

Successful treatment of feline demodicosis with oral sarolaner: case report

Sucesso no tratamento da demodicose felina com sarolaner oral: relato de caso

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Abstract

Demodicosis is a parasitic dermatosis that is considered uncommon in domestic cats. The aim of this study was to report on therapeutic success through using sarolaner for treating the presence of *Demodex* spp. in a naturally infested cat. This adult cat, which was positive for the feline leukemia virus and undergoing glucocorticoid treatment, had cutaneous clinical signs such as severe pruritus, hyperkeratosis, lignification, skin fragility and symmetrical alopecia. The diagnosis of the presence of *Demodex* spp. was confirmed through skin scrapings, imprints on acetate strips and coproparasitological examination. Mites with different morphologies were observed. After the diagnosis, treatment with sarolaner at a dose of 4 mg/kg was administered orally. Evaluations were performed on skin scrapings at 24 and 48 hours and at 7, 14, 21 and 28 days after treatment. After 21 days, no mites were observed in the skin scrapings. Based on the results from this study, it can be concluded that sarolaner was effective in treating feline demodectic mange.

Keywords: *Demodex* spp., cats, parasitic dermatosis.

Resumo

Demodicose é uma dermatose parasitária considerada incomum no gato doméstico. Este estudo tem como objetivo relatar o primeiro sucesso terapêutico do sarolaner, por via oral, no tratamento de *Demodex* spp. em um gato naturalmente infestado no Brasil. Um gato adulto, positivo para o vírus da leucemia felina e em tratamento com glicocorticoides, apresentava sinais clínicos da pele como prurido intenso, hiperqueratose, lignificação, fragilidade da pele e alopecia simétrica. O diagnóstico foi confirmado em raspados cutâneos, "imprint" em fita de acetato e no exame coproparasitológico. Após o diagnóstico, o sarolaner foi administrado por via oral (4mg / kg). A avaliação foi realizada com raspados cutâneos com 24 e 48 horas e com 7, 14, 21 e 28 dias após o tratamento. Após 21 dias, nenhum ácaro foi observado e houve uma melhora na fragilidade da pele e com repilação parcial. Com base nos resultados deste estudo, pode-se concluir que o sarolaner foi eficaz no tratamento da sarna demodécica felina.

Palavras-chave: *Demodex* spp., gato, dermatose parasitária.

Introduction

Unlike canine demodicosis, feline demodicosis is considered a rare but emerging disease. It can be caused by three species: *Demodex cati*, *D. gatoi* and a third form, with elongated body, provisionally named *D. felis* (Moriello et al., 2013).

Demodex cati, like *D. canis*, is an elongated body mite that lives inside the follicle and can cause disease in immunosuppressed cat. *D. gatoi* is a short-body mite that lives in more superficial skin areas, specifically in the stratum corneum, and has been described as responsible for itchy episodes in cats (Newbury & Moriello, 2006). The clinical signs may include itching, erythema, peeling and alopecia. Intense pruritus can be seen, associated with supposed hypersensitivity to the mite. *D. gatoi*



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can be difficult to detect in skin scrapings due to its small size and translucency, and also due to excessive hygiene behavior in affected cats. Coproparasitological techniques of fecal flotation may be useful to identify the remains of undigested mites (Silbermayr et al., 2013). The mite can also be found in asymptomatic cats that come into contact with an affected cat. Some authors have considered *D. cati* demodicosis to be a contagious process (Newbury & Moriello, 2006).

Little is known about the sites of *D. felis* parasitism and its pathogenesis. It has been described in pruritic processes associated with *D. gatoi* infestation. It has also been reported in animals that presented hyperadrenocorticism, but in such cases there was no report of pruritus (Moriello et al., 2013).

Some ectoparasiticides have already been used to treat feline demodectic mange. Macrocyclic lactones such as ivermectin (Ortúñez et al., 2009), doramectin (Johnstone, 2002) and moxidectin (Short & Gram, 2016) have been shown to be able to promote clinical and parasitological cure in animals parasitized by *D. cati*. However, selamectin proved to be ineffective (Saari et al., 2009). The most effective treatment for *D. gatoi* seems to be more complex, given that there have been several reports of therapeutic failures with macrocyclic lactones. Weekly baths with products containing sulfur in the composition have been shown to be more effective for controlling this species (Beale, 2012).

Isooxazolines are a new class of ectoparasiticides that are gaining more space in feline medicine due to their effectiveness against various ectoparasites. Fluralaner has been shown to be effective against *D. cati* (Matricoti & Maina, 2017) and *D. gatoi* (Duangkaew & Hoffman, 2018) in a single oral dose. A combination of selamectin with sarolaner, administered topically (spotting on), was effective in controlling *D. gatoi* (Walker, 2019).

The aim of the present study was to report on the efficacy of sarolaner, administered orally at a dose of 4 mg/kg, for treating a cat that was naturally parasitized by *Demodex* spp.

Case report

In this case report, a four-year-old castrated female cat of no defined race weighing 2.5 kg that was positive for feline leukemia virus (FeLV) presented feline lymphoplasmacytic stomatitis complex. This cat was undergoing continuous treatment with methyl prednisolone acetate, at a dose of 40 mg/cat, with applications every two months. The animal was living in the city of Seropédica, state of Rio de Janeiro, Brazil.

After one year of corticosteroid therapy, the following clinical signs appeared on the skin: intense pruritus, hyperkeratosis, lignification, skin fragility and symmetrical alopecia on the thorax, hind limbs and neck region (Figure 1).



Figure 1. Skin lesions observed in the cat positive for *Demodex* spp. Bilateral symmetrical alopecia is observed in the chest, thoracic and cervical limbs.

An adrenocorticotropic hormone (ACTH) stimulation test was performed in order to investigate the diagnosis of iatrogenic hyperadrenocorticism. The result was negative for endocrine disorders.

Skin scrapings and acetate tape imprints were performed and the material thus collected was observed under an Olympus BX51 microscope with a UC30 camera attached and Cell Sens Dimension software, to search for presence of *Demodex* mites with different morphological characteristics. Some specimens had an elongated and tapered body, with an average length of 187 μm , resembling the species *D. cati*. Others had a globose body, with a length of 98 μm , suggestive of the species *D. gatoi* (Figure 2).

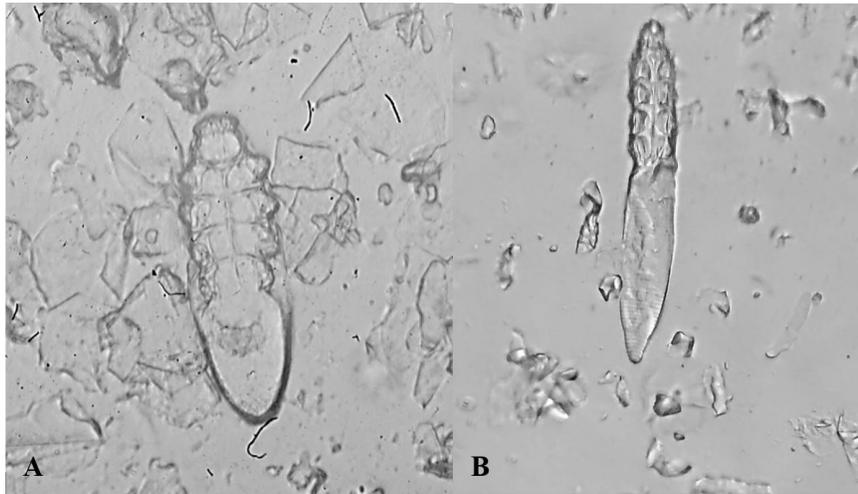


Figure 2. Skin scrapes from the cat positive for *Demodex* spp. (A) mite with globose body, 94 μm long; (B) mite with elongated and tapered body 177 μm long. 400x magnification.

Presence of these mites was also diagnosed through the coproparasitological examination, using the simple centrifugal-flotation technique. A mite with a globular body was observed, measuring 91 μm in length (Figure 3).



Figure 3. Coproparasitological examination of the cat positive for *Demodex* spp. in the simple centrifugal flotation technique. Globous body mite 91 μm in length 400x magnification.

The treatment instituted was oral administration of a 10 mg chewable tablet of sarolaner (Simparic™; Zoetis do Brasil), corresponding to a dose of 4 mg/kg. After this treatment, the animal was evaluated by means of successive skin scrapings and imprints on acetate tape. At 48 hours, 7 and 14 days after treatment, the presence of dead mites was observed. The dead mites found on day 14 showed progressive degeneration. From day 21 post-treatment, the presence of mites on the skin scrapings and imprints on acetate tape were no longer observed. The keeper of this cat reported that the cat showed clinical improvement in pruritus and hair loss from the second day of treatment onwards. After 21 days of treatment, improvement in skin fragility was observed, along with partial regrowth of hair in the alopecic areas. Overall, the animal presented clinical improvement with complete disappearance of the initial symptoms and no new relapses (Figure 4).



Figure 4. Clinical improvement of dermatological changes after 60 days of treatment.

Discussion

This report demonstrates the therapeutic success of using sarolaner orally at a dose of 4 mg/kg in a naturally infested cat, against the mite *Demodex* spp. Skin scrapings from the animal turned negative 21 days after administration of the medication.

Cats presenting clinical disease caused by *D. cati* often also present correlated co-infection with feline immunodeficiency virus (FIV), prolonged glucocorticoid use and hyperadrenocorticism (Ortúñez et al., 2009). One finding from their report that draws attention was the association between clinical manifestation of feline demodicosis and positivity for FeLV. The cat in the present study had two causes of immunosuppression, which was associated both with FeLV infection and with use of high-dose glucocorticoids for more than one year.

Despite the morphological differences observed in the mites found in the present study, it is not possible to claim that the case described here consisted of co-infection between *D. cati* and *D. gatoi*. Taffin et al. (2016) demonstrated in their study that mite morphology can be affected by the host's immune status. These authors noticed mites with different morphological presentations in a single animal and initially believed that their case involved co-infection between *D. cati* and *D. gatoi*. However, the results from molecular analysis showed that, despite the morphological differences, the specimens observed were from a single species, *D. cati*. For this reason, it is not possible to state which species was parasitizing the cat in the present report, on the basis of morphology alone.

The concomitant diagnosis of the mite through the coproparasitological examination reinforces the hypothesis proposed by Silbermayr et al. (2013). These authors stated that coproparasitological examination may help in making the diagnosis of feline demodicosis, since the mite is ingested by the cat during the act of excessive licking caused by itching.

Although some macrocyclic lactones, i.e. ivermectin (Ortúñez et al, 2009), doramectin (Johnstone, 2002) and moxidectin (Short & Gram, 2016), have already been shown to be effective for treating feline demodicosis caused by *D. cati*, the treatment is often long and may require several applications. It may take more than three months to achieve clinical and parasitological cure.

An association of selamectin with topically administered sarolaner, applied monthly, was able to achieve clinical and parasitological cure for two animals parasitized by *D. gatoi*, in a study by Walker (2019). However, it was unclear from that report how many applications were required for curing the animals.

Despite the second administration of the product after 30 days in the present report, it is important to emphasize that the animal was not found to have live mites in skin scrapings performed during the two weeks prior to the second treatment. Thus, it can be stated that sarolaner, administered orally, was able to promote parasitological and clinical cure in a single administration. These results are similar to what was previously shown in relation to *D. cati* (Matricoti & Maina, 2017) and *D. gatoi* (Duangkaew & Hoffman, 2018), using a single oral dose of fluralaner.

Conclusion

Based on the results demonstrated in the present study, it can be concluded that sarolaner was effective in controlling feline demodectic mange at a dose of 4 mg/kg, administered orally in a single dose.

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