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Medical management of concurrent *Neotrombiculus* and *Otodectes cynotis* infestation in a cat

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Abstract

Otodectic mange commonly known as ear mite infestation, is a highly contagious parasitic condition with recognized zoonotic significance. *Otodectes cynotis* is an obligate, non burrowing, surface dwelling ectoparasite that primarily inhabits the external auditory canal of cats, dogs and other carnivores, where it induces otitis externa. Among cats, infestation with *O. cynotis* is particularly common. An eight month old male cat was presented to the Small Animal Medicine Unit, Veterinary Clinical Complex, Veterinary College and Research Institute, Salem, with a history of severe pruritus, alopecia and crusty lesions involving the ear margins, face and limbs. The owners also reported pruritic skin lesions on their hands, suggesting zoonotic transmission. Clinical examination revealed that all vital parameters were within normal physiological limits. Dermatological evaluation showed coffee colored ceruminous discharge in both ears along with alopecia, scaling and crust formation over the ears and head. Microscopic examination of ear swabs and skin scrapings demonstrated the presence of ova and adult stages of *Otodectes cynotis*, along with *Neotrombiculus* species. Based on the clinical presentation and parasitological findings, the case was diagnosed as otodectic mange. Treatment consisted of topical application of selamectin (6%) as a spot on formulation, along with oral supplementation of a multivitamin tonic containing omega-3 and omega-6 fatty acids and amino acids. Marked clinical improvement was observed within three weeks of therapy and the cat made an uneventful recovery.

Keywords: Cerumen, *otodectes cynotis*, *neotrombiculus* sp., selamectin, skin scrapings

Introduction

Otodectic mange, commonly referred to as ear mite infestation or otocariasis, is a highly prevalent and contagious parasitic condition affecting carnivorous animals, particularly cats and dogs. The etiological agent, *Otodectes cynotis* (Acari: Psoroptidae), is an obligatory, non burrowing, surface dwelling mite that primarily colonizes the external auditory canal, although it may also be found on the surrounding skin in severe infestations. Infestation leads to irritation of the ear canal epithelium, cerumen overproduction and varying degrees of inflammation, resulting in clinical manifestations such as pruritus, head shaking, ear scratching, erythema and secondary bacterial or yeast otitis externa [1]. Persistent irritation may predispose affected animals to auricular hematoma and chronic otitis if left untreated.

Otodectes cynotis infects a wide range of carnivores, including cats, dogs, ferrets, foxes and other wild species. Among these, cats are considered the primary reservoir host, often harboring subclinical infections that facilitate transmission [2]. Suckling kittens and puppies are presumed to acquire infection predominantly through close contact with their dams and owing to the highly contagious nature of otocariasis, entire litters may become infested within a short period [3]. Despite its common occurrence in young animals, epidemiological studies have demonstrated no consistent association between otocariasis and age, sex, sexual activity or lifestyle in clinically normal cats, suggesting that infestation can occur irrespective of these factors [4].

In addition to *O. cynotis*, other ectoparasites such as *Neotrombicula autumnalis* (Acari: Trombiculidae), commonly known as harvest mites or chigger mites are of veterinary and zoonotic importance. *N. autumnalis* is regarded as one of the most frequent causative agents of trombiculiasis in both humans and animals. Of the various life stages, only the larval stage is parasitic, attaching to the host's skin and feeding on tissue fluids. Infestation typically occurs through exposure to outdoor environments, particularly grassy or scrubby areas and is characterized by intense pruritus, erythema, papules and crust formation at the site of attachment [5]. Coinfestation with multiple ectoparasites may exacerbate clinical severity and complicate diagnosis and management.

Management of otocariasis traditionally includes mechanical cleaning of the external auditory canal to remove cerumen and debris, followed by topical application of therapeutic agents containing acaricides. These formulations often include antibiotics and synthetic corticosteroids to address secondary microbial infections and inflammation [6, 7]. However, repeated ear handling and prolonged treatment regimens may reduce compliance, particularly in fractious cats. Consequently, systemically active macrocyclic lactones have gained widespread acceptance for the treatment of otocariasis due to their efficacy, safety and ease of administration.

Several acaricidal agents, including ivermectin, milbemycin oxime, imidacloprid, moxidectin and selamectin, have been employed successfully for the treatment of ear mite infestations. Among these, imidacloprid, moxidectin and selamectin have demonstrated superior efficacy and safety profiles against *O. cynotis* in cats and dogs [8]. Topical spot on formulations containing moxidectin or selamectin provide a convenient alternative to aural treatments, as they require less frequent administration and eliminate the need for direct ear canal manipulation [9, 10]. Furthermore, a recent systematic review of available literature recommends the use of selamectin spot on as an effective and reliable therapeutic option for the treatment of ear mite infestations in cats [11].

Environmental treatment of kennels and catteries has not been advocated, as current evidence suggests that transmission of *O. cynotis* occurs primarily through direct contact with infected animals rather than via fomites or environmental reservoirs. Therefore, prompt diagnosis and treatment of affected animals, along with treatment of in-contact pets, remain the cornerstone of effective control strategies.

An eight-month-old male domestic short-haired cat weighing 1 kg was presented to the Veterinary Clinical Complex, Veterinary College and Research Institute, Salem, for clinical evaluation and therapeutic management of dermatological and otic abnormalities. A detailed anamnesis and thorough physical examination were conducted at the time of presentation. The history revealed persistent head shaking and intense ear scratching for approximately one month, accompanied by progressive crust formation over the pinnae (Fig. 1), severe pruritus and alopecia (Fig. 2). The lesions were predominantly distributed over the ear margins, face and limbs (Fig. 3). In addition, the owner reported experiencing pruritic skin lesions on the hands, suggestive of possible zoonotic transmission.

General clinical examination revealed that the vital parameters, including rectal temperature, heart rate and respiratory rate, were within normal physiological limits. Otoscopic examination showed excessive accumulation of dark, coffee-colored cerumen in both external auditory canals. Dermatological examination confirmed the presence of alopecia, scaling, erythema and crust formation involving the head, ears and extremities.

For parasitological investigation, cerumen samples were collected from both ears using sterile cotton-tipped swabs and deep skin scrapings were obtained from the affected areas following standard procedures. The samples were processed and examined microscopically to detect the presence of ectoparasites, as described by Soulsby [12] and Urquhart *et al*. [13]. Microscopic examination revealed the presence of adult mites and ova consistent with *Otodectes cynotis* in the ear swab samples, along with the presence of larval stages of *Neotrombiculus* species in the skin scrapings. Based on the clinical presentation and parasitological findings, the case was diagnosed as otocariasis with concurrent neotrombiculosis.

Therapeutic management consisted of topical administration of selamectin spot-on formulation at a dosage of 6 mg/kg body weight, applied twice at an interval of 10 days. The owner was advised to present the animal for follow-up evaluation after three weeks. Prior to topical therapy, the external auditory canals were gently cleaned using a commercially available salicylic acid-based ear cleanser (Epi-Otic®) to remove cerumen and debris. Additionally, the owner was instructed to instill otic drops containing ofloxacin, clotrimazole, betamethasone and lignocaine (Pomisol®) three times daily for three consecutive days to control secondary bacterial and fungal infections and to alleviate inflammation and discomfort.

Fig. 1

Fig. 2

Fig. 3

Fig 4: Neotrombicuclus

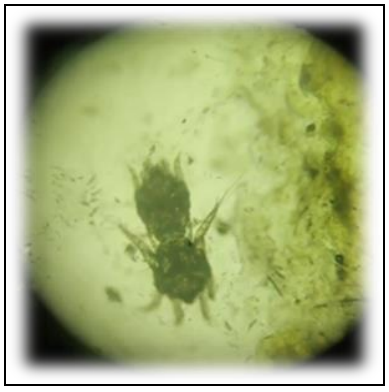

Fig 5: Otodectes cynotis

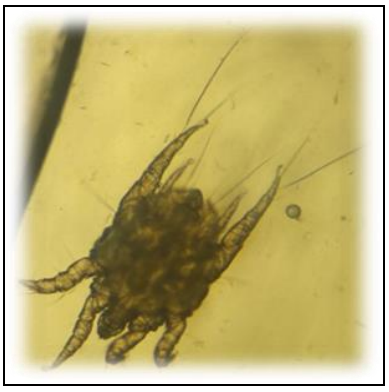

Fig 6: Otodectes cynotis

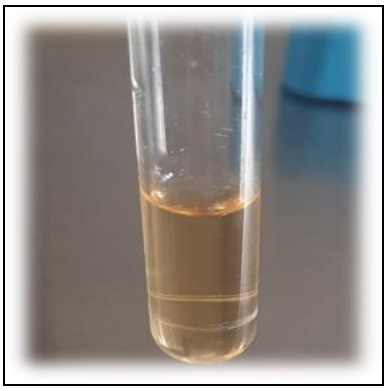

Fig 7: Eggs of Otodectes

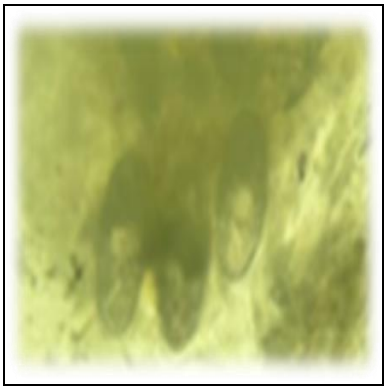

Fig 8: Before treatment

Fig 9: After treatment

Results And Discussion

Physical examination of the affected cat revealed marked excoriations, erythema, crusting and edema involving the ear pinnae and external auditory canals (Fig. 1). A characteristic foul-smelling, dark coffee-colored ceruminous discharge was observed loosely adherent to the surface of the ear canal. Manipulation of the ears elicited severe pain responses, indicating significant inflammation and irritation of the external auditory structures. These findings are characteristic of otocariasis and are commonly associated with intense pruritus and discomfort in affected animals.

Microscopic examination of ear cerumen confirmed the presence of adult mites and ova of *Otodectes cynotis* (Fig. 6,7), while skin scrapings from affected areas revealed the presence of *Neotrombiculus* species (Fig. 4). The diagnosis of *O. cynotis* (Fig. 5) infestation was based on distinct morphological features, including the presence of tarsal suckers on the first and second pairs of legs in adult females and on all four pairs of legs in adult males, as described by Soulsby [12]. Additionally, the identification was supported by the findings of Ahn *et al*. [14], who emphasized the diagnostic value of caruncles on the legs for species confirmation. The *Neotrombiculus* larvae were identified based on their orange to reddish coloration, oval body shape and hexapod morphology (three pairs of legs), which is consistent with earlier descriptions of trombiculid mites [5].

Clinically, the affected cat exhibited progressive improvement following initiation of treatment. Pruritus, pain and inflammatory signs markedly reduced within five days of therapy and the animal became active, alert and responsive. Complete resolution of exudation, irritation and discomfort was observed during the follow-up period, indicating successful therapeutic intervention (Fig.8,9). These clinical observations corroborate earlier reports describing rapid improvement following effective acaricidal therapy in feline otocariasis.

The present clinical findings, including intense pruritus, frequent head shaking and accumulation of coffee colored cerumen within the ear canal, are in agreement with those reported by Ramesh *et al*. [15], who documented similar manifestations in Persian cats affected with *O. cynotis*. Comparable observations were also reported by Ahaduzzaman [16] in a two-month-old Persian kitten with ear mite infestation, highlighting the consistency of clinical presentation across different age groups and breeds.

The successful management of otocariasis in the present case using topical selamectin further supports its established efficacy and safety profile. Selamectin, a macrocyclic lactone, acts systemically following topical administration and has been widely used for the treatment and prevention of ectoparasitic infestations in cats. Several studies have documented the effectiveness of selamectin against *O. cynotis* in naturally infested cats. Six *et al*. [9] reported complete elimination of ear mites following selamectin application, while Beck [17], Roy *et al*. [18] and Ozkan *et al*. [19] also observed high therapeutic success with minimal adverse effects. Blot *et al*. [20] evaluated the efficacy of selamectin in 30 cats infested with *O. cynotis* and reported 100% efficacy, emphasizing its superior safety and convenience compared to other acaricides.

Further supporting these findings, Kamalu *et al*. [21] demonstrated complete disappearance of mites and clinical signs in cats affected with otocariasis within 30 days of selamectin treatment. Alternative therapeutic agents have

also been investigated whereas doramectin was reported to be approximately 90% effective in treating feline otocariasis [22], while ivermectin has been shown to be highly efficacious in eliminating ear mite infestations in cats [23, 24, 25]. However, compared to injectable or repeated topical treatments, selamectin spot-on offers the advantage of ease of administration, improved owner compliance and reduced stress to the animal.

The concurrent detection of *Neotrombiculus* species in the present case highlights the importance of thorough parasitological examination in animals presenting with generalized pruritus and dermatological lesions. Coinfestation with multiple ectoparasites may exacerbate clinical signs and increase zoonotic risk, as evidenced by the pruritic lesions reported by the owner. Prompt diagnosis and appropriate treatment are therefore essential not only for animal welfare but also for public health considerations.

Conclusion

The present report documents a confirmed case of otocariasis caused by *Otodectes cynotis* with concurrent neotrombiculosis in a domestic short haired cat, highlighting the importance of thorough parasitological evaluation in animals presenting with ear infection and dermatological signs. Characteristic clinical manifestations, including severe pruritus, head shaking, coffee colored cerumen and crusted lesions, along with microscopic identification of mites and ova, facilitated prompt diagnosis. Topical administration of selamectin proved to be safe, effective and convenient, resulting in rapid clinical improvement and complete resolution of lesions. The successful outcome reinforces the utility of selamectin spot on as a preferred therapeutic option for feline otocariasis. Additionally, the zoonotic potential and the occurrence of coinfestation underscore the need for early diagnosis, appropriate treatment of affected animals and awareness among pet owners to minimize public health risks.

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