. After 1 week, 42% of fluoxetine-treated dogs had improved compared with 17% of placebo controls (both groups practiced behavior modification).[20] Response in the early weeks of treatment is critical, both from a welfare perspective and to prevent relinquishment or euthanasia of the patient. Therefore, early, rather than delayed, medication administration is recommended. In a sister study of 171 dogs with separation anxiety,[28] in which fluoxetine treatment was compared with placebo in the absence of specific behavior modification instruction, the overall treatment effect was more modest. After 1 week of treatment, 60% of treated dogs had an improved overall severity score compared with 44% of placebo dogs. After 6 weeks, 65% of treated dogs had an improved overall severity score compared with 51% of placebo controls; this difference was not statistically significant.

No behavior drug is similarly efficacious in all patients; therefore, managing behavior problems requires a strategy for managing an unsatisfactory clinical response. If a dog fails to respond satisfactorily to the treatment regimen after 1 month, a number of steps should be taken to improve management. First, the differential diagnosis should be reviewed to make sure that the diagnosis of separation anxiety is correct and that no concomitant medical or behavior problems exist. Second, the behavior management plan should be reviewed and clarified. If present, hyperattachment and confounding behavior problems, such as noise phobia, should be addressed. Third, the antianxiety medication dose should be evaluated and increased, if indicated. Fourth, an adjunctive medication may be added (Table 2) to enhance the effect of the primary agent.[29] Finally, a new baseline agent should be selected, and wash-out guidelines on the package insert should be followed for each medication. I sometimes use pheromone treatment[18] concurrently with medication.

CONCLUSION

Separation anxiety is a common behavior problem of companion dogs. Inadequate treatment can lead to abandonment, relinquishment to an animal shelter, or even euthanasia of affected dogs. Treatment is most successful when it is based on a management plan that improves the environment of the dog when it is alone, changes the relationship between the owner and the dog with behavior therapy, and provides appropriate antianxiety medication.

Behavior Modification Instructions for Owners[3,16,19,20,a]

While at home:

- Provide adequate, appropriate exercise and play opportunities.
- Do not reinforce clingy, attention-seeking behavior.
- If the dog is hyperattached (follows you around the house, often in physical contact), give low-key praise for calm, obedient behavior while not in physical contact with you.
- Practice "place training," rewarding the dog for remaining in a down-stay position in a comfortable resting area as you (with training success) gradually move farther away.
- Desensitize the dog to relevant departure cues: pick up keys, purse, or briefcase multiple times per day without leaving, and ignore the dog's response.
- If the dog is aggressive when you depart, practice sit-stay exercises in the departure area, using small food rewards. Reward the dog for sitting calmly as you step away, approach the door, turn the knob, and so on. Be positive, and proceed slowly.

When preparing to depart:

- Set the household environment (e.g., radio, lights) 30 minutes before departure; avoid last-minute alterations that become triggers for departure.
- Avoid interacting with the dog for 30 minutes before departure.
- Leave the dog in comfortable, warm, safe confinement or drop off at dog day care.
- Provide "enrichment" (e.g., special chew toy, food-filled toy, comfort object) at time of departure.
- Be low key on departure.
- If the dog is aggressive when you depart, briefly review sit-stay exercises in the departure area before actually leaving.

On return:

- Do not scold or punish the dog.
- Be low key when you arrive.
- Ignore greeting behavior until the dog has all four feet on the ground, then modestly greet the dog.

[a]Pettijohn TF, Wong TW, Ebert PD, et al. Alleviation of separation distress in 3 breeds of young dogs. *Dev Psycholbiol* 1977;10:373-381.

Table 2. Drugs Commonly Used to Treat Separation Anxiety in Dogs[19,20,24,a–c]

Drug Name	Drug Class	Oral Dose and Frequency	Comments
Primary agents			
Amitriptyline	Tricyclic antidepressant	1–3 mg/kg q12h	Mild sleepiness, anticholinergic effects, gastrointestinal effects
Clomipramine[d]	Tricyclic antidepressant	1–3 mg/kg q12h or 2–4 mg/kg q24h	Lethargy (transient), vomiting (give with food), mild anticholinergic effects
Fluoxetine[d]	Selective serotonin reuptake inhibitor	1–2 mg/kg q24h	Decreased appetite, lethargy (usually transient and dose-related); seizure history contraindicates use
Paroxetine	Selective serotonin reuptake inhibitor	0.5–2 mg/kg q24h	Anticholinergic effects, paradoxical restlessness; discontinuation reaction (taper slowly)
Adjunctive agents			
Alprazolam	Benzodiazepine	0.02–0.1 mg/kg q12h or as needed for departures	Paradoxical excitation; discontinuation reaction with chronic use at high doses
Buspirone	Azaspirone	1–2 mg/kg q12h	Mild gastrointestinal side effects (uncommon), positive changes in social behavior may be evident
Clorazepate	Benzodiazepine	0.55–2.2 mg/kg q8–24h	Sedation, discontinuation reaction if abrupt withdrawal after chronic use; requires an acid environment for absorption
Diazepam	Benzodiazepine	0.5–2.2 mg/kg as needed for departures	Rapidly metabolized
Lorazepam	Benzodiazepine	0.02–0.1 mg/kg q12h	Not as sedating as other benzodiazepines; may require 3–4 weeks to achieve maximum effect
Trazodone	Atypical antidepressant	1–3 mg/kg q12h or as needed	Mild sedation, gastrointestinal side effects (especially with initial doses), drug tolerance may require dose titration over time

[a]Patients should be monitored regularly. Primary agents should not be used concurrently or with monoamine oxidase inhibitors such as amitraz or selegiline; benzodiazepines should be avoided in cases of aggression due to the risk of behavioral disinhibition.
[b]Simpson BS. Behavioral drugs: "baseline" and "adjunctive" agents. *Proc 140th AVMA*, Session Note #02225, 2006.
[c]Crowell-Davis SL, Murray T. *Veterinary Psychopharmacology.* Ames, IA: Blackwell Publishing; 2005.
[d]Approved by the US FDA for use in dogs for the treatment of separation anxiety.

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