



Short communication

Prevalence and intensity of *Otodectes cynotis* in kittens from Thessaloniki area, GreeceM.A. Lefkaditis^a, S.E. Koukeri^b, A.D. Mihalca^{c,*}^aLaboratory of Parasitology, University of Thessaly, Veterinary Faculty, PO Box 199, Karditsa 43100, Greece^bVeterinary Clinic, Delfon 111, Thessaloniki 54644, Greece^cFaculty of Veterinary Medicine, Department of Parasitology and Parasitic Diseases, USAMV Cluj, Calea Mănăştur 3-5, Cluj-Napoca 400372, Romania

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ABSTRACT

From May 2007 to May 2008 we have examined by otoscopy a total number of 214 cats, aged between 0 and 6 months, brought in for their first veterinary examination to a private veterinary clinic. All cats were of urban origin. In all positive cats we performed a washing of the ear using warm paraffin oil in order to determine intensity of infection. Statistical analysis was performed using the Chi-square test. A total number of 30 cats were found to be infected with *Otodectes cynotis* (prevalence 14.02%). Prevalence of infection was significantly ($p < 0.05$) higher in cats aged between 3 and 6 months (17.58%) than in cats aged below 3 months (11.38). Intensity of infection ranged between 7 and 85 (mean intensity 35.60) mites per infected cat. The same age group of cats between 3 and 6 months had significantly ($p < 0.05$) higher mean intensity (47.19) compared to cats aged under 3 months (22.36). No statistical significance was found between males and females for neither prevalence nor intensity. Differences and similarities with other studies are discussed.

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1. Introduction

Otodectes cynotis (Hering, 1838) Canestrini, 1894, also known as ear mite or ear canker mite, occurs worldwide in the external auditory canal of dogs, foxes, cats, ferrets and other carnivores (Wilson and Zarnke, 1985; Wall and Shearer, 2001). Occasional notes report this species also in insectivores, ruminants (Sweatman, 1958) and even humans (Van de Heyning and Thienpont, 1977). All developmental stages are found on the surface of the external ear canal, without being buried in the skin. It feeds on desquamated epithelial cells and aural exudates but occasionally, the mites pierce the skin to feed on blood, serum or lymph (Mullen and Oconnor, 2002). Clinical importance of *O. cynotis* in pets is very high, as it is estimated that 50% of otitis externa cases in dogs and 85%

of cases in cats are caused by this mite (Wall and Shearer, 2001). While reviewing the literature on *Otodectes* infestations in cats, we noticed that most papers deal with clinical or therapeutic aspects, while epidemiological data are scarce. There are few reports on the epidemiology of *Otodectes* in cats, most of them from USA and a recent one from Greece, focused on adult cats (Sotiraki et al., 2001). The present communication is intended to reveal descriptive epidemiological aspects of *Otodectes* parasitism in kittens from Greece.

2. Materials and methods

From May 2007 to May 2008 we have examined a total number of 214 cats, aged between 0 and 6 months, all from the urban area of Thessaloniki, Greece. All kittens were brought in for their first veterinary examination to a private small animal clinic from Thessaloniki with no signs of otitis externa reported by the owner. All cats were examined using an otoscope in order to identify the

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Table 1
Prevalence of *O. cynotis* infection in kittens.

	Total	Males	Females	0–3 months	3–6 month
Examined	214	96	118	123	91
Positive (%)	30 (14.0)	14 (14.6)	16 (13.6)	14 (11.4)	16 (17.6)
Intensity range (mean intensity)	7–85 (35.6)	8–70 (39.2)	7–85 (32.4)	5–51 (22.4)	8–85 (47.2)

presence of *Otodectes* in the ear canal. In all positive cats we performed multiple washings of the ear using warm paraffin oil. For this purpose, using a 5-cm³ syringe, we introduced the paraffin oil into the ear canal and all debris was collected into a Petri dish. This washing was subsequently examined using a binocular microscope, and all whole mites were counted in order to determine the intensity of parasitism. Mites were morphologically identified using the key provided by Cosoroabă (2000). Statistical analysis of data was performed using the Chi-square test.

3. Results and discussions

Out of the 214 kittens examined, 30 were found to be infected (14.02%) with *O. cynotis*. Prevalence distribution by sex and age is shown in Table 1. Intensity of infection ranged between 7 and 85 mites per infected cat. Variation of intensity by age and sex category is shown in Table 1. Statistical difference ($p < 0.05$) was found for both prevalence and intensity only between the two age groups. No statistical significance was found between males and females.

Lack of descriptive epidemiology of *O. cynotis* infection in cats was also noted by other authors (Souza et al., 2008). According to our studies and others, *O. cynotis* can be considered a prevalent parasite in domestic cats in temperate regions. In Southern Europe, Sotiraki et al. (2001) report a prevalence of 25.5% in adult cats from Greece. Akucewich et al. (2002) found a prevalence of 22.5% in Florida, USA. A prevalence of 33% was found in Oklahoma, USA, by Tonn (1961). In Canada, in an extensive study done in Ontario, more than 50% of the ectoparasitic infections in cats were *Otodectes* (Slocombe, 1973). In Australia, Coman et al. (1981) found a prevalence of less than 1% in feral cats while in other tropical regions reports are occasional (Irwin and Traub, 2006).

According to the present study, in young cats, statistical analysis shown that the most affected age seems to be between 3 and 6 months, as this group had significantly

higher prevalence and intensity compared to new born cats. It was shown that development of clinical signs reflects allergic hypersensitivity on the part of the host to antigenic substances introduced while the mites are feeding. This can lead to highly variable responses ranging from asymptomatic or mild cases to severe otitis. Sotiraki et al. (2001) showed that cats with mild-to-moderate degree of infestation had higher chance of exhibiting an ear discharge than those with a severe infestation. Regarding age predisposition, the same authors found that the odds of mild-to-moderate parasitism were linearly related to the age (Sotiraki et al., 2001).

References

- Akucewich, L.H., Philman, K., Clark, A., Gillespie, J., Kunkle, G., Nicklin, C.F., Greiner, E.C., 2002. Prevalence of ectoparasites in a population of feral cats from north central Florida during the summer. *Vet. Parasitol.* 109, 129–139.
- Coman, B.J., Jones, E.H., Driesen, M.A., 1981. Helminth parasites and arthropods of feral cats. *Aust. Vet. J.* 57, 324–327.
- Cosoroabă, I., 2000. Parazitologie veterinară: acarioze, antomooze. Editura Mirton, Timișoara, p. 645.
- Irwin, P., Traub, R., 2006. Parasitic diseases of cats and dogs in the tropics. *CAB Rev.: Perspect. Agric. Vet. Sci. Nutr. Nat. Resour.* 10, 1–18.
- Mullen, G.R., Oconnor, B.M., 2002. Mites (Acari). In: Mullen, G., Durden, L. (Eds.), *Medical and Veterinary Entomology*. Academic Press, pp. 449–516.
- Slocombe, J.O.D., 1973. Parasitism in domesticated animals in Ontario. 1. Ontario Veterinary College Records 1965–70. *Can. Vet. J.* 14, 36–42.
- Souza, C.P., Ramadinho, R.R., Scott, F.B., Pereira, M.J.S., 2008. Factors associated with the prevalence of *Otodectes cynotis* in an ambulatory population of dogs. *Pesq. Vet. Bras.* 28, 375–378.
- Sotiraki, S.T., Koutinas, A.F., Leontides, L.S., Adamama-Moraitou, K.K., Himonas, C.A., 2001. Factors affecting the frequency of ear canal and face infestation by *Otodectes cynotis* in the cat. *Vet. Parasitol.* 96, 309–315.
- Sweatman, G.K., 1958. Biology of *Otodectes cynotis*, the ear canker mite of carnivores. *Can. J. Zool.* 36, 849–862.
- Tonn, R.J., 1961. Studies on the ear mite *Otodectes cynotis*, including life cycle. *Ann. Entomol. Soc. Am.* 54, 416–421.
- Van de Heyning, J., Thienpont, D., 1977. Otitis externa in man caused by the mite *Otodectes cynotis*. *Laryngoscope* 87, 1938–1941.
- Wall, R., Shearer, D. (Eds.), 2001. *Veterinary Ectoparasites: Biology, Pathology and Control*. 2nd edition. Blackwell Science, Iowa State University Press, p. 262.
- Wilson, N., Zarnke, R.L., 1985. Occurrence of the ear canker mite, *Otodectes cynotis* (Hering), on the Wolverine *Gulo gulo* (L.). *J. Wildl. Dis.* 21, 180.