Feline Hyperesthesia Syndrome*

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Feline hyperesthesia syndrome (FHS) is known by several names, including rolling skin disease, neurodermatitis, neuritis, psychomotor epilepsy, and pruritic dermatitis of Siamese.1,2 As evidenced by these names and by the use of the term syndrome, FHS is not characterized as having a single etiology. In fact, it is often a diagnosis of exclusion. The differential diagnosis for FHS includes diseases related to the fields of dermatology, neurology, and behavior. Only after conditions relating to skin and the nervous system have been ruled out can this condition be labeled a behavior disorder.

Signalment
FHS can occur in cats of any age, but it is commonly seen in cats aged 1 to 5 years. Males and females are equally affected. While all breeds can be affected, Siamese, Burmese, Persian, and Abyssinian cats are more commonly afflicted.3

Clinical Signs
As indicated by the name rolling skin disease, affected cats often show rippling or rolling skin along the lumbar spine. Palpation of the lumbar musculature may elicit signs of pain. Mydriasis is common during bouts of FHS. Affected cats commonly stare at their tail, then attack the tail and/or flanks. Biting of the tail base, forelegs, and paws is common. These cats often run wildly around the home, vocalizing at the same time. Normally calm cats may display aggression toward people or other cats in the household, while aggressive cats may display increased affection. The behavior may be induced by petting or stroking the cat’s fur and most commonly occurs in the morning or later in the evening.2

Diagnosis
The differential diagnosis for FHS can be categorized by the type of clinical signs displayed:

*Adapted with permission from John Ciribassi, DVM, and the Veterinary Information Network (VIN).
Dermatologic: Flea allergy dermatitis, food allergy, atopy, infectious dermatitis
Neurologic: Epilepsy, brain tumors, spinal disease (disk disease, neoplasia, infectious myelitis)
Musculoskeletal: Myositis, myopathy
Behavioral: Compulsive disorder, displacement behavior

A minimum database to aid in diagnosing FHS should include a physical examination, neurologic examination, complete blood count, serum chemistry profile (especially hepatic and renal function), urinalysis, and spinal radiography. Depending on these results, further diagnostics might include skin scraping, fungal culture, skin and/or muscle biopsy, spinal or cranial imaging (computed tomography or magnetic resonance imaging), electromyography, food trials, and pharmaceutical trials (flea control, corticosteroids, antiseizure medication). The decision of which tests to run and in what order depends on the patience and financial situation of the owner and the severity of the clinical signs. While running the gamut of tests is ideal, it may be more practical to use pharmaceutical trials once the baseline database has been collected. I typically suggest a trial of flea control medication and, if there is no change, treatment with corticosteroids at antiinflammatory doses. If the patient does not respond to steroid treatment, treatment with an antiseizure medication is indicated. Phenobarbital is my initial antiseizure drug of choice; some practitioners also use gabapentin.

If none of the above approaches results in an improvement in the cat’s condition, then a presumed diagnosis of behavioral FHS can be made.

Pathophysiology
FHS is commonly considered to be a compulsive disorder resulting in self-injurious behavior. One proposed trigger of FHS is displacement behavior. Displacement behavior occurs as an alternative to two other conflicting behaviors. An example might be a cat that wants to eat but is being prevented from doing so by an aggressive cat in the household. The competing motivations, hunger and fear, cause the affected cat to want to simultaneously perform the conflicting behaviors of eating and escaping. As a consequence, the cat might perform a species-appropriate, but unrelated, behavior such as grooming. If this conflicting situation persists over a prolonged period, the cat may engage in the displacement behavior even when the competing motivations are no longer present. This is then defined as a compulsive behavior.

The environmental factors that trigger compulsive behaviors exert their influence by stimulating the hypothalamus and the limbic system, which in turn activate motor activity through the basal ganglia. Three types of neurotransmitters are reported to be involved:

Dopamine. Increased dopamine levels can result in increased frequency of compulsive behaviors.
Opiates. One theory is that when animals engage in compulsive behaviors, levels of opiates in the brain are elevated, and the pleasurable effects that opiates promote reinforce the behaviors. Another theory is that opiates initiate stereotypic behavior. This theory is based on the observation that administration of opioids enhances the display of amphetamine-induced stereotypic behaviors, but these behaviors are blocked when narcotic antagonists (such as naloxone) are administered.
Serotonin. Serotonin is produced in the dorsal raphe nucleus, and its influence on the basal ganglia and frontal cortex affects behaviors such as compulsive disorders. Higher levels of serotonin reduce the incidence of compulsive disorders, which is the rationale for the use of selective serotonin reuptake inhibitors (SSRIs) to treat these disorders.

Treatment
Successful therapy is based on reasonable owner expectations and the ability to monitor the degree of improvement. This can be accomplished by recording the frequency and severity of signs of FHS during the treatment period.

Behavior Modification
As with many behavior problems in companion animals, the treatment of FHS combines behavior modification protocols and the use of psychoactive pharmaceuticals. Behaviorally, the goal is to create a stable and consistent environment for the cat. This can be accomplished in the following ways:
Institute a regular feeding schedule to provide a more predictable source of food.
Maintain consistency in interactions with the cat. When managing dogs with a compulsive disorder, one common recommendation is for the owners to use a command–response–reward technique for all interactions. For example, the owner asks the dog to sit and, after the dog obeys, gives it a treat. The same technique can be used with cats.

Provide regular play sessions using target-type toys (e.g., feather toys).

Anticipate situations that trigger the behavior. When the behavior is likely to occur, redirect the cat’s activity to more appropriate behaviors, such as training exercises or play.

FHS behaviors should not be punished because punishment will increase the cat’s conflict and stress, resulting in a likely increase in the problem behaviors.

Pharmaceutical Intervention

There are no US Food and Drug Administration–approved medications for treating FHS or any other compulsive disorder in pets. Consequently, owners should be informed of the potential risks as well as the possible benefits of the use of behavior medications. It is always wise to conduct appropriate laboratory testing to confirm normal hepatic and renal function before prescribing these medications, which are metabolized and eliminated by the liver and kidneys. It is also helpful to repeat testing approximately 4 weeks after instituting therapy to evaluate the medication’s effect on organ (particularly hepatic) function.

The three main classes of medications used to treat FHS are SSRIs, tricyclic antidepressants (TCAs), and benzodiazepines. When using any of these medications in cats, it is best to begin at the lower end of the dose range, then titrate upward as needed to achieve the desired response. This approach minimizes the potential for serious side effects such as prolonged anorexia or excessive sedation.

Once the frequency of the behavior reaches an acceptable level, treatment should be maintained for 4 to 6 months. The dose can then be gradually reduced (25% reduction every 1 to 2 weeks) until the patient has been weaned off the drug. If the behavior recurs or increases in frequency during the weaning process, the previously effective dose should be reinstituted. Another reduction may be attempted after another 4 to 6 months of therapy; however, some patients require lifelong administration of the medication. If the patient is receiving combination therapy (an SSRI or TCA with a benzodiazepine), the medications should be weaned one at a time to determine which drug is responsible if signs return as the dose is reduced.

Selective Serotonin Reuptake Inhibitors

The following dosages are recommended for cats with FHS:

- **Fluoxetine**: 0.5 to 2.0 mg/kg PO q24h
- **Paroxetine**: 0.5 to 1.0 mg/kg PO q12–24h

The adverse effects of SSRIs include sedation, anorexia, irritability, vomiting, and diarrhea. In addition, SSRIs inhibit the function of the liver cytochrome P450 enzymes CYP2C9, CYP2D6, CYP2C19, and CYP3A4. As a consequence, care should be taken when prescribing concurrent medications that rely on these enzymes for their metabolism (e.g., phenobarbital, carbamazepine, benzodiazepines, TCAs). SSRIs should not be used in combination with each other or with other drugs that increase serotonin levels, such as monoamine oxidase inhibitors (e.g., selegiline), other SSRIs (e.g., paroxetine, sertraline), or TCAs (e.g., amitriptyline, imipramine, doxepin).

Tricyclic Antidepressants

Of the TCAs, clomipramine (0.5 to 1.0 mg/kg PO q24h) can be used to treat FHS. Adverse effects associated with this drug include sedation, anticholinergic effects, potentiation of arrhythmias in predisposed patients, and lowering of the seizure threshold in patients with seizure disorders.

Benzodiazepines

The following dosages are recommended for cats with FHS. These benzodiazepines are recommended in cats because they do not have active metabolites. Diazepam has been implicated in cases of hepatic necrosis in cats.

- **Lorazepam**: 0.125 to 0.50 mg PO q8–24h
- **Oxazepam**: 0.20 to 0.50 mg/kg PO q12–24h

The potential adverse effects of these drugs include sedation, ataxia, and temperament changes. Combination therapy with an SSRI or a TCA is acceptable with either of these drugs if no agent alone provides sufficient response.

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Conclusion

FHS has multiple possible etiologies. It requires patience and close communication with the pet’s owner in order to arrive at the correct diagnosis. As with most behavior disorders, FHS can be controlled but is not likely to be cured. By developing a clear diagnostic plan and following it closely, veterinarians can avoid confusion for the owner and foster a sense of cooperation between the owner and themselves. Overall, this is the true measure of success.

References