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SCABIES IN DOMESTIC RABBIT (*Oryctolagus cuniculus*): EXPERIENCE REPORT WITH THERAPEUTIC SUCCESS

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ABSTRACT

The increase in the adoption of rabbits as pets has revealed the need for a better understanding of the diseases that affect this species, such as sarcoptic mange or scabies, an itchy dermatopathy caused by the mite Sarcoptes scabiei. The present study aims to report a case of scabies in a Rex rabbit (Oryctolagus cuniculus) treated at a private veterinary service presenting intense pruritus, alopecia and crusted lesions on the limbs. The diagnosis was confirmed by skin scraping, which allowed the identification of mites of the Sarcoptidae family compatible with the genus Sarcoptes. Treatment consisted of the administration of ivermectin at a dose of 0.5 mg/kg subcutaneously at weekly intervals for four weeks, without association of topical therapies, due to the sensitivity of the species. Throughout the treatment, the patient showed a significant reduction in the number of mites and clinical improvement of the skin lesions, with complete disappearance of the parasites in the fourth week, evidencing the efficacy of the treatment. The present case report highlights the importance of early diagnosis and appropriate therapeutic intervention for the success of treatment in domestic rabbits, especially in cases of zoonoses such as sarcoptic

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mange, reinforcing the need to disseminate knowledge about the proper management of these infestations in non-conventional pets.

Keywords: Sarcoptic mange, Sarcoptes scabiei, Lagomorph, Dermatopathy, Ivermectin.

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INTRODUCTION

The significant increase in non-conventional pets as companion animals between 2017 and 2020, as reported by Stein (2022), indicates the importance of preserving the well-being and health of these animals. Of the 167.6 million pets in Brazil, about 2.6 million are small mammals (ABINPET, 2023), including rabbits, a species often adopted as a companion animal due to its easy maintenance in captivity (COUTO *et al*., 2014).

Domestic rabbits (*Oryctolagus cuniculus*) are monogastric lagomorphs, strictly herbivores, descendants of the European wild rabbit, being differentiated into several breeds generally classified according to their variety of coloration and weight. Among its particularities, sensitive skin is a relevant characteristic (KLINGER; TOLEDO, 2020; MACHADO *et al*., 2022), being a species susceptible to dermatopathies such as scabies, commonly observed in these animals (VITALE; LARSSON, 2016).

Sarcoptic mange or scabies is an extremely pruritic dermatopathy, transmitted by direct contact or fomites, resulting from the infestation of ectoparasites of the genus *Sarcoptes* (NABUCO, 2000), which is characterized in its morphology by the globose body, short and thick legs and dorsal spines, with the position and shape of the genital opening as one of the aspects to differentiate them from other sarcoptiformes (NABUCO, 2000; HENRICH *et al*., 2019). Among the most reported clinical signs in rabbits diagnosed with scabies, pruritus, alopecia, hyperkeratosis, and erythema in regions where there is little hair and thinner skin can be mentioned (CHOE *et al*., 2020; SINGH *et al*., 2022). These signals are linked to the action of females, which excavate the dermis of the host, where they lay eggs (HENRICH *et al*., 2019).

Among the most common conditions in domestic rabbits, scabies caused by *Sarcoptes* spp. has a prevalent casuistry, with about 23% of the lagomorphs of the species *Oryctolagus cuniculus* treated in the wild animal sector of the Fluminense Federal University affected by this dermatopathy, according to Castro and Bruno (2022). Thus, the need to disseminate knowledge about the aspects resulting from infestations by *Sarcoptes* spp. and also about the management and particularities of rabbits is highlighted to determine actions of tutors and veterinarians in search of prevention and treatment of animals affected by scabies. That said, the present study aims to report a case of scabies in a rabbit treated at a private veterinary service, emphasizing the therapeutic success achieved.

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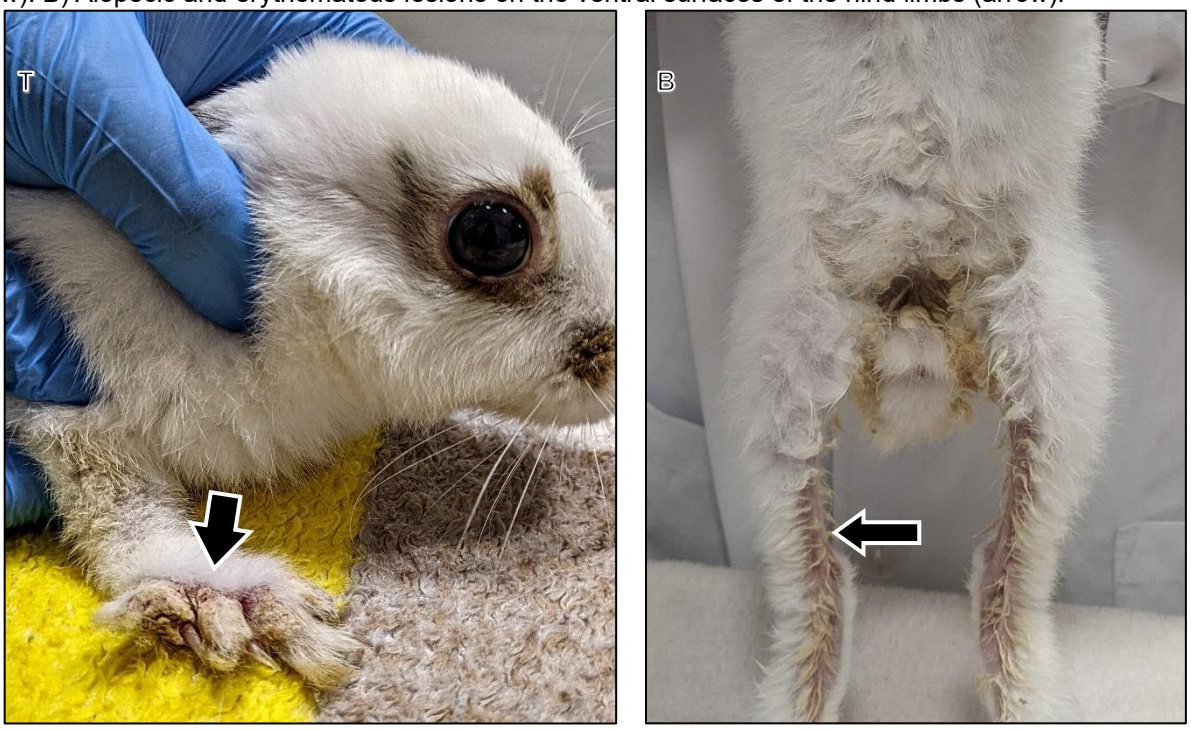
CASE REPORT

A four-month-old male male Rex rabbit (*Oryctolagus cuniculus*) weighing 0.63 kg was treated at a private veterinary clinic in the city of Umuarama, Paraná, complaining of less locomotion and lesions with crusty, scaly and/or alopecic areas on all four limbs, especially on the extremities (Figure 1). The owner also reported the occurrence of generalized itching, especially in the affected limbs. On physical examination, vital parameters were within the reference for the species and the owner did not report reduced appetite or fecal changes.

Figure 1 – A) Patient presenting proliferative, erythematous and puriginous skin lesions at the end of the paws (arrow). B) Alopecic and erythematous lesions on the ventral surfaces of the hind limbs (arrow).



Source: Personal collection (2024).

The animal had been acquired three months ago from a breeding stock in a nearby location, but the evolution of the lesions had occurred in the last month prior to the consultation. The animal had no feline or canine contacts, nor lagomorph contacts or other exotic animal species. The owner did not report the appearance of lesions in the patient's human contacts. At first, fungal or parasitic dermatopathy was suspected, therefore, screening was performed with exposure of the lesions to Wood's lamp, which did not result in characteristic coloration. Thus, the technique of deep skin scraping was performed in different injured sites in order to increase the diagnostic sensitivity to mites that cause scabies. The scraping test was positive for the presence of mites with a rounded body and

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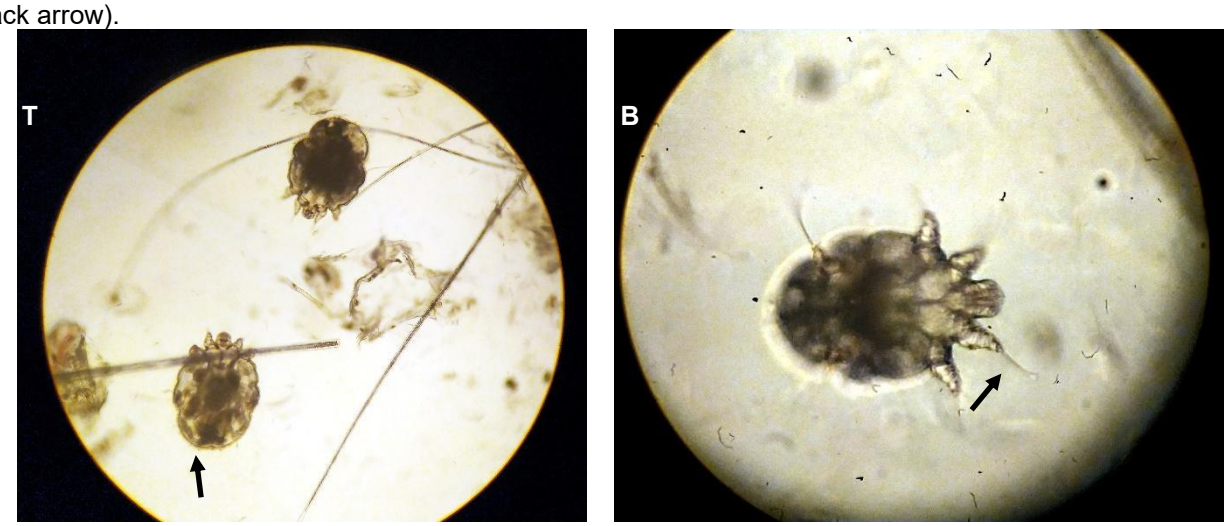
digitiform relief on the back, with eight legs morphologically typical of the Sarcoptidae family, with a long and unsegmented pedicel (Figure 2). Males had suction cups at the ends of the first, second, and fourth pairs of legs, while females had suction cups only on the first and second pairs of legs.

It was not possible to measure the parasites, so their morphology was decisive for the diagnostic conclusion, and the identified sarcoptiform mites belonging to the genus *Sarcoptes*.

Figure 2 – A) Specimens of *Sarcoptes* sp. in the patient's skin scraping, presenting a morphology characteristic of the Sarcoptidae family, such as a rounded body with short legs and gnatoosma. Note posterior anal opening with bristles around (arrow). B) Female *Sarcoptes* sp. with a rounded body with a long, unsegmented pedicel (black arrow).



Source: Personal collection (2024).

In view of the diagnosis, antiparasitic therapy was initiated with ivermectin at a dose of 0.5mg/kg, administered subcutaneously every seven days for four weeks. Due to the particularities of the species, it was decided not to associate topical therapy. In each new week of treatment, skin scrapings were repeated in order to monitor the therapeutic response. In the first week, the parasites were diagnosed and therapy began. In the second week, a new antiparasitic administration was performed and the skin scraping revealed the presence of ectoparasites in smaller quantities and lower motility than previously presented. In the third week, the skin scraping showed rare adult mites, with almost no mobility. In the fourth week, the skin scraping was negative and a last administration of ivermectin was performed. Weekly clinical follow-up also showed non-progression of lesions from the second week of treatment (Figure 3). In the fifth week after the beginning of treatment, the lesions showed hair growth in the previously alopecic sites and the crusted and scaly areas had significantly reduced, evidencing the therapeutic response to the treatment initiated.

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Figure 3 – Patient showing progressive improvement in skin lesions. Second week after the start of treatment.

Source: Personal collection (2024).

DISCUSSION

The genus *Sarcoptes* belongs to the family Sarcoptidae, a group of burrowing mites with a convex and ventrally flattened back, with a cuticle covered by fine striations, short legs, and the two pairs of hind legs generally not visible from the back (TAYLOR; COOP; WALL, 2016). In addition, the parasite is characterized by the posterior position of the anus and long, non-segmented pedicels in the first two pairs of legs (MARTINS, 2019). The mites in question had a morphology equivalent to that described in the literature for *Sarcoptes* sp. and, although it was not possible to measure the specimens, the clinical signs presented together with the morphological description of the mites allowed the diagnostic conclusion.

Digging galleries into the horny layer of the epidermis allows mites to colonize the stratum spinosum, where females lay their eggs after copulation. In three to four days the eggs hatch, giving rise to hexapod larvae, which in approximately three days evolve into octopod nymphs and, later, to the adult stage. During their stay in the integument, the mites continue to move and excavate new galleries (REY, 2010; PEREIRA, 2012; RIBAS, 2016), damaging the epidermal layers through cupping and the action of salivary secretion. This triggers a physical and immunological response in the host that is manifested by vasodilation, flushing, heat, intense itching, alopecia, and crusting, signs compatible with the reported case. This sequence of events makes the host's skin susceptible to

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opportunistic infections by bacteria and fungi, which are most often responsible for the observed cutaneous clinical signs (CARAMALAC; PALUMBO; TERRA, 2019).

The lack of clinical signs other than dermatological signs in the rabbit in question may be justified by the rapid diagnosis and therapeutic intervention. The absence of contacts since the acquisition of the animal, considering a mite-free domestic environment, suggests that transmission has occurred while still in the herd, which is justified by the evidence that infestations by other species of sarcoptiformes can take up to a month to manifest the first signs of pruritus (MONTEIRO, 2017).

Frequently, the challenges related to the handling of lagomorphs and rodents lead veterinarians to opt for therapeutic diagnoses instead of performing complementary exams (VITALE; LARSSON, 2016). In the present study, complementary tests were essential for determining an accurate diagnosis and choosing a safe and appropriate therapy. In addition to exposing the lesions to Wood's lamp, used to investigate the presence of dermatophytosis, the deep skin scraping allowed the identification of the parasite, as well as the exclusion of other differential diagnoses involving mites that cause scabies in rabbits such as *Psoroptes* sp., *Cheyletiella* sp., *Notoedres* sp. and *Trixacarus* sp. (VITALE; LARSSON, 2016). The skin scraping technique is simple to perform, low cost and effective. In the diagnosis of mites of the Sarcoptidae family, which are considered semi-superficial, it is not necessary to perform the scraping until capillary bleeding. Instead, scarification of different affected areas is more advantageous to increase the sensitivity of the examination (FOLEY *et al*., 2016).

The therapeutic approach to this parasitosis is based on the systemic administration of antiparasitic drugs such as ivermectin (FOLEY *et al*., 2016), in addition to baths with active ingredients for topical use or even the association of other classes such as antihistamines and anti-inflammatories, to judge each case. Due to the sensitivity of the animal, considering its size and age, added to the fact that the potential harms of bathing in rabbits may outweigh the benefits, the choice of injectable administration of ivermectin as the only intervention proved to be adequate and sufficient to resolve the condition. Avermectins belong to the chemical group of macrocyclic lactones, resulting from the fermentation process of an actinomycete, *Streptomyces avermitilis*. These drugs are highly lipophilic compounds, allowing rapid absorption, large volume of distribution and greater permanence in the body due to deposition in low-metabolism tissues, such as adipose (CANGA *et al*., 2009; LOPES *et al*., 2014). The use of ivermectin subcutaneously in rabbits

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infested by *Sarcoptes* spp. has been shown to be effective in clinical reports such as those of Kumar *et al*. (2018) and Sharun *et al*. (2019), which is corroborated by the results obtained in the present report.

Prevention continues to be the most effective strategy for controlling infestations by mites that cause scabies. Essential measures include the provision of a balanced diet, maintenance of good hygiene conditions, adequate management of population densities, and caution in the acquisition of animals of unknown origin. The management of positive cases is also fundamental, implying the isolation of infested animals, the use of gloves during dermatological care and the sterilization of the materials used. It is important to highlight that, although animals with scabies may have an apparent cure, there is a risk of recurrence, especially when associated with conditions that favor immunosuppression (RIBAS, 2016; MONTEIRO, 2017).

CONCLUSION

The present study describes a case of sarcoptic scabies in *Oryctolagus cuniculus*, demonstrating the efficacy of treatment with ivermectin in the elimination of ectoparasites and in the resolution of dermatological lesions. Early diagnosis associated with appropriate therapeutic intervention was essential for the success of the treatment, which resulted in complete recovery of the patient. The report reinforces the importance of rapid and effective clinical management in non-conventional pets, highlighting the relevance of disseminating knowledge about the prevention and control of this zoonosis in domestic rabbits.

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