Animal Behavior Case of the Month

Statement of the Problem

A dog was evaluated for tail chasing and tail biting of 3 months’ duration. The behavior began acutely and resulted in traumatic dermatitis but persisted after resolution of the dermatitis.

Signalment

The patient was a 2.5-year-old spayed female Lakeland Terrier that weighed 7.3 kg (16 lb).

History

Three months prior to the consultation, the patient had acutely begun to chase its tail while being cared for by a pet sitter when the owner was out of town. The caregiver reported that the dog appeared to have been bitten on the tail by an unseen insect, causing the dog to suddenly start chewing its tail. The primary care veterinarian had recommended via telephone that the caregiver wash the dog’s tail with mild soap, give an antihistamine (loratidine [10 mg, PO, q 12 h]), and apply an over-the-counter hydrocortisone ointment as needed. After 4 days, the dog had begun to frantically chase its tail until able to capture and start chewing it. The dog was then brought to the primary care veterinarian, who noted a 1-cm patch of alopecia and ulceration at the distal end of the tail on examination. No external parasites were detected, and the anal sacs were empty. The veterinarian fitted the dog with a 20-cm Elizabethan collar (E-collar), a topical antibacterial-antifungal ointment, and recommended that loratidine administration be continued. One week later, there was no improvement. Despite use of the E-collar, the dog had been able to continue chewing its tail. The dog was returned to the primary care veterinarian for reevaluation. On examination, the condition of the tail was unchanged. The dog was fitted with a 30-cm E-collar and administered cefovecin sodium (53 mg, SC, once; the patient’s body weight at the time was not included in the record). The loratidine was discontinued, gentamicin-betamethasone spray was dispensed in place of the ointment, and prednisone was prescribed at a dosage of 5 mg, PO, every 12 hours for 5 days, followed by a tapered dose over 7 days. Six days later, the ulcerated skin on the dog’s tail had started to heal. The owner had returned home by this time and reported that the dog would furiously chase and bite its tail when the E-collar was removed. The dog could not be interrupted while spinning, and only physical restraint could stop the behavior until the E-collar could be placed.

Two weeks later, the dog was reexamined by the primary care veterinarian. The skin on the tail had healed, but the dog would still frantically chase its tail when the E-collar was removed. This behavior would last for up to 5 minutes until the dog had tired itself or the E-collar was placed back on the dog. Fluoxetine hydrochloride (1.4 mg/kg [0.64 mg/lb], PO, q 24 h) and gabapentin (13.4 mg/kg [6.1 mg/lb], PO, q 12 h) were prescribed. After 3 weeks of this treatment regimen, the dog’s tail remained healed, but it continued to chase and bite its tail if the E-collar was removed. At that time, the veterinarian discontinued the gabapentin because of perceived inefficacy and referred the dog for behavioral evaluation.

On the behavioral history form, the owner noted that at 6 months of age, the dog had abruptly started keeping its tail in a tucked position and was resistant to having it touched. No trauma or injury had been observed. The dog had been brought to its primary care veterinarian at the time; the tail was found to be sensitive to palpation, but no radiographic imaging was performed. The dog was prescribed a short course of carprofen and tramadol (doses and duration unknown). According to the owner, the abnormal tail carriage and sensitivity resolved. The dog had no other history of tail trauma, allergic skin disease, anal sacculitis, or urinary tract infection.

Physical Examination Findings and Laboratory Results

At the time of the initial behavioral consultation, the dog was wearing a 30-cm-long E-collar that extended well past the tip of its nose. During the consultation, the dog appeared relaxed, briefly exploring the room before settling in sternal recumbency next to the owner. The E-collar was removed so that the dog’s behavior could be observed. Almost immediately, it began spinning and biting its tail. Distinct snapping of the teeth could be heard. The dog was gently restrained to interrupt the behavior, and the E-collar was replaced; attempts to chase the tail ceased, and the dog returned to sternal recumbency. Thirty minutes later, the E-collar was removed again. When the dog turned to start circling, a jar of treats was shaken. The noise interrupted the dog, and it sat on command for a treat. Shortly afterward, its attention returned to its tail, and the E-collar was again placed. During physical examination, the skin on the tail
did not appear inflamed, and there were no other signs of dermatologic inflammation observed. No evidence of discomfort was appreciated on palpation of the vertebral column, including the tail, or on orthopedic examination. The perineal reflex was normal, as was the remainder of the neurologic examination. Vaginal mucosa was not hyperemic. The anal sacs were empty, and the walls did not feel thickened. Results of a CBC and serum biochemical analysis were within the respective reference ranges. A urine sample could not be collected at the time; the owner was instructed to collect a free-catch sample at home to provide to the referring veterinarian for urinalysis, but this was not done. Radiography and magnetic resonance imaging of the caudal vertebrae and electroencephalography were offered to rule out structural causes of the problem and seizures, but these were declined.

**Diagnosis**

The dog’s behavior fit criteria for a diagnosis of compulsive disorder; the pattern observed was a repetitive locomotor behavior occurring out of its normal context, its frequency was in excess of what would be required to accomplish a reasonable goal, and the dog was unresponsive to distraction once the behavior began. The extent to which the dog’s tail chasing interfered with normal function was unclear because the presence of the E-collar prevented or inhibited the behavior. Some compulsive disorders are described as occurring in situations of stress or conflict, but in this case, the behavior would occur constantly if the E-collar was not in place. However, it is possible that the dog had become anxious when the owner was out of town, causing disruption of its normal routine. This could have been an inciting factor, triggering the start of the tail-chasing behavior. Self-mutilation was considered to be a secondary component of the diagnosis because of the trauma inflicted on the tail at the onset of the behavior. The trauma would have continued if the E-collar was not used. It is possible for pets to be conditioned to perform repetitive behaviors as a way of attention seeking. This scenario was considered less likely but could have been tested by removing the E-collar and leaving the dog alone in a room while remotely monitoring it for tail chasing. If the behavior occurred in the absence of people, attention seeking would be unlikely.

Some behaviors that appear to be compulsive disorders can actually be manifestations of medical conditions. It is possible that there was an insect bite that caused discomfort and initiated the behavior, with a subsequent cycle of self-trauma and discomfort then perpetuating it. However, the initial dermatologic issue had resolved. A central neurologic cause such as focal seizure activity was less likely because the behavior seemed to be inhibited once the larger E-collar was placed, there was no postictal phase, and the dog appeared to be aware of its surroundings. Electroencephalograms have been used to show a correlation between epileptiform activity and abnormal behaviors such as tail chasing in Bull Terriers, but normal electroencephalography results do not completely rule out seizure activity. On the basis of the dog’s history of suspected tail trauma as a puppy, neuropathic or orthopedic pain could also have been the cause of the behavior, although the normal findings on palpation and lack of pain response during examination made orthopedic pain less likely. Neuropathic pain is frequently associated with self-directed compulsive behaviors, and it was suspected to play a role in this case.

**Treatment**

Many drugs have been evaluated for the treatment of compulsive disorders. Fluoxetine and clomipramine are typical drugs of choice and have been shown to be effective. There are also accounts describing administration of N-methyl-D-aspartate receptor blockers such as memantine and dextromethorphan, either alone or in combination with other drugs. Tramadol has reportedly been used in combination with paracetamol for treatment of a dog with self-mutilation behavior. Because the dog of this report was already receiving a moderate dose of fluoxetine without adverse effects, the decision was made to continue administration of this drug. Because relatively high doses of selective serotonin reuptake inhibitors are often required for treatment of compulsive disorders, the dosage was increased from 1.4 mg/kg to 2.1 mg/kg (0.95 mg/lb), PO, every 24 hours. Not only would this treat the compulsive disorder, it could potentially mitigate any anxiety that might be contributing to the dog’s behavior. The owner was counseled on possible transient changes in appetite and activity that could occur with the increased fluoxetine dose.

Gabapentin is frequently used for the treatment of neuropathic pain and has been used in conjunction with other behavioral medications for the treatment of self-directed compulsive behaviors. The dog of this report had previously received gabapentin, but it was only given for 3 weeks and was combined with a lower fluoxetine dose. Because months of gabapentin administration can be required for resolution of pain, this medication was prescribed at a dosage of 13.7 mg/kg (6.2 mg/lb), PO, every 12 hours with instructions to continue the treatment for ≥ 8 weeks. Gabapentin is also an anticonvulsant, which could potentially be of benefit if the dog’s behavior was a manifestation of seizure activity.

Behavior modification recommendations were made in addition to pharmacological treatment. The owner was instructed to continue to use the E-collar as a preventative measure and to practice daily sessions of conditioning the dog to calm behavior on a mat. If the dog began to spin, the owner was advised not to use punishment but instead use a novel, pleasant sound (shaking a treat jar) to interrupt the behavior, then leash the dog and instruct it to lie on the mat. The E-collar could be removed during times of high distraction and enrichment, such as during meals, when given dried chew treats (eg, dried bull penis or so-called bully sticks), and during leash walks. In general, the owner was to ignore any attention-seeking behavior in case this was a component of the problem behavior. The owner was instructed...
to give verbal praise when the dog was being calm and playing independently. A consistent routine including daily exercise was to be maintained.

**Follow-up**

The dog was seen for follow-up 5 weeks after the initial consultation. The owner reported that the dog had not been attempting to spin or chase its tail with the E-collar on or when the collar was taken off during meals, during times when bully sticks were offered, and on walks. The dog was tolerating the medication well, with no signs of sedation or anorexia observed. The owner was given new instructions to downgrade to a 20-cm-long E-collar and to increase the number of high-enrichment or distracting situations in which the E-collar could be removed, including providing meals stuffed in a toy and playing chase or tug-of-war. If tail chasing was not attempted during these activities, the dog could start daily sessions in which the E-collar was removed without any deliberate distractions. The dog did not have to be tethered or on its mat, but the owner was instructed to be in the same room or at least have a view of the dog to monitor it for any tail Chasing or spinning behavior. If these did not occur, the duration that the dog was allowed to have the E-collar off could be increased by 15 minutes each week.

Three months later, the dog was returned for its next recheck appointment. The dog had not needed to wear the E-collar for the previous 4 weeks. On 2 or 3 occasions, the dog had turned to look back toward its hindquarters, but in those situations, the owner was able to call the dog's name and interrupt the behavior. Longterm use of medication was discussed. It was agreed that if the dog continued to do well, the owner could start weaning it off the medication in 8 months (12 months after the initial consultation). The authors of 1 retrospective study reported that the median duration of treatment for compulsive disorders in dogs was 12 months, although in a smaller prospective study treatment was discontinued 4 weeks after improvement of the behavioral signs.

Unfortunately, the owner became eager to end medical treatment and insisted on discontinuing the medication 2 months later (6 months after the initial consultation). The owner was strongly advised against the early weaning; however, instructions for appropriate tapering were given to prevent the use of an inappropriate weaning schedule or abrupt cessation of the medications. Gabapentin administration was reduced to once daily for 3 weeks and then stopped. After 3 weeks without the gabapentin, the fluoxetine dosage was to be reduced to 10 mg (1.4 mg/kg), PO, every 24 hours for 1 week; then to 5 mg (0.7 mg/kg [0.32 mg/lb]), every 24 hours for 1 week; and then discontinued. After 3 days of receiving the 5-mg dose of fluoxetine, the dog’s behavior relapsed. The owner came home to find the dog's tail wet with saliva and abraded at the distal end. The dog also started spinning in front of the owner that night. After giving an update on the dog's behavior via telephone, the owner was instructed to place the E-collar on the dog, increase the fluoxetine dosage to 2.1 mg/kg, PO, every 24 hours, and resume gabapentin administration at 13.7 mg/kg, PO, every 12 hours. Two months later, the dog was able to be out of its E-collar full-time with only 1 minor episode/wk of attempting to chase its tail. The owner could easily disrupt and redirect the dog during these episodes. The owner was advised that weaning the dog from its medication might be attempted again in 1 year, but that lifelong medical management might be necessary in addition to the behavior management plan.

**Footnotes**


**References**