

## Canine Dysautonomia: Uncommon & Fatal

A sporadic idiopathic disease affecting the autonomic nervous system, canine dysautonomia usually results in death or euthanasia. The cause is unknown, but living in a rural area is a recognized risk factor, and most cases occur in spring or autumn. Young animals (median age, 18 months) are generally affected. Four of 5 Havanese puppies in a single litter in the Kansas City, Missouri, area were diagnosed with canine dysautonomia. A fifth unaffected puppy was adopted minutes before the 4 affected puppies gained access to an area of patchy grass where 6 months

earlier topsoil had been applied on a single occasion. Clinical signs developed 10-16 days later and included vomiting, crusty nares, difficulty in defecation and urination, absent anal tone, rhinorrhea, prolapsed third eyelid, and hindlimb ataxia. The dogs died or were euthanized 3 to 9 days after the onset of clinical signs, and the diagnosis was confirmed by morphologic confirmation of neuronal degeneration.

An additional, unrelated dog developed dysautonomia after contact with 1 of the affected puppies and was subsequently euthanized. No infectious or toxic agents were identified. The only common factor for the puppies was brief exposure to the soil; this possible exposure suggests a soil-borne toxin or infectious agent.

### Commentary

The onset of signs in this case report was earlier than previously reported.

Only 1 littermate, which did not get access to the outdoors, was unaffected. Does this suggest an environmental factor? Did the unrelated dog contract the disease from the Havanese puppy or before joining the new common household? The questions about this uncommon, fatal disease remain unanswered. —*Helena Rylander, DVM, DACVIM, DACVN*

### Source

Hull NC, O'Toole D, Miller MM, et al. Canine dysautonomia in a litter of Havanese puppies. *J Vet Diagn Invest.* 2015;27(5):627-631.

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ANADA 200-513, Approved by FDA

**Enroflox<sup>®</sup>**  
(enrofloxacin)  
Injection For Dogs  
2.27%

For Dogs Only

Brief Summary: Before using Enroflox<sup>®</sup> Injection For Dogs, please consult the product insert, a summary of which follows.

#### CAUTION:

Federal (U.S.A.) law restricts this drug to use by or on the order of a licensed veterinarian. Federal law prohibits the extralabel use of this drug in food-producing animals.

#### DESCRIPTION:

Each mL of injectable solution contains: enrofloxacin 22.7 mg, n-butyl alcohol 30 mg, potassium hydroxide for pH adjustment and water for injection, q.s.

#### INDICATIONS:

Enroflox (brand of enrofloxacin) Injectable Solution is indicated for the management of diseases in dogs associated with bacteria susceptible to enrofloxacin.

#### CONTRAINDICATIONS:

Enrofloxacin is contraindicated in dogs known to be hypersensitive to quinolones. Based on the studies discussed under the section on Animal Safety Summary, the use of enrofloxacin is contraindicated in small and medium breeds of dogs during the rapid growth phase (between 2 and 8 months of age). The safe use of enrofloxacin has not been established in large and giant breeds during the rapid growth phase. Large breeds may be in this phase for up to one year of age and the giant breeds for up to 18 months. In clinical field trials utilizing a daily oral dose of 5.0 mg/kg, there were no reports of lameness or joint problems in any breed. However, controlled studies with histological examination of the articular cartilage have not been conducted in the large or giant breeds.

#### ADVERSE REACTIONS:

No drug-related side effects were reported in 122 clinical cases treated with an enrofloxacin injectable solution followed by enrofloxacin tablets at 5.0 mg/kg per day.

To report adverse reactions, call Norbrook at 1-866-591-5777.

#### ANIMAL SAFETY SUMMARY:

Adult dogs receiving enrofloxacin orally at a daily dosage rate of 52 mg/kg for 13 weeks had only isolated incidences of vomiting and inappetence. Adult dogs receiving the tablet formulation for 30 consecutive days at a daily treatment of 25 mg/kg did not exhibit significant clinical signs nor were there effects upon the clinical chemistry, hematological or histological parameters. Daily doses of 125 mg/kg for up to 11 days induced vomiting, inappetence, depression, difficult locomotion and death while adult dogs receiving 50 mg/kg/day for 14 days had clinical signs of vomiting and inappetence.

Adult dogs dosed intramuscularly for three treatments at 12.5 mg/kg followed by 57 oral treatments at 12.5 mg/kg, all at 12 hour intervals, did not exhibit either significant clinical signs or effects upon the clinical chemistry, hematological or histological parameters.

Oral treatment of 15 to 28 week old growing puppies with daily dosage rates of 25 mg/kg has induced abnormal carriage of the carpal joint and weakness in the hindquarters. Significant improvement of clinical signs is observed following drug withdrawal. Microscopic studies have identified lesions of the articular cartilage following 30 day treatments at either 5, 15 or 25 mg/kg in this age group. Clinical signs of difficult ambulation or associated cartilage lesions have not been observed in 29 to 34 week old puppies following daily treatments of 25 mg/kg for 30 consecutive days nor in 2 week old puppies with the same treatment schedule.

Tests indicated no effect on circulating microfilariae or adult heartworms (*Dirofilaria immitis*) when dogs were treated at a daily dosage rate of 15 mg/kg for 30 days. No effect on cholinesterase values was observed. No adverse effects were observed on reproductive parameters when male dogs received 10 consecutive daily treatments of 15 mg/kg/day at 3 intervals (90, 45 and 14 days) prior to breeding or when female dogs received 10 consecutive daily treatments of 15 mg/kg/day at 4 intervals; between 30 and 0 days prior to breeding, early pregnancy (between 10th and 30th days), late pregnancy (between 40th and 60th days), and during lactation (the first 28 days).

#### DRUG INTERACTIONS:

Concomitant therapy with other drugs that are metabolized in the liver may reduce the clearance rates of the quinolone and the other drug.

Enrofloxacin has been administered to dogs at a daily dosage rate of 10 mg/kg concurrently with a wide variety of other health products including anthelmintics (praziquantel, febantel), insecticides (pyrethrins), heartworm preventatives (diethylcarbamazine) and other antibiotics (ampicillin, gentamicin sulfate, penicillin). No incompatibilities are known with other drugs at this time.

#### WARNINGS:

**For use in animals only. The use of this product in cats may result in Retinal Toxicity. Keep out of reach of children.**

Avoid contact with eyes. In case of contact, immediately flush eyes with copious amounts of water for 15 minutes. In case of dermal contact, wash skin with soap and water. Consult a physician if irritation persists following ocular or dermal exposure. Individuals with a history of hypersensitivity to quinolones should avoid this product. In humans, there is a risk of user photosensitization within a few hours after excessive exposure to quinolones. If excessive accidental exposure occurs, avoid direct sunlight.

For customer service, to obtain a copy of the Material Safety Data Sheet (MSDS) or to report adverse reactions call Norbrook at 1-866-591-5777.

#### PRECAUTION:

Quinolone-class drugs should be used with caution in animals with known or suspected Central Nervous System (CNS) disorders. In such animals, quinolones have, in rare instances, been associated with CNS stimulation which may lead to convulsive seizures.

Quinolone-class drugs have been associated with cartilage erosions in weight-bearing joints and other forms of arthropathy in immature animals of various species.

The use of fluoroquinolones in cats has been reported to adversely affect the retina. Such products should be used with caution in cats.

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