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Occurrence of mite infestation in cats

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Abstract
Skin diseases are relatively more common in cats. Studies indicate that 6-15 percent of feline patients have one or the other type of dermatopathy. Feline skin disorders become a diagnostic challenge because many skin diseases look alike in cats. Dermatologic diseases caused by mites are of prime importance in feline dermatology. Mites contribute to major parasitic etiology of dermatologic disorders in cats because of their prevalence and contagious nature. Young cats are vulnerable to severe mite infestations. This is because the immunity of cats towards mites develops with age. Mites can be treated by topical or systemic therapy or the combination of both. Prevention of mite infestation can be done with routine use of approved ectoparasiticides in cats.

Keywords: Feline, mite, skin disease, Notoedres, Sarcoptes and ectoparasitic

Introduction
Skin is a glorious organ. It is the largest and most visible organ of the body involved in many vital physiologic functions. On the contrary, skin is subjected to wide variety of physical, chemical and biological stresses, which could be manifested as dermatologic disorders (Lloyd and Patel, 2012) [5].

Despite the fact that dermatologic disorders in cats are common conditions, our understanding of skin diseases in cats have been growing slowly compared to dogs. Skin diseases in dogs are widely studied and very well documented unlike dermatologic disorders in cats wherein there is a paucity of literature. Skin disorders in cats are common source of discomfort and a major concern to owners as skin diseases decrease the living standards and aesthetic value of the cats. Feline skin disorders become a diagnostic challenge because many skin diseases look alike in cats. The dermatologic diseases in cats could be broadly categorized into parasitic, bacterial, fungal, viral and protozoal skin diseases, hypersensitivity disorders, autoimmune and immune mediated dermatoses, endocrine and metabolic diseases, congenital and hereditary defects, nutritional skin diseases, cutaneous neoplasms and miscellaneous skin diseases (Miller *et al*., 2013) [6]. Dermatologic diseases caused by mites are of prime importance in feline dermatology. Mite infestation enters into differential diagnosis of many skin conditions. The common mite infestations in cats are Otodectic mange, Notoedric mange, Sarcoptic mange, Demodecosis, Lynxacariasis and Cheyletiellosis.

Headings and Footnotes
Etiology, clinical signs and distribution of lesion in Mite infestation
Otodectes cynotis (Ear mite) was a non–burrowing mite lived on the skin surface. The life cycle of mite was twenty one days. Mite fed on epidermal debris and tissue fluid from superficial epidermis. Ear mites were prevalent in young animals and highly contagious in nature, all contact animals should be presumed to be infected because the mites were not host specific and treatment should be initiated. The continuous feeding of the mites on the epithelium of the ear canal caused irritation, resulted in filling of the ear canal with cerumen, blood and mite debris. This was the reason for the typical coffee ground appearance of otic discharge. Severe untreated cases had led to self-induced trauma, spasms and partial convulsions. Insertion of swab into ear canal had elicited pinna–pedal reflex. In most of the cases, mites were restricted to ear canal and resulted in "OTIC" symptomology; in few cases "ectopic" symptomology was also seen with the mites residing in neck, rump and tail.

Sarcoptes scabiei infestation in cats was rare and manifested with variable clinical presentation. Clinical signs of scabies included dermatitis involving ear margins of pinna and face, generalized pruritus, scales, crusts and severe pododermatitis.

Feline scabies caused by *Notoedric cati* had shown typical clinical distribution, lesions were first appeared at the pinna of the ear. Then lesions had spread at faster rate to the upper ear, face, eyelids and neck. Lesions also extended to the feet and perineum due to curled up position of sleeping in cats. These patterns of distribution of lesions with intense pruritus were highly suggestive of *N. cati* infestation.

Lynxacarus radovskyi (Cat fur mite) were found on the hair shafts as ectoparasites. On clinical examination, dry and lusterless hair coat, alopecia around eyes and on ears along with a "salt and peppered" appearance on hair coat.

Demodecosis caused by *D. Gatoi* was a superficial mite inhabited in stratum corneum and was contagious in nature. The clinical presentation of the disease was traumatic alopecia on the lateral thorax, ventral and lateral abdomen, and medial aspects of all the four limbs.

Materials and Methods

Otoscopic and ear swab examinations were carried out to find ear mites. Superficial skin scrapings were taken to find *Sarcoptes*, *Notoedres* and *Demodex spp*. mites. Acetate tape impression smear technique was used to find superficial ectoparasites cat fur mites.

Clinical signs of Mite infestation

Fig 1: Dark brown OTIC discharge in Otodectic mange

Fig 2: Crusty lesion in feet in notoedric mange

Fig 3: Crusty papular dermatitis in sarcoptic mange

Fig 4: Salt and pepper appearance on hair coat

Fig 5: Salt and peppered appearance on hair coat Traumatic alopecia in ventral abdomen

Results

A total of 600 feline medical consultations were recorded in the duration of ten months out of which 160 (26.6 percent) cases were presented with dermatologic complaint. Out of 160 total dermatologic consultations of cats, 147 (91.87 percent) were recognized as parasitic dermatitis. Out of 147 cases of parasitic dermatitis, 95 (64.62 percent) cases were due to mites. Among 95 cases of mites, 14 (14.13 percent) were due to *Notoedres cati*, seven (7.36 percent) were caused by *Sarcoptes scabiei var canis*, two (2.10 percent) were due to *Demodex gatoi*, 16 (16.84 percent) were caused by

Lynxacarus radovskyi (fur mite) and 56 (69.47 percent) were due to *Otodectes cynotis* (ear mite). Diagnosis was done by skin scrapings examination, acetate tape impression method, ear swab examination and otoscope. Live ear mites were detected under otoscope.

Fig 6: Otoscopic examination

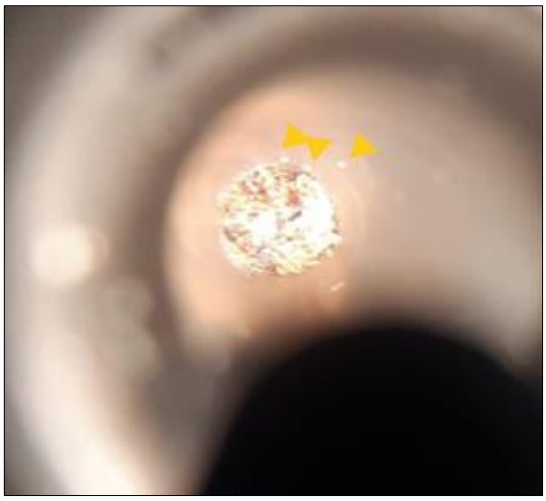

Fig 7: Live ear mites under Otoscope

Microphotograph of etiologies of Mite infestation

Fig 8: *Otodectes cynotis (10 X)*

Fig 9: *Lynxacarus radovskyi (10 X)*

Fig 10: *Otodectes cynotis (10 X)*

Fig 11: *Notoedres cati* (10 X)

Fig 12: *Demodex gatoi (10 X)*

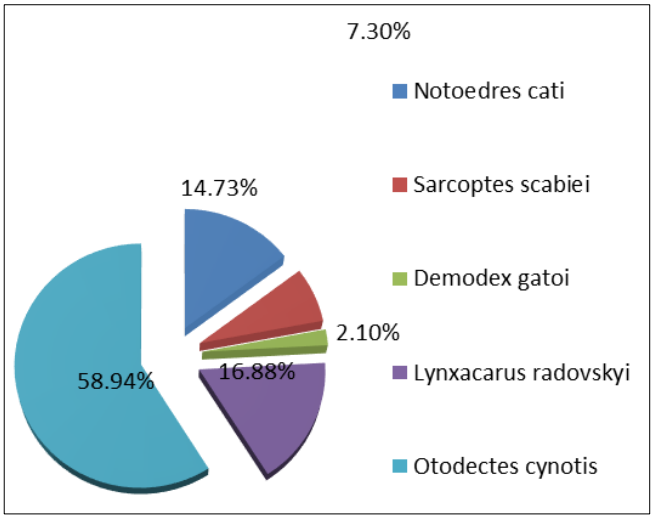

Fig 13: Species of mites recognized in mites

Distribution of lesions in mite infestation

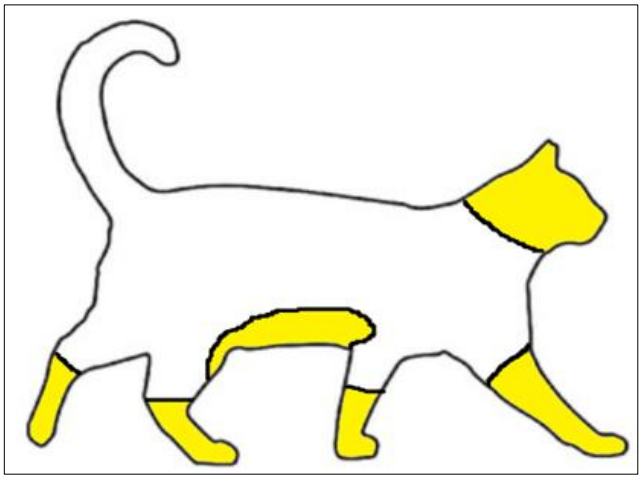

Fig 14: Notoedric mange

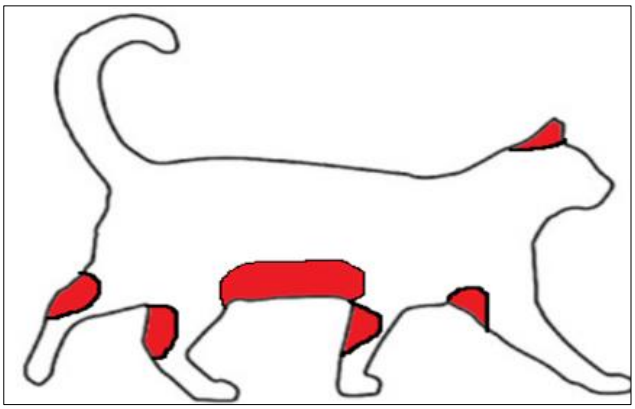

Fig 15: Sarcoptic mange

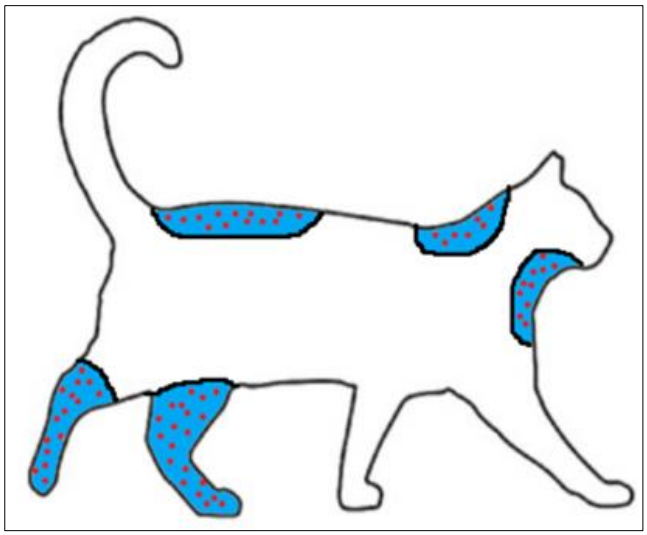

Fig 16: *Lynxacarus* infestation

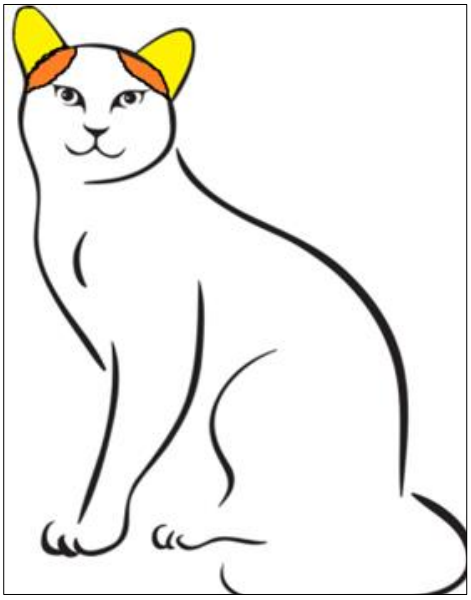

Fig 17: Otodectic mange

Treatment

Ivermectin was used as an OTIC formulation and proved to be effective in treatment of otodectic mange. Spot on preparations of selamectin or fipronil were effective in treating ectopic *O. Cynotis* infestation. Treatment with any one of the agents like, two percent lime sulphur dips or spot-

on preparation with selamectin @ 6-12 mg/kg or fipronil sprays @ 3 ml/kg or ivermectin @ 0.2-0.4 mg/kg twice at 14 days intervals subcutaneously or orally three times at seven days intervals were proven efficacious in elimination of canine scabies, feline scabies, Cheyletiellosis and Demodecosis infestation in cats.

Discussion

High occurrence of parasitic dermatitis in this study was in agreement with the study of Scott and Paradis (1990) [11] and Hill *et al.* (2006) [1]. The authors stated that in cats, frequency of occurrence of parasitic dermatitis was more common when compared to any other dermatoses. This might be due to lack of awareness among the cat owners regarding the periodic ectoparasite control measures and highly contagious nature of the ectoparasites. Skin scraping examination is much effective and less difficult test for diagnosis of mange infestation in cats. Otoscopic and ear swab examinations are more sensitive for the identification of ear mites in cats. Proper diagnosis and prompt treatment is warranted as the mite infestations in cats are very contagious and some diseases are of zoonotic importance. Periodic application of safe and approved acaricide helps to prevent the mange in cats.

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