

Successful Treatment with Permethrin for Fur Mite Infestation in Pet Rabbits: Case Report

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Abstract : The fur mite is a highly contagious zoonotic mite that causes skin disorders in rabbits. In this case report, four rabbits with a fur mite infestation were treated with a single dermal application of permethrin (65%) at a dose of 0.1 ml. All the rabbits were treated successfully with permethrin without any adverse reactions at 8 weeks after treatment. This suggests that permethrin is an effective treatment for fur mite infestations in rabbits.

Key words : fur mite, permethrin, rabbit

Introduction

Ticks, fur mites, psoroptic mites, lice and fleas are important ectoparasites of rabbits. Among these ectoparasites, the fur mite is the most common mite that causes skin disorders in rabbits. These mites cause skin irritations along the back of rabbits. Infested rabbits can have scale, pruritus and slight hair loss. However, rabbits may not show any signs of the infestation. The clinical signs may be more severe in immunosuppressed and young rabbits (3,11). The adult mite is transmitted by direct contact between rabbits. The fur mite is zoonotic, causing a papular dermatitis in human (11,13). The mites can live for several days away from the host. Therefore, it is possible for rabbits to become infested through environmental contamination. Environmental decontamination is needed to prevent a re-infestation and transmission. Lime sulfur dips, selenium sulphide shampoo (3,11), selamectin (5,6) and imidacloprid/moxidectin (4), and injectable drug such as ivermectin (2,10), doramectin (14) and eprinomectin (9) are commonly used to treat mite infestation in rabbits.

Permethrin is a pyrethroid insecticide used as a dermal applied spot-on for the prevention and treatment of fleas, ticks and lice as well as a mosquito repellent in dogs (1). Permethrin-based spot-on preparations are contraindicated in cats because of the high risk of toxicity. Feline permethrin toxicity manifests as increased muscular activity such as twitching, tremor, or convulsions (1,12).

Mencke (7) reported that acaricides with repellent properties such as the synthetic pyrethroid, permethrin, are ideal compounds for preventing arthropod bites in dogs. Meyer *et al.* (8) reported that a permethrin (65%) spot-on treatment killed and

repelled significantly more mosquitoes on treated dogs. However, most reports were limited to therapeutic use for dogs.

Although permethrin can be used to treat fur mite infestations in rabbits, there are no reports on its efficacy for fur mite infestation and administration in rabbits. Therefore, this study reports the efficacy of a single dose of permethrin for the treatment of fur mite infestations in pet rabbits.

Case

History and diagnosis

Four rabbits (2 to 3 months old, 0.6 to 1.0 kg, three males and one female) in one household were presented for a routine clinical examination with no other problems. The rabbits were adopted from a pet shop approximately 20 days earlier. The physical examination revealed mild scaling on the dorsum. An acetate tape test and flea combing were performed, and fur mites and eggs were observed by a microscopic examination (Fig 1).

Treatment

The rabbits were treated with 65% permethrin (Advance Spot on[®], Cipla, India) applied once to the base of the neck at a dose of 0.1 ml using 1 ml syringes. No other treatments were performed during the treatment period. Sodium hypochlorite bleach was used to eliminate the environmental contamination. Each rabbit was re-evaluated at 1, 4 and 8 weeks after treatment.

Prognosis

One week after treatment, the rabbits showed scaling and the microscopic examination by the acetate tape and flea combing were negative for mites and eggs. Four weeks after treatment, no clinical signs were observed in any of the rab-

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Fig 1. Microscopic examination by acetate tape test revealed adult mite (A, x 100) and eggs (B, x 400).

bits and no mites or eggs were found in any of the samples. There were no signs observed in any rabbit 8 weeks after treatment. In addition, there were no adverse reactions to the treatment using permethrin.

Discussion

Fur mites (*Cheyletiella parasitovorax* and *Leporacarus gibbus*) can be found in the skin of rabbits, and can infest human skin, causing symptoms such as erythema and pruritus. Because the fur mite is zoonotic, it is important to diagnose and treat it correctly for public health (3,11).

In the author's previous reports, a single topical application of a formulation containing imidacloprid 10% (w/v) and moxidectin 1% (w/v) at a dose of 0.4 ml was an effective treatment for cheyletiellosis in 32 rabbits. The signs of remission of pruritus became visible to the pet owners 1 week after treatment. After 4 weeks of treatment, there were no clinical signs, such as scale and pruritus, and no mites or eggs were observed in any rabbit (4). In addition, a total 23 rabbits with cheyletiellosis were treated with a single topical application of selamectin at a dose of 12 mg/kg without adverse reactions. At 3 weeks, the clinical signs such as scaling and pruritus

had resolved in 20/23 rabbits and a microscopic examination by the acetate tape and flea combing were negative for mites and eggs in 22/23 rabbits. After 5 weeks of treatment, there were no clinical signs in any of the rabbits and no evidence of mites and eggs in microscopic examination. No signs of recurrence were observed in any rabbit 12 weeks later (5).

Permethrin is a common synthetic chemical used as an insecticide and acaricide. It functions as a neurotoxin by prolonging sodium channel activation in the nerve membranes. It rapidly kills fleas, lice and mosquitoes (1).

In this case report, rabbits with a fur mite infestation were treated with a single dermal application of 0.1 ml permethrin (65%). The therapeutic effect of permethrin (65%) against the fur mite infestation was 100% at 4 and 8 weeks, and there were no adverse reactions. Permethrin showed similar therapeutic effects to imidacloprid/moxidectin and selamectin. Although clinical signs, such as scaling were observed 1 week after treatment, no mites or eggs were observed. At 4 weeks after treatment, the clinical signs were resolved and no mites or eggs were found in any rabbits. No signs of recurrence were observed in the rabbits 8 weeks later.

To the author's knowledge, it is the first report of permethrin (65%) being used to treat a fur mite infestation in rabbits. Only four rabbits were used in this study. However, further studies on the safety of permethrin in rabbits will be needed in the future.

These results suggest that a single topical application of permethrin is an effective and convenient treatment for fur mite infestations in rabbits.

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애완 토끼에서 털응애 감염증에 대한 Permethrin의 성공적 치료: 증례 보고

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요 약 : 털응애는 토끼에서 피부 질환을 유발하는 매우 전염성이 강한 인수공통 질병 진드기이다. 본 증례 보고에서는 털응애에 감염된 네 마리의 토끼에 permethrin (65%) 0.1 ml를 1회 피하로 적용하였다. 모든 토끼가 8주 후 부작용 없이 성공적으로 치료되었다. 본 증례에서 permethrin은 토끼 털응애증 치료에 효과적이었다.

주요어 : 털응애, permethrin, 토끼