

A Case of Naturally Acquired Cheyletiellosis in a Rabbit: Therapeutic Trial of Selamectin

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Abstract: An about 5-month-old, female rabbit was presented with pruritus, alopecia and mucopurulent ocular discharge. On physical examination mild to moderate scales on whole body were observed. Dermatological lesions such as alopecia, erythema, papules, pustules and crusts were observed in the eyelids, nose, inner pinna, medial sites of four feet, metacarpal and metatarsal areas, and cranial site of left stifle joint. Also, mild conjunctivitis, blepharitis and keratitis were found. For extensive dermatologic diagnostic evaluation skin scraping, tape stripping, impression smear, combing, wood' light, bacterial culture and fungal culture were performed. Finally, *Cheyletiella* spp. was found by combing. Many heterophils and eosinophils were appeared in impression smear. The result of fungal culture was negative. *Pasteurella* spp was cultured. Definitive diagnosis of *Cheyletiellosis* and secondary *Pasteurella* spp infection were established. The rabbit was treated with 6 mg/kg of selamectin topically every two weeks and restricted in cage for one month. During one month of initial treatment, clinical signs such as pruritus, alopecia, scales, papules, pustules and crusts were remarkably improved. However, in spite of good therapeutic response of selamectin the rabbit was dead suddenly at 22 days after second administration of selamectin. This case showed that selamectin was possibly effective for cheyletiellosis in rabbit; safety of selamectin for rabbit was not identified.

Key words: *Cheyletiella* spp, selamectin, rabbit

Introduction

Cheyletiellosis ("walking dandruff") is a highly contagious mite infestation and mild, non-suppurative mite-induced dermatitis produced by *Cheyletiella* spp¹³. These mites infest dogs, cats, rabbits, and human^{15,17,19}. The species of mites are *Cheyletiella yasguri*, *Cheyletiella blakei* and *Cheyletiella parasitovorax* and these mites may travel freely among various host species^{6,13,16}. These mites are zoonotic potential and also potentially contagious to other animals^{6,7}. *Cheyletiella parasitovorax* commonly infest rabbits and most infested rabbits inclined not to show overt signs of skin disease. Usually heavy infestations cause a variety of pruritic dermatitis and in hypersensitive hosts little number of mites can cause intense pruritic dermatosis¹⁴. Occasionally, there is only a facial dermatitis characterized by alopecia over the frontal area with varying degree of erythema and scale formation⁵.

Systemic endectocide is a treatment of choice and ivermectin 400 mg/kg SQ every 2 weeks for 2-3 treatments is very effective^{1,13}. However, it is inconvenient to treat due to injection and the owner must bring the pet rabbit to clinic, and also ivermectin is an off-label drug at dose and indication. All rabbits in house should be treated and environment should be cleaned.

Selamectin is a novel ivermectin and first FDA-licensed topically applied product that prevents heartworm disease, kills adult flea, and prevents their eggs from hatching and treats and controls ear mites in dogs and cats^{1,4,18}. In pet rabbit

topical application of selamectin could completely eliminate mites from rabbits naturally infested with ear mite⁸.

To date no information is available concerning cheyletiellosis and the efficacy of topical application of selamectin in pet rabbit with *Cheyletiella* spp infestation. We report a case of naturally acquired cheyletiellosis and topical administration of selamectin for treating cheyletiellosis in a pet rabbit.

Case Report

An about 5-month-old, female pet rabbit was presented with pruritus, alopecia and ocular mucopurulent discharge. On history taking, she was treated with systemic antibiotics, corticosteroids and topical antibacterial ointment for two weeks previously and showed some clinical response. However, clinical signs and skin lesions were not completely resolved. She was slightly depressed but had normal appetite, defecation and urination on presentation. On dermatologic examination, mild to moderate scales on whole body and alopecia, erythema, papules, pustules, crusts on face, inner pinna, medial side of four feet, metacarpal and metatarsal areas and cranial site of left stifle joint were observed. Mild conjunctivitis, blepharitis and keratitis suspected as secondary were found (Fig 1 & 2).

In dermatologic diagnostic evaluations of skin scraping, tape stripping, flea combing and wood's light, the infestation of *Cheyletiella* spp. were found by combing (Fig 5). Many heterophils, eosinophils, lymphocytes and monocytes were observed in impression smear of affected skin (Fig 3). The fungal culture was negative and *Pasteurella* spp. was shown in bacterial culture. Definitive diagnosis of cheyletiellosis

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Fig 1. Dermatologic lesions of alopecia, erythema, papules, pustules, crusts around eyes, nose and mouth.



Fig 2. Dermatologic lesions of alopecia, erythema, scales and crusts in legs.

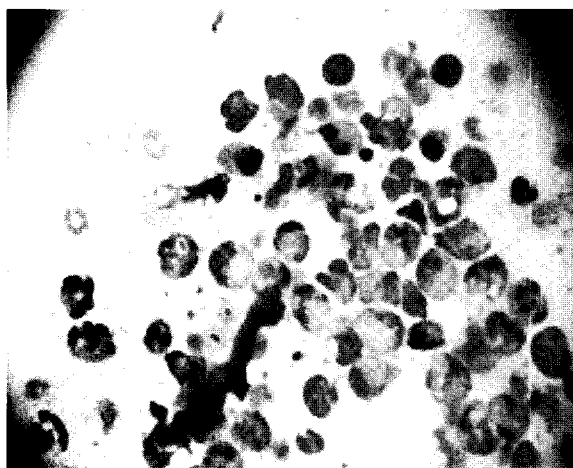


Fig 3. Many heterophils, eosinophils, lymphocytes, monocytes, were observed on cytology of impression smear.

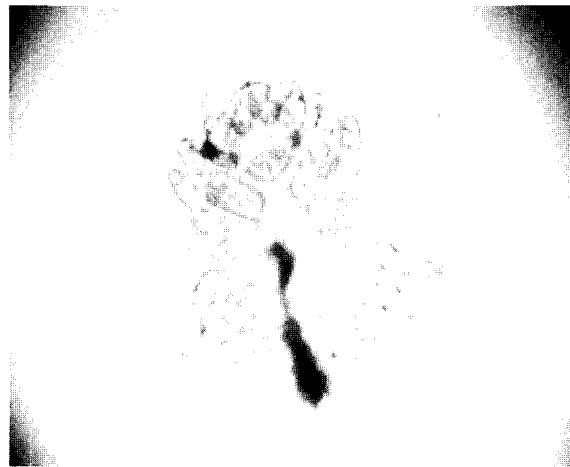


Fig 4. *Cheyletiella* spp. from flea combing.

infestation was established.

The rabbit was treated with 6 mg/kg of selamectin every two weeks for 2 treatments and cage restriction for one month. One week after initial administration of selamectin, pruritus and scales were decreased. Two weeks later, scales were remarkably decreased and hair growth was partial. Three weeks later, clinical signs and dermatologic lesions were remarkably improved but some still remained especially on leg. For one month after initial therapy, clinical signs including alopecia, scales, papules, pustules and crusts were much improved.

Discussion

Cheyletiellosis is a very contagious dermatosis caused by *Cheyletiella* mites living on the skin surface. These mites are not host specific and may transfer readily between dogs, cats, and rabbits. Eggs which are shed with hair into the environment are important reservoir of infestation^{13,14,19}. Due to the lack of host specificity and capability of surviving free of host for at least 10 days, it is important that all in-contact pet mammals, their utensils for life, and their environment should be included in the treatment program.

The characteristic signs of the disease are scaling and pruritus in animals^{10,14,19}. The intensity of the pruritus is usually mild to moderate, but sometimes appears disproportionate to the apparent low numbers of mites. This might be due to a hypersensitivity reaction to the mite²⁰. An asymptomatic carrier state also exists and this can cause the repeated reinfestation and zoonotic transmission. Humans in contact with pets carrying *Cheyletiella* spp. are at risk of becoming transiently infested themselves, producing an uncomfortable, pruritic dermatosis, characterized by popular lesions that, typically, appear on the arms, legs, trunk, and buttocks^{3,6,19}. However, because *Cheyletiella* spp. can not reproduce on humans, appropriate treatment of the pet should prevent further infestation, so human acaricidal therapy unnecessary.

Diagnosis of *Cheyletiella* dermatitis can be challenging in susceptible animals. In rabbits diagnosis is confirmed by identifying mites or eggs from scales. Superficial skin scrapings, acetate tape preparations, flea combing, fecal flotation are most commonly used^{10,11}. In case of difficulty of demonstration of mites therapeutic trial may be necessary.

There are currently no licensed veterinary products specifically indicated for the treatment of *Cheyletiellosis*. Topical application of lime sulfur dips, pyrethrin sprays or shampoos in conjunction with regular treatment of the environment are also effective^{9,13}. Alternative topical treatment options are applications of 0.25% fipronil spray³. Ivermectin can be used systemically in animals that do not tolerate topical therapy^{9,11,13}. The treatment of choice for *Cheyletiellosis* in rabbits is ivermectin. Administration of 200-400 mg/kg of ivermectin every one week for 6 to 8 treatment is practical, economical, and very effective^{13,18}. However, it is an off-label use in rabbit. Although selamectin is not currently approved for use in rabbits, topical administration of selamectin at a dose of 6 to 18 mg/kg can completely eliminate mites from rabbits naturally infested with *P. cuniculi*⁸. And no adverse reactions associated with selamectin treatment were observed. Topical selamectin, which administered at 6-15 mg/kg, for 3 treatments, was revealed a practical and well-tolerated means of treatment for *Cheyletiellosis* in cats⁴.

In this case, we topically administered 6 mg/kg of selamectin every two weeks for one month. After 2 weeks of treatment main signs of pruritus and scales were remarkably decreased. The skin lesions including erythema, papules, scales and alopecia were remarkably disappeared at 3 weeks. Therefore, topical selamectin for *Cheyletiellosis* of rabbit was very effective at the point of improvement of clinical signs and dermatologic lesions. Further clinical study with selamectin to *Cheyletiellosis* in rabbit are required to support the result of this case.

To our knowledge this is the first clinical case of cheyletiellosis in a rabbit raised by pet owner and also the first topical application of selamectin for the treatment of *Cheyletiellosis* in rabbit. Based on this case presentation, bi-weekly topical administration of selamectin may be considered as treatment of *Cheyletiellosis* in rabbit.

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애완토끼에서 발생한 Cheyletiellosis 피부염에 대한 selamectin 치료 1례

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요 약 : 5개월령의 암컷 토끼가 소양증, 탈모 및 짐액화농성 안루로 내원하였다. 전신에서 경미에서 중등도 인설이 관찰되었다. 안면부, 이개내측, 사지 중수골과 중족골의 내측, 좌측슬관절 앞쪽의 탈모, 발적, 구진, 농포와 가피등의 다양한 피부병변이 나타났다. 채취된 인설의 현미경 검사에서 다수의 *Cheyletiella* spp가 관찰되었다. 다수의 이염색성 백혈구, 호산구 및 림프구가 세포학적 검사에서 나타났으며 곰팡이 배양검사는 음성이었다. 세균배양결과 *Pasteurella* spp가 검출되었다. 검사결과에 따라 *Cheyletiella* 피부염으로 진단하였다. 치료는 selamectin 6 mg/kg을 2주 간격으로 2회 국소 적용하였으며 치료 1개월 후에 임상증상이 현저하게 경감되었고 피부병변은 대부분 정상으로 회복하였다. 따라서 selamectin의 국소적용은 토끼의 *Cheyletiellosis*의 치료에 효과적인 것으로 판단되었다.

주요어 : *Cheyletiellosis*, selamectin, rabbit