Debra F. Horwitz, DVM, Diplomate ACVB, Veterinary Behavior Consultations, St. Louis, Missouri

Storm Phobias in Dogs

Spring is upon us, and with it comes thunderstorms. What is the newest information on helping storm-phobic dogs?

While some dogs respond to storms by hiding quietly, others may display problematic behaviors, endangering themselves, others, or the environment (eg, escape attempts, destruction of property, keeping owners awake at night). Responses are likely to differ between animals depending on their experiences and the intensity and frequency of the storms.

Diagnosing Storm Phobias

Presenting signs may include panting, pacing, trembling, remaining near the owner, salivation, vocalization, destructive behavior, indoor elimination, and self-trauma. The distress responses can vary from mild to extreme.

Bamberger and Houpt[1] retrospectively examined factors associated with behavior diagnosis in dogs at Cornell University Hospital for Animals and reported that 2.3% of the 1644 cases evaluated presented with storm phobia. In addition, dogs with thunderstorm phobias are likely to also have separation anxiety. Overall and colleagues[2] found associations between separation anxiety and thunderstorm and noise phobias in dogs.

Depending on the initial presentation, it may be difficult to determine whether a dog has storm phobia. Dogs with combinations of noise phobias, storm phobias, and separation anxiety may present with more intense signs than dogs showing just 1 condition.[2] Furthermore, the intensity of the phobia may affect the treatment response. Clients presenting pets for storm phobias should be asked whether the dog also has concurrent issues with being left home alone or with other loud noises.

Treatment for Storm Phobia

Medications

Considerations for the use and type of medication include the health and age of the animal, the presence of the owner at the onset of the storm (which might affect time of administration), and choice of drug. Many oral medications will take 30 to 60 minutes to show an effect, although some benzodiazepines are in the system with 1 hepatic pass.

Once the dog is agitated, its response to medication may be altered. Therefore, it is important to administer medication before onset of a storm or at least before the most intense onset of stimuli. Owners should assess response and tolerance of a medication in order to determine whether the dog becomes ataxic at a low dose, which may prompt the switch to a different medication.

Acepromazine Maleate

In the past, dogs showing intense responses to storms or other loud noises were treated with acepromazine maleate. As a phenothiazine,

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acepromazine is a neuroleptic drug that suppresses spontaneous movements and complex behaviors; such drugs are primarily used in veterinary medicine for a tranquilizing effect. However, for most animals they seem to have very little anxiolytic effect.[3] In addition, while some dogs may become sedated, others may show paradoxical excitement or increased sensitivity to noises. Acepromazine may take 45 to 60 minutes to have an effect, and the sedation/tranquilization may last for up to 8 hours. Owners often find the duration of sedation to be objectionable.

Anxiolytic Medications

Anxiolytic medications, especially the faster-acting ones, appear to be useful in storm situations; in veterinary medicine, benzodiazepines are used most often. Benzodiazepines potentiate GABA (gamma-aminobutyric acid, an inhibitory neurotransmitter), reduce anxiety, cause muscle relaxation, decrease locomotor activity, and can lead to paradoxical excitability. The usefulness of these drugs in dogs with storm phobias stems from the speed with which they reach peak effect. With extended use, however, dependency is possible, and clinical signs may rebound without gradual withdrawal. Diazepam, alprazolam, and clorazepate are the benzodiazepines commonly used to treat storm phobias in dogs.

Buspirone is an anxiolytic agent; however, it is not fast-acting. For peak effect it may require twice-daily dosing for a week or more. Therefore, it is not suitable for use on an as-needed basis but rather as daily medication. I have not found it to be particularly useful for storm-related problems.

Antidepressant Medications

Antidepressant medications have also been used to treat storm phobias. Tricyclic antidepressants and selective serotonin reuptake inhibitors affect serotonin and other neurotransmitters in the brain. Since they may take 2 to 6 weeks for an effect to be noted, they are also not suitable for as-needed use. However, they can have a role in treatment that seeks to address ongoing and underlying anxieties. A common side effect is lethargy, which may be dose related and usually resolves within a week; anorexia and seizures in predisposed individuals are infrequent side effects. Please consult the sources provided in **Aids & Resources** for more detailed cautions.

Medication + Behavior Modification

Crowell-Davis and colleagues[4] conducted a prospective, open-label clinical trial of clomipramine, alprazolam, and behavior modification for the treatment of storm phobias in 32 dogs. All dogs received clomipramine daily for 3 months (and then in declining dosages for 4 weeks); alprazolam was given as needed 1 hour before anticipated storms and then every 4 hours as needed. In addition, the owners were provided a desensitization and counter-conditioning program that used audio simulation of a storm.

Panting, pacing, trembling, hiding, excessive salivation, destructiveness, indoor elimination, and vocalization were signs recorded during the trial. At the end of the study, the owners of 30 dogs indicated that their dogs showed improvement with medication and behavior modification. In most cases, the signs noted became less intense, and in a few cases the problems resolved. This approach works well for pets with more extreme responses and pets that must be left home alone on potential storm days.

A complete discussion of mechanism of action of the various medications is beyond the scope of this article but is provided in other sources.[3] Practitioners are encouraged to become familiar with these medications before prescribing them.

Pheromones

Pheromones are species-specific chemical substances that affect behavior. Dog-appeasing pheromone (DAP; ceva.com) is a synthetic analog of the appeasing pheromone secreted by the mammary glands of a nursing dog. Although no published placebo-controlled studies have examined pheromones for storm phobias, several studies have shown the efficacy of DAP diffusers for treating firework phobias and separation anxiety in dogs.[5-8]

A prospective study by Levine and colleagues[5] evaluated the efficacy of 2 self-help, CD-based desensitization and counter-conditioning programs that also employed DAP diffusers and creation of a safe haven for the dogs. The results indicated significant improvement in total severity scores (calculated by multiplying the frequency score for signs by the intensity score) and global fear scores. Owners should be advised that pheromones may help with response—the dog may still startle, but may recover more quickly. However, other dogs may show little if any effect. Diffusers are adjunct therapy, not a stand-alone treatment.

Behavior Modification

There are 2 types of behavior modification protocols for storm phobias. The first type helps the dog engage in a rewardable behavior. During storms, owners should be counseled to avoid rewarding anxiety-associated behaviors.[7] Patting or speaking in soothing tones may send the message that the pet's behavior (eg, trembling, shaking) is acceptable. Instead, the owner should ask the dog to perform a known command, such as sitting, and then reward compliance.

The second type of behavior modification involves attempting to engage the dog in a more pleasant activity, such as a game of fetch or even gnawing on a chew bone. Dogs that are very

distressed may not respond to either of these interventions. However, the use of medication during storms or daily may allow the owner to begin to use these techniques.

Over the long term, desensitization and counterconditioning to sounds of a storm on CD may also be a useful behavior modification intervention. For some dogs, this is best done during the off season to avoid exposure to the intensity of a real storm while attempting to train new responses.[4] (See Aids & Resources for CD recommendation.) Some dogs may benefit from a tricyclic antidepressant agent or selective serotonin reuptake inhibitor during this process.

Environmental Interventions

Environmental interventions are useful adjuncts during a storm. Sequestering the dog in a darkened room without windows blocks out visual stimuli, and using white noise or loud music to mask the sounds of the storm may help dampen responses to these stimuli. Although some individuals suggest products to cover the ears or body during storms, these products have not been studied for their efficacy or usefulness; it is possible that they could help certain patients.

Before a storm, it may be necessary to ensure that the dog associates the darkened place with safety and positive activities, such as food rewards, play, and relaxation exercises. This training should take place as part of the overall treatment plan. In some cases, the use of a head collar may calm the dog and allow the owner to more easily place it in a relaxed down position. If used during training, this may provide another signal to the dog to relax and follow owner instructions.

Conclusion

Each dog experiences storm responses in an individual manner. An evaluation of the type and intensity of signs and of owner tolerance for the behavior will help determine the treatment options best suited for a given dog. All treatment plans should consider incorporating medication, pheromones, and behavioral intervention. When these modalities are properly combined, the behavior responses of many dogs can be controlled or improved during storms.

See Aids & Resources, back page, for references, contacts, and appendices.

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Medication Dosages

Appropriate and timely use of medication is essential.[7] Evaluate all animals medically before administering medication.

Short-acting benzodiazepines:

- **Diazepam:** 0.5–2.2 mg/kg PO as needed for storms
- **Alprazolam:** 0.01–0.1 mg/kg PO as needed for storms (up to 4 mg/day), or 0.02 mg/kg as needed with clomipramine

Longer-acting benzodiazepine (not for use with short-acting benzodiazepines):

- **Clorazepate:** 0.55–2.2 mg/kg Q 8–12 H
- Discontinuation reaction is possible with any benzodiazepine; wean dog off slowly after long-term use

Daily medication (started before and used throughout storm season for severe cases):

- **Clomipramine** (tricyclic antidepressant): 2–3 mg/kg Q 12 H for 60 days minimum
  - May take several weeks for effect; must be given daily
  - A benzodiazepine may be added as needed during storms
- **Fluoxetine** (selective serotonin reuptake inhibitor): 1 mg/kg to start, Q 24 H for 60 days minimum
  - May take several weeks for effect; must be given daily
  - A benzodiazepine may be added as needed during storms