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The effectiveness of the Anxiety Wrap in the treatment of canine thunderstorm phobia: An open-label trial

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KEYWORDS:
canine;
thunderstorm phobia;
fear;
deep pressure touch;
acupressure;
Anxiety Wrap

Abstract The effectiveness of the Anxiety Wrap on canine thunderstorm phobia (ThP) was investigated by comparing owner-reported Thunderstorm Anxiety Scores before and after the use of this product (n = 18). The mean Thunderstorm Anxiety Score associated with the fifth use of the Anxiety Wrap was 47% lower than the mean anxiety score that was generated before the use of the Anxiety Wrap ($P = 0.001$). After 5 uses of the Anxiety Wrap, 89% of owners reported that it was at least partially effective in treating their dogs' ThP, and this percentage was significantly higher than those who rated it as noneffective ($\chi^2 = 11.842$, n = 19, $P = 0.001$). Eighty percent of the owners reported that they would continue to use the Anxiety Wrap for their dogs' ThP after the trial, and no owners reported any negative side effects from the use of this product. The data suggest that the Anxiety Wrap is a safe and effective treatment for canine ThP.
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Introduction

Canine thunderstorm phobia (ThP) is a condition that can result in hardship for both owners and dogs. Affected dogs display symptoms that can include panting, pacing, owner seeking, hiding, escaping attempts from crates (or even the home itself), inappropriate elimination, and vocalization (McCobb et al., 2001). Although there are efficacious pharmacological treatments for canine ThP (Crowell-Davis et al., 2003), not all owners want to rely on using medication. One nonpharmacological treatment option, Storm Defender, which has supposed antistatic properties, was already tested and found to be efficacious (Cottam and Dodman, 2009), but

an additional efficacious nonpharmacological treatment for this condition would provide yet another option.

The Anxiety Wrap (Animals Plus LLC, Huntington, IN) is a product designed to apply pressure to a dog's torso, while allowing the dog to engage in unencumbered movement. The inventor of the Anxiety Wrap claims that the product reduces fear by 2 pressure-inducing methods: maintained pressure "swaddling" and acupressure. There is some evidence to suggest that tactile pressure produces a calming effect in humans (Blairs et al., 2007), pigs (Grandin et al., 1989), and dogs (Williams et al., 2003). The methods used to exert tactile pressure in these studies, and the degree to which these methods restrict movement, varied according to the pressure delivery system used (i.e., bed tuck-ins for humans, squeeze machine for pigs, and a grain-filled box for dogs). The amount of tactile pressure necessary to engender a calming effect in various species (with or without movement restriction) varies with the method used to induce tactile pressure. In an exploratory study on the

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effectiveness of deep pressure stimulation, a 30 pound weighted blanket was used to induce a calming effect on prone adult humans (Mullen et al., 2008), and Grandin's renowned squeeze machine delivers 60 psi or 95 pounds of air pressure (Grandin, 1992).

Anecdotal evidence suggests that the use of the Anxiety Wrap can reduce canine fear-related behaviors; however, it has not been scientifically tested for effectiveness. This open-label trial was performed to evaluate the effectiveness of the Anxiety Wrap in treating canine ThP.

Materials and methods

Participants and animals

The protocol for this study was approved by the Tufts Cummings School of Veterinary Medicine's (TCSVM) Clinical Research Studies Committee (North Grafton, MA, USA). Subjects were found by placing an advertisement in one of the TCSVM's newsletters, Your Dog, in March 2010. Owners of thunderstorm wary dogs, living in 11 states with a high prevalence of thunderstorms (Alabama, Arkansas, Florida, Georgia, Kansas, Louisiana, Mississippi, Montana, Oklahoma, South Carolina, and Tennessee), were asked to help investigate the effectiveness of a body wrap on ThP. Interested owners were directed to fill out a qualification form via e-mail or electronically via Google Docs. Owners needed to report that their dogs displayed at least 3 of the following behaviors during thunderstorms to be included in the study: (1) panting, (2) shaking, (3) escaping attempts/property destruction, (4) inappropriate elimination, (5) pacing, (6) attention seeking, (7) whining, (8) inappetance, (9) salivation, and (10) hiding. An additional enrollment criterion was that owners had to report that their dogs displayed anxiety for at least 85% of the time during storms (note: the term "anxiety" was not defined for the owner). Non–housetrained dogs, dogs with pre-existing health conditions and dogs undergoing pharmacological treatment for ThP were not eligible for enrollment. Hundreds of owners showed interest and contacted the authors. The first 32 dogs that met the preceding criteria were enrolled. Owners were instructed to discontinue the use of any other treatments for ThP before participation in the study.

Baseline phase

The owners of qualified dogs were asked to complete a baseline phase (BP) survey regarding their dogs' behavior during 2 future thunderstorms. Owners were instructed to record these data only if they were at home and awake to observe their dogs' behavior during these 2 storms. The survey required owners to report on the presence and severity of 9 of the 10 behaviors previously mentioned. Escaping attempt/property destruction was removed because the authors felt that the owners' presence would make escape attempts less likely to occur (and if they did occur, any

property damage would be less severe because the owner would intervene to stop it). Response options for the 9 behaviors were yes, no, or I do not know. A positive response directed the owner to follow up questions regarding the intensity, duration, or frequency of the behavior. Response options to these secondary questions were in the form of 1-5 Likert scale. Likert scale response options, specific to the duration, intensity, and frequency of the behavior, were defined by the authors to decrease subjectivity (Table 1). Both duration and intensity of panting and shaking were recorded, and the mean response of the 2 questions was used in the Baseline Anxiety Score (BAS). The maximum number of points a dog could score for each question was 5 and that for all 9 questions was 45. The BAS is a proportion of the accumulated points divided by the maximum number of points a dog could score on the 9 questions. For instance, if an owner answered 8 questions, the number of accumulated points was divided by 40. A ratio was used because owners did not answer all the questions, and we wanted to avoid artificial score lowering because of missed responses. Thus, the BAS ranged from 0.0 to 1.0 (most severe). Two BASs (BAS1 and BAS2) were generated for each dog (i.e., BAS during first and second thunderstorms). The mean of BAS1 and BAS2 (mBAS) was used in some parts of the analysis.

Owners were also required to indicate how they interacted with their dogs during both baseline thunderstorms and were given the following response options: ignore my dog, pet my dog, allow my dog to sit by my side, hug my dog, let my dog find his/her hiding place, talk soothingly to my dog, attempt to console my dog, distract my dog, did not respond to my dog's attempts to get my attention, allow my dog to get into bed with me, give obedience commands, or other. Owners were asked to

Table 1 Likert scales used in generation of anxiety scores

	Behavior	Parameter measured	Likert scale used
1	Pant	Intensity	A
		Duration	B
2	Shake	Intensity	A
		Duration	B
3	Inappropriate elimination	Frequency	C
4	Pace	Duration	B
5	Attention seek	Duration	B
6	Vocalization	Duration	B
7	Inappetance	Intensity	D
8	Salivation	Duration	B
9	Hide	Duration	B

A: 1 = mild, 2 = mild-moderate, 3 = moderate, 4 = moderate-severe, and 5 = severe.
B: 1 = ≤20% of the time, 2 = 21%-40%, 3 = 41%-60%, 4 = 61%-80%, and 5 = 81%-100%.
C: 1 = one time, 2 = two times, 3 = three times, 4 = four times, and 5 = five times.
D: 1 = was decreased by ≤20%, 2 = 21%-40%, 3 = 41%-60%, 4 = 61%-80%, and 5 = 81%-100%.