ADVANCES IN THE DIAGNOSIS AND TREATMENT OF NOISE PHOBIAS IN COMPANION ANIMALS

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Fear Response

Fear response is a complex physiological response involving several areas in the brain. This response is accompanied by activation of the neuro-endocrine and autonomic components of the central nervous system, stimulation of the hypothalamic-pituitary-cortico-adrenal axis, liberating stress hormones and exhibiting certain somatic signs that increase survival probabilities in the animal (1,2). These include defense behavior, increased blood pressure, heart rate, respiratory frequency, glucose metabolism, and accompanied by a decreased perception of pain, hair bristling, pupil dilation, salivation, urination and defecation, and evacuation of the anal glands. Fear also seems to be involved in altering the activity of certain neurotransmitters such as serotonin, adrenalin, noradrenalin and GABA. These neurotransmitters therefore become important targets for medicines. (3)

Fear:

Fear is a definite emotional state like a feeling of apprehension or anguish before a specific danger or imminent threat. It may be considered as a normal adaptive behavior (1). It is a basic, instinctive behavior that allows an animal to survive by making it ready for either fight or flight.

Phobia:

This refers to an exaggerated response to fear that presents itself chronically and intensely before a certain stimulus (1).

Phobias can be categorized as:

- Specific phobias towards a specific and identifiable stimulus or stimuli such as the fear of firecrackers.
- Generalized phobias towards many stimuli, sometimes difficult to identify, for example, the fear of people, other animals and objects.
- Situational phobias these stimuli occur under specific and identifiable situations or conditions, such as fear of a veterinarian or of car travel.

Noise phobias

These phobias are commonly found in dogs and in a third of the cases are so severe that owners look for professional help because the animal shows intense discomfort.

Although it is a part of normal behavior, it is important to determine if the fear is adaptive or pathological which can be identified within the context in which it is produced.

"Normal fear versus phobia"

To experience fear when attacked by an animal is normal, when lightening strikes a near-by tree is also normal, but to experience fear when the sky darkens may be considered a phobia. It can be said that phobias are exaggerated fear responses as indicated by the danger level of the stimulus generating them (2).

Possible Causes and diagnosis

Genetic factors, traumatic events, early socialization deficit, associative learning, by either classic or instrumental conditioning.

The diagnosis of noise phobias is mostly clear; the causing stimulus is usually loud and recognizable and the owner is capable of identifying its occurrence by the animal's behavior (2). The prognosis varies and depends on the animal itself, the duration of the phobia, the success in finding a controllable and efficient stimulus for systematic desensitization and counter-conditioning (SD-CC), and the ability to control the intensity of the stimulus during treatment.

Treatment may be divided into three mechanisms:

1. **Modifying the environment:** This consists of controlling the environment whenever possible; having control of the animal; providing a secure place where the animal feels safe and protected, and avoiding exposure to the stimulus except during specific treatment sessions.
2. **Modifying the behavior:** This consists of several procedures with the objective of diminishing the animal's perception of danger or threat generated by the stimuli, while avoiding unconscious strengthening of attention-seeking behavior like jumping on its master's lap, seeking constant physical contact, whining, barking, hiding, attempts to escape, etc., employed by the animal to feel safer. In general, these procedures require making changes in the relationship and in the way the owner communicates with the animal.

   Some of these procedures involve:

   - Identifying causal stimuli
   - Identifying the tolerance threshold or gradient of

exposure to the causal stimulus without a show of fear

- Avoid rewarding the animal if it shows fear

In order to establish the gradient of exposure and utilize systematic desensitization and counter-conditioning (SD-CC) as a therapeutic tool, one may utilize, depending on the causal stimulus, audiocassettes, videocassettes, special effects recordings or exposure to the real stimulus at a distance (1, 2).

It is important that the animal be retrained with rewards in a controlled situation while recourse to obedience commands such as "sit" or "down" may become very useful, not only because they provide us with additional control over the animal, but because they may be used as a vehicle to obtain more easily a physiologically relaxed state (1), which is exactly what we are looking for. The rewards must be highly attractive so that they change the animal's perception of the stimulus through associative learning.

During DS-CC we must search for an optimal level for the exposure, expose the animal to a very low intensity of the stimulus (one the animal is capable of tolerating without showing signs of fear or anxiety, reward calmed behaviors, and *increase very gradually* the intensity of the stimulus until it reaches levels close to those that originally caused a fear response. If at any time the animal shows signs of fear or anxiety, it is imperative that we reduce the stimulus and then proceed more gradually.

Another technique of behavior modification is flooding. This technique is not very commendable as the subject requires being exposed to the causal stimulus at its real intensity until the animal becomes used to it and can relax. The technique may be counterproductive, as the fear may be reinforced if the animal is not able to get used to the stimulus intensity and the stimulus is withdrawn before habituation or the animal may escape stimulus exposure before the fear subsides. This technique implies a high degree of risk as the animal may harm itself, or others, while under a much altered emotional state (1).

Punishment must not be applied for it only provokes a higher state of anxiety. Maintaining the animal calm is an important part of the treatment. If the level of anxiety or excitement is high, the animal immediately responds to the threatening stimulus and new learning doesn't occur. However, if the level of anxiety or excitement is reduced by using behavior modification techniques, medication or a combination, new learning may then occur.

3. **Drug treatment:**

Tricyclic antidepressants (TCA's):
Clomipramine, Amitriptiline, Imipramine

Selective inhibitors of serotonin recapture (SSRI's):
Fluoxetin, Paroxetin, and Fluvoxamin

Benzodiazepines (BDZ's): Alprazolam,

Diazepam, Clorazepate

Occasionally combining TCA's and BDZ's is useful.

Alternative medicine may be applied:
D.A.P., acupuncture, homeopathy (3).

Prevention

Early exposure to a variety of stimuli within the human environment and habituation during sensitive periods, have proven to be useful.

Development of the phobia:

Previous traumatic experiences, such as lightning striking a nearby tree may trigger the development of a phobia. These include a hurricane or tornado and accumulated traumas such as frequent and very strong storms in the area.

We may say that a dog is storm phobic when the symptoms it exhibits are disproportionately more intense than the stimulus provoking them (5).For example, symptoms that occur as a response to harmless stimuli such as rain or dark clouds. An important factor to consider is that an animal with storm phobias is subjected to a high degree of suffering.

A variety of types of phobias according to the intensity of signs are discernable: (2)

- Type 1: hiding, staying close to its master, wandering, moaning
- Type 2: hiding, staying close to its master, wandering, moaning, agitation, trembling, vocalizations
- Type 3: stronger attempts to hide, staying close to its master, and attempts to escape, wandering, trembling, hypersalivation, agitation, vocalizations, urination, defecation, or anal gland evacuation.

According to the severity of the signs, ten signs are commonly observed, and the scale varies from 0 to 5 (LIkert scale) where 0 represents the absence of signs and 5 the highest intensity shown. (2)

The signs to observe are:

- Destructivity
- Elimination
- Salivation
- Vocalization
- Hiding
- Wandering
- Agitation
- Staying close to owner
- Trembling
- Self-mutilation

A score of a total of 30 points or more in the scale is considered to be a severe case that undoubtedly requires medical treatment. (2, 3)

Treatment is simple for mild or moderate cases: bring the dog

indoors during the storm, the dog may feel at ease with the presence of the owner, provide a place of refuge such as a large container, a piece of furniture, a closet, or the like.

Storms have many components to which the dog responds to several of them, thus making its treatment so much more complicated.

Drug treatment of storm phobias:

Base medication: Before the rainy season begins, or at least at the beginning of the season, for the remainder of the season, due to classic conditioning it is possible that the dog shows fear even to low-intensity storms. (1)

The most commonly used medications are:

Clomipramine (1.5 – 3.0 mg/kg, twice per day) or Fluoxetine (1.0 – 1.5 mg/kg, once per day)

Quick-acting ansiolitic medication that make it easier for the dog to get through the storm:

Alprazolam (0.1 – 0.5 mg/kg q 6-8 h); Diazepam (0.25 – 2.0 mg/kg q 6-8 h)

Drug treatment must always be accompanied by behavioral modification and environmental modification where indicated.

Desensitization and counter-conditioning

These are effective if the dog shows signs of anxiety or fear during an "artificial storm". It requires being able to manage the various components of the storm if the dog responds to a specific stimulus. For example, do not begin with thunder if the dog fears rain. Begin with the least threatening stimulus such as light rain, followed by more intense rain; moderate thunder, followed by more intense thunder; or a combination of stimuli, etcetera. (2, 4)

Due to the fact that some dogs respond only to specific stimuli, recording a local storm has proven to be useful for SD-CC sometimes. (2, 5)

It is best to conduct DS-CC during the dry season, as the goal is that "ideally" the dog will never experience fear (3, 5). Thus we can perform gradual exposure and avoiding the risk of the dog suddenly finding itself exposed to a high-intensity storm, and therefore loosing everything that had been gained during therapy.

It is equally important to change the manner in which we communicate with the dog. Not comforting during the storm, reward calm and relaxed behavior, do not punish if the dog digs, hides, moans, etc..

The veterinarian must talk about real expectations before the treatment which is usually difficult to resolve totally. Effectiveness increases with treatment time, and almost all the patients show improvement, although they may have relapses during severe storms.

Severe storms present a great challenge because they have multiple components, the dogs generally manifest intense responses, it is difficult to find artificial stimuli for DS-CC, it is difficult to prevent exposure to real stimuli and, on many occasions, the stimulus appears when the owner is absent.

Storm phobia in cats

There is no reason to assume that this doesn't occur. However, cats register a different response. They generally tend to show a reduction of their activity level - hiding or even sleeping can be interpreted as important signs of stress or anxiety. They do not exhibit the destructive signs that dogs have. When the owner returns home he doesn't find anything "abnormal" and therefore the condition goes unnoticed, unreported and is not diagnosed (2, 5).

References:

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