

Efficacy of Application of Selamectin for Canine Scabies Infestation in a Dog

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Abstract : A 3-year-old, male, mongrel dog was presented with pruritus, alopecia to the Veterinary medical Teaching Hospital, College of Veterinary Medicine of Kyungpook National University. On physical examination, generalized erythema, papules, scales and crusts were observed. The canine scabies infestation was diagnosed by deep skin scraping and *Malassezia* spp. and *Staphylococcus* spp. were found on skin cytology. He was treated with selamectin at 6 mg/kg applied to the skin in a single spot every two weeks for one month in order to investigate the effect of selamectin on canine scabies and was treated with amoxicillin trihydrate/clavulanate potassium, ketoconazole and chlorhexidine shampoo for *Malassezia* spp. and *Staphylococcus* spp. simultaneously. When he was rechecked after 7, 14, 21, and 28 days after the first application of selamectin, scabies were not seen. The dermatological signs including pruritus, papules, scales, and crusts were remarkably resolved at 14 days. The alopecia was almost disappeared and few *Malassezia* spp. and *Staphylococcus* spp. were seen after 28 days. The efficacy of selamectin by this protocol is excellent in the dog infested with canine scabies

Key words : Selamectin, scabies, dog

Introduction

Sarcoptes scabiei is the ectoparasites of considerable importance in canine veterinary practice. Infestation with the mange mite *S. scabiei* is one of the 10 most common skin diseases in dogs referred to veterinary teaching hospitals in North America¹³. Scabies are easily spread by direct contact and are very contagious¹⁴. Clinical signs of scabies infestation can be variable. The classic presentation is an intensely pruritic dog with alopecia and crusting involving the ear pinna margins and pressure points, but some dogs have the more vague presentation of a generally pruritic dog with few or no skin lesions^{6,11}. For treatment of *S. scabiei* infestation in dogs many involve treating the entire body surface with an acaricidal dip or wash with lime sulfur and amitraz^{4,12,13}. Several systemic macrocyclic lactones which are ivermectin, milbemycin oxime, moxidectin and selamectin and fipronil have been used with success in many cases of canine scabies^{1,3,7,10}.

Selamectin, a novel avermectin is the only approved systemic treatment for sarcoptic acariasis. The recommended dosing schedule is application of selamectin every 30 days. However, several reports confirmed that commercial formulation is not always effective when used as labeled which is 6 mg/kg at monthly intervals⁹. Therefore, we thought another dosing schedule is needed for treatment of canine scabies infestation. This case reported here revealed that efficacy of every 2 weeks application of selamectin is very effective on the infestation of scabies in a dog.

Case Report

A 3 year-old, male, mongrel dog of 3.05 kg of body weight

was presented to the Veterinary Teaching medical Hospital, Kyungpook National University with pruritus and alopecia. On presentation, the patient had scales, crusts, erythema and generalized alopecia especially on ventral portion of abdomen, both of flanks, chest and legs. He showed pinna-pedal reflex when being touched both pinna for examination. The patient was slightly depressed but he had normal appetite, defecation and urination.

Extensive dermatological diagnostics were performed including Woods lamp, deep skin scraping, tape stripping and otoscopic examination to rule out pyoderma, *Malassezia* dermatitis, demodicosis and other ectoparasitic infection. Ear swab on the both ear was performed for direct and cytological examination. Multiple skin scrapings revealed adult scabies and the examination of ear swab did not show scabies and ear mites. Cytological examination of tape stripes of skin and ear swab revealed the *Malassezia* spp. and *Staphylococcus* spp. Definitive diagnosis of canine scabies infestation was established. *Malassezia* spp. and *Staphylococcus* spp. infection on the skin were considered as secondary infection.

Six mg/kg of selamectin was applied to the skin in a single spot twice a month and amoxicillin trihydrate/clavulanate potassium at 15 mg/kg, p.o. b.i.d for *Staphylococcus* infection and ketoconazole 10 mg/kg, p.o. s.i.d. for *Malassezia* infection were administered and topical therapies with 5% of chlorhexidine shampoo every 7 days was done for one month.

After 1 week of initial treatment, the dog's clinical signs had improved and no more scabies were observed on microscopic examination. However, a few *Staphylococcus* spp. and *Malassezia* spp. were still seen in cytological examination of ear swab and skin.

After 2 weeks, the dog's clinical signs had significantly improved. The pruritus, papules, scales and crusts had regressed and pinna-pedal reflex was disappeared. There were no more scabies. One month after the initial treatment, the dogs

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skin lesions were completely disappeared and the alopecia was also disappeared. The negative skin scraping was achieved and few *Staphylococcus* spp. and *Malassezia* spp. were seen in cytological examination of ear swab and skin.

Discussion

Canine scabies is a nonseasonal, intensely pruritic, highly contagious cutaneous infestation caused by the mite *Sarcoptes scabiei* var *canis*¹¹. The life-cycle takes approximately 21 days, and adults usually survive off the host for up to 6 days at room temperature, but have been shown to survive for up to 19 days in cool moist conditions^{6,11}. Transmission occurs most commonly from direct contact. The disease is more common in dogs that have frequented pet shops, kennels, and grooming establishments.

Definitive diagnosis is made by demonstrating mites, eggs, or feces of *Sarcoptes scabiei*. In practice it has been difficult to find the canine scabies for confirmation of diagnosis. A definitive diagnosis may also be made by complete cure following scabicide therapy in a case with a tentative diagnosis⁵.

Ivermectin is considered favorite antiscabicide although extra-labeled by many veterinary dermatologists. It is practical, economical and highly effective, and can be administered p.o., s.c., or topically (pour-on). However, ivermectin is not approved for this use in collies and other breeds such as Australian shepherds, Old English sheepdogs and Shetland sheepdogs or their crosses due to idiosyncratic reactions^{2,8}.

Selamectin is a novel avermectin which is the only systemic treatment and approved for sarcoptic and otodectic acariasis^{9,13}. The field safety and the efficacy of this product against natural infestations of *S. scabiei* were evaluated in 79 dogs¹⁴. Dogs received 6 mg/kg of selamectin on days 0 and 30. The percentages of dogs with no viable *S. scabiei* infestations on days 30 and 60 were 94% and 100% respectively⁹. Unfortunately, several anecdotal reports showed that the commercial formulation is not always effective when use of as labeled. Some clinicians have seen failures in treating skin scraping positive scabies infestation with selamectin every 4 weeks. Also, some dermatologists recommend every 2 weeks therapy with a minimum of 3 treatments in the affected dog as well as all dogs in contact in order to increase efficacy. Therefore, selamectin may not be reliable to use as a therapeutic trial to rule out scabies. Nevertheless, it appears to be a valuable and approved treatment in confirmed cases of canine scabies because of its relatively good efficacy and ease of treatment¹⁵. Furthermore, its apparent safety in collies and related breeds makes it a very good treatment option in these dogs.

In this case we administered 6 mg/kg of selamectin, every 2 weeks for one month. In the clinical response, especially pruritus, thick crusts and pinnal-pedal reflex by canine scabies infestation were remarkably decreased at 2 weeks. Skin lesions including erythema, papules and scales, alopecia almost disappeared at 4 weeks. It was considered that for successful

treatment of canine scabies specific agent for the scabies was very important, and therapy for secondary infection consisting of systemic antibiotics, antifungals and topical agent including chlorhexidine were also important and accelerated the healing of skin. Skin scrapings performed at 1, 2, 3 and 4 weeks were negative for scabies. This clinical response of selamectin was considered very effective for canine scabies.

Based on this case presentation, it is considered that bi-weekly application of selamectin for one month is effective for the treatment of canine scabies. Also selamectin could be considered as the good therapeutic trial to rule out scabies. Further clinical trials with this protocol are required to support the result of this case.

Conclusion

This case showed that application of selamectin every two weeks for one month had a good efficacy on the infestation of scabies in a dog and selamectin was a good therapeutic trial to rule out scabies.

References

1. Curtis CF: Use of 0.25 per cent fipronil spray to treat sarcoptic mange in a litter of five-week-old puppies. *Vet Rec* 1996; 139: 43-44.
2. Campbell WC. Ivermectin, an antiparasitic agent. *Med Res Rev* 1993; 13: 61-79.
3. De Jaham C, Henry CJ. Treatment of canine sarcoptic mange using milbemycin oxim. *Can Vet J* 1995; 1: 42-43.
4. Foley RH. Parasitic mites of dogs and cats. *Comp Cont Ed Pract Vet* 1991; 13: 783-799.
5. Grant DI. Notes on parasitic skin disease in the dog and cat. *Br Vet J* 1985; 141: 447-462.
6. Griffin CE. Scabies. In: Griffin CE, Kwochka KW, MacDonald JM. *Current Veterinary Dermatology: The Science and Art of Therapy*. St. Louis, MO: Mosby, 1993:85-89.
7. Mueller RS, Bettenay SV. A proposed new therapeutic protocol for the treatment of canine mange with ivermectin. *J Am Anim Hosp Assoc* 1999; 1: 77-80.
8. Paradis M. Ivermectin in small animal dermatology. Part I. Pharmacology and toxicology. *Compend Contin Educ Pract Vet* 1998; 20: 193-200.
9. Paradis M. Clinical presentation, diagnosis and new treatments of *chelyletilla*, *sarcoptic* and *otodectic* acariases. 4th Proceedings of World Congress of Veterinary Dermatology, WVDA, San Francisco, USA, August 30 September 2, 2000, p 105-111.
10. Paradis M, de Jaham C, Page N. Topical (pour-on) ivermectin in the treatment of canine scabies. *Can Vet J* 1997; 6: 379-382.
11. Scott DW, Miller WH jr., Griffin CE. *Muller and Kirks Small Animal Dermatology*, 6th Ed. Philadelphia: WB Saunders, 2001: 423-516.
12. Sischo WM, Ihrke PJ, Franti CE. Regional distribution of 10 common skin diseases in dogs. *J Am Vet Med Assoc* 1989; 195: 752-756.

13. Six RH, Clemence RG, Thomas CA, Behan S, Boy MG, Watson P, Benchaoui HA, Clements PJM, Rowan TG, Jernigan AD. Efficacy and safety of selamectin against *Sarcoptes scabiei* on dogs and *Otodectes cynotis* on dogs and cats presented as veterinary patients. *Vet Parasitol* 2000; 91: 291-309.
14. Sture GH, Clements PJM, Jones RL, Smith DG, Rowan TG, Jernigan AD. Efficacy of selamectin against natural infestations of *Sarcoptes scabiei* on dogs in the UK. 16th Proceedings ESVD, Helsinki, Finland. August 1999.
15. H WP, O TH. Efficacy of twice a week selamectin application as a treatment for mixed canine scabies and ear mite infestation in a dog. *J Vet Clinics* 2002; 19: 401-404.

개에서 개선충(Canine Scabies) 감염에 대한 월 2회 Selamectin 적용 일례

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요 약: 3연령 잡종견이 소양감, 탈모의 증상으로 내원하였다. 신체검사에서 전신적으로 발적, 구진, 탈모, 비듬 그리고 가피의 병변이 관찰되었다. 전반적인 피부검사결과 개선충, *Staphylococcus* spp과 *Malassezia* spp의 혼합 감염으로 진단되었다. Selamectin 6 mg/kg을 2주간격으로 2회 경부피부에 적용하였다. 그리고 한 달간 구균과 *Malassezia* 치료를 위해 amoxicillin trihydrate/clavulanate potassium과 ketoconazole 10 mg/kg을 경구투여하고 5% chlorhexidine 샴푸를 주2회 실시하였다. 첫 치료 후 7,14,21 그리고 28일에 피부를 재검사 하였을 때 개선충은 관찰되지 않았으며 피부 증상은 현저하게 개선되었다. 피모는 거의 정상으로 회복되었으며 *Staphylococcus*와 *Malassezia* spp는 거의 관찰되지 않았다. 그러므로 이 치료절차에 따른 selamectin 적용은 개선충이 감염된 개에서 매우 효과적이라고 사료된다.

주요어: selamectin, scabies, dog