

Severe Sarcoptic Mange and Cheyletiellosis in a New Zealand Rabbit and its Treatment With High Dosage of Ivermectin

Gözde COŞKUNSERÇE¹ Ezgi AKDEŞİR² Güney KAYA³
Şevki Z. COŞKUN^{1,*}

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Abstract: Severe sarcoptic mange and cheyletiellosis in a male New Zealand rabbit at 4 months of age are reported. Infection is characteristic with a mass resembling to the horn of a rhinoceros on the muzzle, crustling on pinnae and paws, gryposis, alopecia on abdomen. *Sarcoptes scabiei* and *Cheyletiella parasitivorax* were identified in skin scrapings.

Ivermectin (İverkol ® Etkin) at the dose of 1.2mg kg⁻¹ bw was injected subcutaneously. The mass on the muzzle fell off on the 2nd day of treatment. The mite burden of the mass was found to be 657 *S. scabiei* and 2 *C. parasitivorax* in a volume of 5mm³ respectively. Since few live mites were observed in scapings, the treatment was repeated at the dose of 600µg kg⁻¹ on the 7th day of treatment. There was not any live mite in the scapings on the 14th day post treatment. However, alopecia especially on the muzzle and gryposis were still persistent, and, a third application of the drug at the dose of 600µg kg⁻¹ was performed. The rabbit was kept in a wire cage for 5 months and examined with 10 days of intervals. Any side effect of the drug was not observed. The rabbit clinically improved except alopecia on the muzzle.

Key Words: Rabbit, Mange, *Sarcoptes*, *Cheyletiella*, Ivermectin.

Yeni Zellanda Tavşanında Şiddetli Sarkoptik Uyuz ve Cheyletiellosis Vakası ve Yüksek Doz İvermektin ile Tedavisi

Özet: Dört aylık erkek Yeni Zellanda tavşanında şiddetli sarkoptik uyuz ve cheyletiellosis vakası bildirilmektedir. Enfeksiyon burun bölgesinde yerleşmiş gergedan boynuzuna benzer kitle, kulak kepeği ve ayaklarda kabuklanma, tırnak anomalileri, karın bölgesinde kıl dökülmesi ile karakterizedir. Deri kazıntılarında *Sarcoptes scabiei* ve *Cheyletiella parasitivorax* tesbit edilmiştir.

Derialtı yolla 1.2mg kg⁻¹ dozda Ivermectin (İverkol ® Etkin) enjekte edilmiştir. Burundaki kitle tedavinin 2. gününde düşmüştür. Kitledeki parazit yoğunluğu 5mm³ lük bir hacimde 657 adet *S. scabiei* ve 2 adet *C. parasitivorax* olarak belirlenmiştir. Tedavinin 7. gününde deri kazıntılarında birkaç canlı akar tesbit edildiği için tedavi 600µg kg⁻¹ dozda tekrarlanmıştır. Tedavi sonrası 14. günde deri kazıntılarında canlı akara rastlanmamıştır. Ancak, burun bölgesindeki kıl dökülmesi ve tırnak anomalileri devam ettiği için ilaç 600µg kg⁻¹ dozda üçüncü kez uygulanmıştır. Tavşan 5 ay süreyle tel bir kafeste bakılmış ve 10 günlük aralarla muayene edilmiştir. İlacın hiçbir yan etkisi gözlenmemiştir. Burun bölgesindeki kıl dökülmesi hariç tavşan klinik olarak iyileşmiştir.

Anahtar Kelimeler: Tavşan, Uyuz, *Sarcoptes*, *Cheyletiella*, Ivermectin.

¹ Uludağ Üniversitesi Veteriner Fakültesi Parazitoloji Anabilim Dalı 16059 Görükle, Bursa, Türkiye.

² Uludağ Üniversitesi Veteriner Fakültesi Patoloji Anabilim Dalı 16059 Görükle, Bursa, Türkiye.

³ Nilüfer Belediyesi Hayvan Bakım ve Tedavi Merkezi Nilüfer, Bursa, Türkiye.

* scoskun@uludag.edu.tr

Introduction

Sarcoptic mange is an uncommon infection in rabbits caused by a burrowing mite, *Sarcoptes scabiei*. The prevalence of the infection varies from 4 to 14.7% in rabbits^{2,7,10}. *Sarcoptes scabiei* inhabits the epidermis of sparsely haired areas of the body such as the face, pinnae, paws and external genitalia. The mites cause irritation, hypersensitivity reaction and inflammation with subsequent hyperkeratosis, seborrhea and alopecia. The intense pruritus causes dermal abrasions commonly developing to serious encrustations and secondary bacterial dermatitis. The most common lesions in rabbits are hyperkeratosis in the limbs and muzzle and nail deformation. Also, long hair around the crusts in the limbs, up to cover the nails, which presented an abnormal growth, is characteristic for the infection (hairy feet diseases)⁷. Skin punch biopsies taken from lesions on the muzzle reveal parakeratotic, serocellular crusting, and, regular epidermal hyperplasia with lymphocytic exocytosis and spongiosis³.

A licensed treatment protocol with the macrocyclic lactones against sarcoptic mange in rabbits are not readily available. Application of the drugs differs in dosage and administration way. Effectivity of the treatments varies depending on many factors including interpretation of the findings^{1,4,5,7,8,12}.

Cheyletiellosis, mainly caused by *Cheyletiella parasitivorax*, is a common infection in rabbits. The mites feed on surface epithelia, debris and lymph. Clinical signs of the infection consists of pruritis, alopecia, seborrhoea with crusts and erythema in mild to moderate severity. Although, treatment of the infection with macrocyclic lactones is recommended in textbooks⁹, ivermectin and selamectin was found to be effective at the rates of 81.8 – 80.8% in a clinical trial respectively⁶.

Here, an extreme sarcoptic mange and co-existing cheyletiellosis, characterised with a mass resembling the horn of a rhinoceros on the muzzle of a rabbit, and its treatment with high dosage of ivermectin are reported.

The Case

A male New Zealand rabbit at 4 months of age and 1kg of body weight with the history of intense pruritis and a horn like structure on the muzzle for 2 months was brought to the

Animal Protection Center of Nilüfer Municipality in province of Bursa, Turkey.

In addition to the horn like mass on muzzle, severe crusting on pinnae and paws, gryposis, alopecia and erythema on the abdomen and tail were detected in macroscopic examination (Figure 1). Scrapings collected from the lesions were put into 10% of KOH for 2 h. *Sarcoptes scabiei* and *C. parasitivorax* were identified according to their morphological peculiarities in microscopic examination¹¹.



Figure 1. Mass on the muzzle, severe crusting on pinnae and paws, gryposis and alopecia on abdomen.

Resim 1. Burun bölgesinde kitle, kulak kepçesi ve ayaklarda şiddetli kabuklanma, tırnak anomalileri ve karın bölgesinde kıl dökülmesi.

Ivermectin (İverkol ® Etkin) at the dose of 1.2mg kg⁻¹ was injected subcutaneously and the rabbit put into a wire cage. Water and food were served ad libidum and cage cleaned up daily for 5 months. The mass on the muzzle left out on the second day of treatment. The mass was measured as 33mm height and 23X14mm width at the base. A piece of the mass was processed conventionally and stained with haematoxyline and eosin. Histopathology revealed keratinous plaques, necrotic cells composed of epithelium and granulocytes, more significantly eosinophils, parasitic bodies and cavernous appearance (Figure 2). Additionally, part of the mass at a volume of 5mm³ was put into 10% of KOH for 5 h, crushed mechanically, and the mites were counted. The number of *S. scabiei* (adult, nymph and larvae) and *C. parasitivorax* (adult, nymph) in that sample were 657 and 2 respectively.

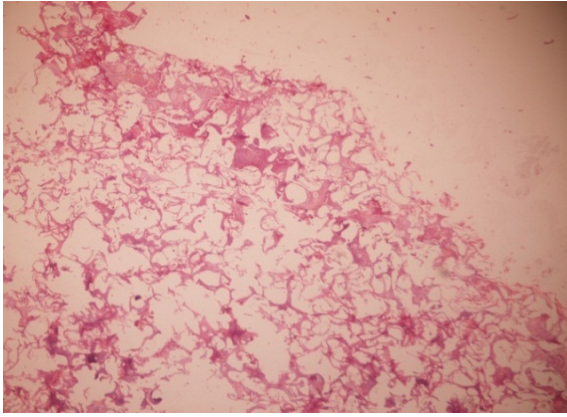


Figure 2. Keratinous plaques, necrotic cells, parasitic bodies and cavernous appearance.

Resim 2. Keratin plakları, ölü hücreler, parazitlere ait yapılar ve boşluklu yapı.

Some live mites were observed in scrapings on the 7th day of treatment, and, the drug was repeated at the dose of 600µg kg⁻¹. There was not any live mite in the scrapings on the 14th day post treatment. But, alopecia especially on the muzzle and gryposis were still persistent. A third application of the drug at the dose of 600µg kg⁻¹ bw was performed. The rabbit was housed in the center for 5 months and examined at 10 day intervals. No side effect of the drug was observed during treatments. Crusting on pinnae and paws, alopecia and erythema on the abdomen, gryposis were clinically improved. But, alopecia on the muzzle has never recovered within that time.

Discussion

Sarcoptic mange in rabbits develops a series of symptoms varying from a light pruritus to body malformation and even to death. In this article, a mass resembling to the horn of a rhinoceros on the muzzle was described. The mass was found to be filled up by the mites. The mite burden was as high as 657 mite in a volume of 5mm³. Treatment of sarcoptic mange with macrocyclic lactones extends up to 30 days in rabbits. Dosage, administration way of the drugs and severity of the infection effect the mortal time of the mites^{1,3-6}. Moreover, a macrocyclic lactone, moxidectin, has only a partial effect against *S. scabiei*¹². In the present case, ivermectin given subcutaneously at the dose of 1.2mg kg⁻¹ did not kill all the mites on the 7th day of treatment. A second application of the drug at the dose of 600µg kg⁻¹ killed all the

mites until 14th day post treatment. This finding indicates that the mites can be killed much faster with high doses of ivermectin in severe cases. However, a complete clinical recovery may not be achieved by killing the mites. Scar from the mass on the muzzle was still persistent on the 5th month of treatment. Seemingly, it will stay for life long.

Mellegren and Bergvall⁶ indicated that ivermectin given subcutaneously at the dose of 0.2-0.48mg kg⁻¹ bw at 2 or 3 occasions with the intervals of 11 days had a moderate effect (81.8%) against cheyletiellosis in rabbits. However, in this case, the infection caused by *C. parasitivorax* was treated completely with high dosage of the drug until 14th day post treatment.

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