

OTODECTOSIS IN CATS

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Otodectes cynotis is a mite of the family Psoroptidae, which lives predominantly in the external ear canal and occasionally on the adjacent skin of the head in dogs, cats, foxes, ferrets, and even humans. It is a non-burrowing surface-living mite that feeds on tissue fluid and debris. Infestation of the mite results in pruritic symptoms and otitis externa which is characterized by ear canal erythema and the presence of dark brown, ceruminous otic exudate^[1].

Life Cycle

Female *O.cynotis* mites cement developing eggs to the epidermal lining of the ear canal; larvae hatch in a few days and molt through 2 nymphal stages to the next generation of adults. Ear mites feed on epithelial cells, exudate, and tissue fluid but do not burrow. The entire life cycle takes less than 3 weeks. Infestation follows direct contact and commonly occurs from dam to offspring in the neonatal period. Although documented, off-host mite survival is considered limited.



Morphology

Adult *O.cynotis* are large mites; at approximately 400 μm, females may be visible without magnification. When examined by microscopy, mites are usually active and a large, single egg is often present within females. The first 2 pairs of legs of the female end in caruncles (suckers) attached to very short stalks; the fourth pair of legs on the female is vestigial. Males are slightly smaller than females and have distinct copulatory structures on the ventral surface. All legs on male *O.cynotis* end in suckers attached to short stalks.

Epidemiology

Prevalence estimates vary widely based on the population examined and the sensitivity of the diagnostic method used. A survey of pet cats from 7 European countries found ear mites were the most common ectoparasite, present in 17,4% of cats, and more commonly recovered from cats than fleas. In a survey in northern Italy, over half of the free-roaming cats examined had clinical evidence of otitis externa and *O.cynotis* was found in the majority. Infested animals with asymptomatic infestations serve as important reservoirs.

In general, ear mites are most common in young, free-roaming cats and dogs and in pets with outdoor access, although as many as 25% of pet cats and 6,7% of pet dogs are infested. Although mites are most commonly identified in kittens, age-related differences in ear mite prevalence are not consistent and adult cats are frequently infested. Similarly, breed, sex, and age have not been associated with increased infestation prevalence in dogs. Ferrets and wild canids, especially foxes, are commonly infested.

Transmission

Because mite survival off-host is limited, direct contact with an infested animal is the most likely mode of transmission. Mites are transmitted among all age classes and between infested dams and nursing young. Transmission between cats, dogs, and ferrets is also possible. As many as 10% of cats harbor subclinical infestations, serving as a source for future infestations. *O.cynotis* does not pose a major zoonotic risk; however, reports of human infestations exist, as do cases of dermatitis following close contact with an infested animal^[2].

Disease

Otodectes cynotis infests the external acoustic meatus of domestic and wild cats, dogs, and occasionally ruminants. The main route of infestation is from dam to offspring. Other routes of spread include contaminated combs, brushes, bedding, or other grooming accessories. They are nonburrowing and feed on the cerumen, keratin, and lipids. These mites are a prominent primary cause of otitis externa with up to 50% of cats and 10% of dogs developing otitis externa. They cause intense irritation by mechanisms not well understood. Copious cerumen production ensues until a thick, waxy, dark brown otorrhea (exudate) obstructs the external acoustic meatus. Auricles are often alopecic and have «scratching» wounds from trauma that form in response to intense pruritus. These areas may also become infected secondarily with bacteria. The epidermis becomes acanthotic with parakeratotic hyperkeratosis and crusts that contain mites and mite detritus mixed with cerumen. Small to moderate numbers of lymphocytes and macrophages infiltrate the dermis and subcutis. Ceruminous glands are typically hypertrophied and hyperplastic and may contain cellular debris and neutrophils.

Although a majority of cats are infested, a minority manifest clinical disease, possibly owing to early exposure as kittens and the development of Arthus- and immediate-type hypersensitivity reactions^[4].

Clinical Signs

Animals with *O.cynotis* infestations present clinically normal or with otic pruritus that is usually bilateral. Magnitude of clinical signs appears to be independent of the number of mites. Cats may have significant infestations with minimal pruritus, whereas dogs are more likely to be pruritic. Symptomatic animals display varying degrees of irritation and pruritus associated with head shaking, head tilt, and circling; a pinna-pedal reflex can be elicited when the infested ear canal is massaged.

A dark, «coffee ground» otic discharge is a classic presentation, although the color and consistency vary, and some infested cats have scant cerumen. Severely infested animals or those with hypersensitivity reactions can present with self-excoriation and dermal trauma. Hematomas and secondary infections are not uncommon. Less common clinical presentations include miliary dermatitis of the head, feet, or tail due to ectopic mites. Left untreated, infested animals, particularly cats, may become emaciated or develop neurologic signs.

Ear mites are a common cause of otitis externa, with as many as 85% of feline cases and 50% of canine cases reportedly associated with *O.cynotis* infestation. Additionally, chronic, uncontrolled *O.cynotis* infestation and the resultant ceruminous gland hyperplasia have been linked with development of ceruminous gland tumors in some animals. A diffuse hypersensitivity reaction resembling flea allergy dermatitis, in which pets present with widespread pruritus, excessive grooming, and alopecia, has been described as associated with ectopic ear mites in some patients.

Pathology of *O.cynotis* infestation develops from inflammation caused by mite feeding and includes accumulation of moderate to excessive dark brown ceruminous exudate. Some

infested pets display minimal pathology even though the presence of mites is confirmed. When pathologic changes are present, the epithelium of the ear canal is usually erythematous, hyperplastic, and hyperkeratotic. Histopathologic examination shows hyperplastic sebaceous and ceruminous glands, dilated blood vessels, and macrophage and mast cell infiltrates. When treatment is delayed, secondary bacterial and fungal infections can develop; *Staphylococcus* and *Malassezia* species are most commonly identified^[2].

Diagnosis

The mites can be recognized on otoscopic examination by observing movement. Another means of diagnosis is to swab the ear with a cotton tipped applicator and to place the swab in a glass vial serum vial with a small drop of water. After about an hour, the mites will begin to migrate out of the cerumen and detritus and can be observed walking on the walls of the glass vial or on the applicator stick. Smearing the ear swab onto a glass slide and examining under 400 X magnification usually reveals the mites also^[5].

Treatment

The products approved for the treatment of ear mites in cats in the United States of America include pyrethrin containing compounds (Otomite Allerder/Virbac, Nolvamite® Fort Dodge; Eradimite® Solvay; Aurimite® Schering Plough) and rotenone containine compounds (Ear Miticide Phonenix; Ear Mite Lotion Durvet; Ear Miticide Vedco). Also, Otomax, a mineral-oil based otic ointment gontaining gentamicin sultate, betamethasone valerate, and clotrimazile, has been shown to have some apparent effect against ear mites in cats (Pappas and Katz, 1995). As part of a trial testing the efficacy of another mineral-oil based compound, one of the authors (Bowman) used 2 ml of mineral oil and 30 seconds of external massage of the base of the ear in the control cats, and found that after two treatments one week apart, there were no mites found in any of the control cats three-weeks after the second treatment. This large volume of mineral oil tended to leak from the ear, and the hair on the head of the cat would appear oiled for the first day or so after treatment^[5].

Control and prevention: It is very important that all susceptible animals be treated if a case of otodectic mange is diagnosed in a household. Animals with clean ears containing no detritus can harbor mites, and thus, even if no signs of infestation are present it is important that the animal be treated. When very heavy levels of infestation are present, it may be warranted to try and bathe the infected animals, especially in those cases where topical treatment methods are employed^[5].

References:

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