

Use of doramectin for treatment of notoedric mange in five cats

Luis Delucchi, DVM, and Eleonor Castro, DVM

- ▶ Use of ivermectin in cats with notoedric mange requires administration of several weekly doses of ivermectin, and safety margins are narrow.
- ▶ Doramectin may be used to treat cats with notoedric mange. A single dose of doramectin provides effective treatment and is not accompanied by adverse effects or local reactions at the injection site.

Five cats belonging to the same owner were brought to the veterinary hospital because of signs of intense pruritus and alopecic and erythematous areas on the body with bloody crusts for 30 days' duration. These cats were part of a household population of 16 cats (6 sexually intact females, 6 neutered females, and 4 neutered males). The mean age of the 16 cats was 9 years old (range, 6 to 12 years old). Three of the 5 cats at the hospital had alopecia and thick, adherent bloody or yellow-gray crusts on the ears, frontal region of the head, and lateral areas of the neck (2 cats). The other 2 cats had lesions in the abdominal region, left and right flanks, inner thigh region, and base of the tail. One of the latter cats had a superficial pyoderma complication with papules and pustules, which affected hair follicles at the base of the tail and near alopecic zones, as well as yellow crusts.

Considering clinical signs and characteristics of the lesions, notoedric mange was suspected. The diagnosis was confirmed by microscopic examination of skin scrapings of all 5 cats. Skin scrapings were prepared with a 5% solution of sodium hydroxide to eliminate debris on the slide and ease examination by light microscopy. *Notoedres cati* at all developmental stages were observed on microscopic examination of skin scrapings. The total number of parasites observed (larvae, nymphs, and adults) ranged from 28 to 77 (mean, 46.5) per skin scraping. Skin scrapings were then obtained from the remainder of the household cat population (11 cats). These cats did not have clinical signs of mange. On microscopic examination of these skin scrapings, *N cati* were not observed.

Because of difficulties associated with topical treatment of 16 cats, a decision was made to treat all cats with doramectin^a (200 µg/kg [90 µg/lb] of body weight, SC). Because of the small drug volume, difficulties in precise dosing would have been encountered if doses of < 0.1 ml/cat had been administered. Therefore, a dose of 0.1 ml of a 1% solution of doramectin

was administered, SC, in the left flank of each cat. Because body weight ranged from 2.9 to 7.1 kg (6.4 to 14.2 lb) in the 16 cats, the final doses varied from 143 to 345 µg/kg (65 to 157 µg/lb), with a mean (± SD) of 270.4 ± 64 µg/kg (122.9 ± 29.1 µg/lb). The mean dose for the 5 affected cats was 292.2 ± 44.8 µg/kg (132.8 ± 20.4 µg/lb), with a range of 208 to 333 µg/kg (94.6 to 151.4 µg/lb).

After treatment, cats were observed for local or general adverse reactions for 24 hours. Signs of drug toxicosis (eg, seizure, tremor, lethargy, diarrhea, mydriasis, blindness, or abnormal behavior) were not observed. Signs of pain or inflammatory reaction were not noticed around the site of injection. Lesions began to recede 1 week after treatment. Fifteen days after treatment, all 5 affected cats were clinically normal, and all lesions had healed. Cats that had localized mange lesions healed sooner than cats with generalized lesions.

The cat that had pyoderma was also treated with gentamicin sulfate (4 mg/kg [1.8 mg/lb], IM, q 24 h) and amoxicillin (25 mg/kg [11.4 mg/lb], IM, q 24 h). Lesions were not observable in this cat 15 days after treatment with doramectin. Skin scrapings were obtained 15, 21, and 45 days after doramectin treatment. Microscopically, *N cati* was not observed in any of the skin scrapings. Follow-up evaluations of cats continued periodically for approximately 20 months after doramectin treatment, and all cats were free of notoedric mange.

For the treatment of notoedric mange in our cats, ivermectin and doramectin^a were considered. These drugs have the same spectrum of activity and mode of action, because they belong to the same chemical family.¹ However, doramectin has a half-life in plasma that is twice as long as that of ivermectin, as well as a longer duration of residual protection that varies depending on the parasitic species involved.^{2,3} This difference can be explained by pharmacokinetic profiles of the drugs. In cattle, doramectin persists in plasma for 35 days, and a single dose completely prevents *Psoroptes ovis* infection for 7 weeks.³ The long plasma half-life of doramectin is attributable to its oily formulation and its nonpolar cyclohexyl group located at carbon 25 of the ivermectin ring.⁴

Ivermectin treatment in kittens has a low safety margin,^{5,6} necessitating that doses be exact. Doses of ivermectin of 400 µg/kg (182 µg/lb) can provoke clinical signs of drug toxicosis in Siamese kittens.⁵ Moreover, it has also been observed that doses of 300 µg/kg (136 µg/lb) can be lethal in kittens.⁶ Because of potential ivermectin toxicosis, an ivermectin dose of 225 µg/kg (102 µg/lb) is currently recommended.⁷ Ivermectin toxicoses that have been described for young mammals and Collie-related breeds of dogs

From Clínica Veterinaria Palermo, Barrios Amorin 953 CP 11200, Montevideo, Uruguay (Delucchi) and the Department of Parasitology, Faculty of Veterinary Medicine, Lasplacés 1550 CP 11600, Montevideo, Uruguay (Castro).

appear to be the result of greater penetration of the blood brain barrier than in adults or other breeds of dogs.^{7,8} Unfortunately, a single dose of ivermectin does not control notoedric mange, and 2 or even 3 weekly treatments are necessary.⁹

The use of doramectin and its spectrum of activity in ruminants and swine have been reported,^{3,10} but there is little information regarding doramectin use in cats.¹¹ Findings in our cats are similar to those reported by Ferrero et al,¹¹ who studied doramectin efficacy for treating notoedric mange in cats, and concluded that there were no adverse effects after a SC injection of doramectin (200 µg/kg). *Notoedres cati* parasites were eliminated with a single treatment. In our cats, infestations with high numbers of *N cati* were eliminated too, but doses administered varied from 200 µg/kg. Doses of doramectin as high as 345 µg/kg were administered to our cats, which did not result in any local or general adverse effects. Findings in our cats suggest that a single mean dose of doramectin at 292.2 µg/kg is sufficient to control notoedric mange in cats. In addition, doses 70% higher than the recommended amount of 200 µg/kg likely will not provoke clinical signs of drug toxicosis. It cannot be concluded from our report, however, that doses of 143 µg/kg are effective in eliminating *N cati* from cats, because the cat treated with this dose did not have notoedric mange before the treatment.

^aDectomax, Pfizer, Buenos Aires, Argentina.

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