

Animal Behavior Case of the Month

In collaboration with the American College of Veterinary Behaviorists

Signalment

The patient was a 5-year-old 33.6-kg sexually intact male Bull Terrier.

History

The dog presented for barking, panting, pacing, and trembling triggered by multiple types of noises. It was adopted at 9 weeks of age and lived with 2 owners and a 7-year-old female spayed Bull Terrier near a fire station. Reactions to sirens started at 18 months of age; over time, the dog began reacting to loud cars, motorcycles, and television sounds by barking, panting, pacing, trembling, and hiding. Over time, even the slightest irregular sounds, such as an owner coughing, would trigger anxiety. No signs of anxiety were demonstrated when the dog was left alone when quiet.

At age 3, the dog was diagnosed with allergic dermatitis and was on oclacitib (Apoquel; 16 mg [0.47 mg/kg], q 24 h). At age 4, a board-certified veterinary cardiologist diagnosed the dog with a mild pulmonic valvular stenosis. No medical treatment was prescribed, and the dog was monitored regularly by the cardiologist. Two months prior to presentation, a physical examination, CBC, and serum chemistry were performed. Results were all within normal limits except for a grade 1/6 left-sided systolic murmur and a body condition score of 7/9. Trazodone, a serotonin antagonist and reuptake inhibitor (150 mg [4.4 mg/kg] q 12 h), and paroxetine, a selective serotonin reuptake inhibitor (SSRI; 30 mg [0.9 mg/kg], q 24 h), were prescribed. Per the owners, the dog's anxiety decreased by approximately 20%.

Physical Examination Findings and Laboratory Results

On physical examination, a grade 1/6 left-sided systolic heart murmur was identified, and the patient's allergic dermatitis appeared well managed.

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Its body condition score was 7/9. No other abnormalities were noted. Within 5 minutes of entering the quiet examination room, the dog settled down and ate treats in a relaxed manner, with no signs of anxiety noted. During the appointment, desensitization and counterconditioning (DS/CC) was explained and demonstrated. Siren sounds (www.freesound.org) were played on a cell phone in one hand while high-value treats were given with the other. At the lowest volume, the dog immediately reacted by barking and panting while displaying a tense body.

Diagnosis

The differential diagnosis for the dog's anxiety behavior included medical and behavioral causes.^{1,2} Based on the results of medical examinations, behavioral causes were considered. Behavior differentials included noise phobia, separation anxiety, attention-seeking behavior, and generalized anxiety.³⁻⁶ The owners reported they never saw any signs of anxiety in their home-monitoring video recordings when they were out and in the absence of siren; thus, separation anxiety was ruled out.^{5,7} Attention-seeking behavior was ruled out because the dog's behavior was not correlated to the owners' proximity or responses.⁸ Generalized anxiety was ruled out because the dog was reported to be relaxed in the home in the absence of triggers and was relaxed during the appointment.^{4,9} The dog's behaviors were triggered only by noises, never by objects, places, people, animals, or other identifiable stimuli. Based on the history and the behaviors observed during the appointment, the patient was diagnosed with noise phobia, a profound, persistent, excessive, and maladaptive fear of 1 or more types of noises.^{2-6,10}

Treatment

Treatment was focused on reducing the patient's overall anxiety with medications, avoiding or minimizing triggers, and behavior modification (specifically, systemic DS/CC to identified noise triggers). The patient's medical conditions were considered when selecting medications. The dog was on paroxetine, but this treatment was ineffective. Increasing the dose of paroxetine risked potential anticholinergic effects, a contraindication for the patient's cardiac disease. Therefore, another SSRI, sertraline, was selected for its minimal potential side effects.^{3,4,6,11} Sertraline is an SSRI that blocks the presynaptic reuptake of se-

rotonin and downregulates postsynaptic serotonin receptors long term.^{11,12} It has no known substantial affinity for adrenergic and cholinergic effects, so minimal cardiovascular effects were expected.^{11,12} Potential side effects included anorexia, sedation, lethargy, vomiting, diarrhea, anxiety, irritability, hyperactivity, and panting.¹¹ The patient was gradually weaned off of paroxetine over 2 weeks. Once it was completely off of paroxetine for 5 days, sertraline was started at 50 mg (1.5 mg/kg, q 24 h). The patient was weaned off of trazodone over 1 week due to lack of efficacy as well as potential cardiovascular side effects such as tachycardia and increased blood pressure from anti-cholinergic effects.¹³ Tricyclic antidepressants, such as clomipramine, and α_2 -receptor agonists, such as clonidine or dexmedetomidine oromucosal gel (Sileo), were not considered due to potential negative cardiovascular effects despite reports that support its effectiveness in treating noise phobia.¹⁴⁻¹⁶

A management plan was suggested to minimize triggers, including keeping windows and doors closed, using thick window curtains to block noises from outside, playing white noise near the patient's hiding place, and use of wireless headphones for owners watching television. The patient was to be taken on walks during low-traffic hours to minimize exposure to noises from passing vehicles.

The goal of behavior modification via DS/CC was to change how the patient perceived noise stimulus and reinforce a positive emotional response through gradual exposure to the stimulus paired with a reinforcer (like food) when calm.^{6,14} To begin DS/CC to noises, the owners were to play siren noises on their cell phones at a very low volume while the dog was asked to focus via a hand target or eye contact cue. Two possible options were discussed on how to control the volume more finely: 1) muffle the phone with a blanket and 2) place the phone farther away. While the patient remained calm and focused on the owners with the siren sound playing, the owners were to deliver high-value treats. If, at any time, the patient showed any sign of fear, the session was to end. After a short break, the owners were to restart the session at a lower volume. Sessions were to be brief (2 to 3 minutes) but frequent (several times daily). The owners were provided a log sheet to record these sessions.

Follow-up

At the 4-week follow-up, the owners reported they implemented the management plan and attempted DS/CC but were unable to find a volume at which the patient didn't display anxiety; only minor improvements were seen. Therefore, sertraline was increased to 75 mg (2.2 mg/kg, q 24 h). Six weeks after the appointment, the owners reported that the patient's anxiety to noises had decreased, and they were able to perform DS/CC to sirens. At the 8-week follow-up, DS/CC had been regularly utilized, and the patient's anxiety diminished to the point that it no longer was anxious when it heard sirens.

At the 3-month follow-up, the owners reported that they boarded the patient at a kennel for 10 days

while vacationing. It was uncertain whether the patient regularly received its medications while at the kennel. After returning home, the noise phobia was worse than prior to therapy. At that time, the patient was examined by the referring veterinarian and veterinary cardiologist; results of a physical examination, bloodwork, and cardiac examination were unremarkable. They returned for a 4-month follow-up appointment, at which ceaseless panting and pacing were observed in the quiet examination room. Aside from a nonchanged heart murmur, the results of the physical examination were unremarkable. Because of the severity of the regression, other diagnoses were reconsidered, including separation anxiety and generalized anxiety. Separation anxiety was ruled out because the patient's anxiety was the same with or without the owners' presence.³⁻⁵ The patient's anxious behaviors without apparent triggers were consistent with generalized anxiety, a persistent condition involving autonomic hyperactivity, hyperreactivity, and hypervigilance that interferes with normal daily social and maintenance behaviors.^{4,9} As a result, generalized anxiety was added to the previous diagnosis of noise phobia.^{4,9} The patient's regression and development of generalized anxiety may have resulted from being overwhelmed by the multiple types of loud noises while kenneled and potentially not receiving the sertraline.¹⁷

To treat generalized anxiety, sertraline was increased to 100 mg (3 mg/kg, q 24 h). Gabapentin (300 mg [9 mg/kg], q 12 h) was prescribed as an adjunctive therapy to be used for its immediate anxiolytic effects.¹⁸⁻²⁰ Although the owners walked the patient only during quiet hours, it had become hypervigilant and severely anxious on walks. Consequently, they were advised to reduce the number and duration of walks and institute more play sessions in their backyard. Six months after the initial presentation, the owners reported that the patient had responded well to the gabapentin and sertraline, as its anxiety-related behaviors suddenly and significantly had decreased. Desensitization and counterconditioning to sirens was also resumed with success. Therefore, DS/CC to other types of noises was recommended once the patient was no longer anxious with sirens. It was maintained on sertraline (75 mg, q 24 h) and gabapentin (300 mg, q 12 h), and veterinary care was transferred to the referring veterinarian and veterinary cardiologist with recommendations for annual bloodwork and examination.

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