STUDY CONCERNING ECTOPARASITES INFESTATION IN DOGS AND CATS IN THE TÂRGOVIŞTE-DÂMBOVIŢA AREA

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Abstract

The objective of this study was to determine the prevalence of ectoparasites infestation in dogs and cats, and their type in the Târgovişte-Dâmboviţa area. In the period September 2011 - September 2012, 685 dogs and 180 cats were examined. A prevalence of ectoparasites from 52.41% to 51.67% in dogs and cats was identified. The following species of ectoparasites were identified in dogs: Ctenocephalides canis – 33.71%, Ctenocefalides felis – 7.24%, Rhipicephalus sanguineus – 24.51%, Dermacentor reticulatus – 11.42%, Trichodectes canis – 16.99%, Demodex canis – 7.52%, Sarcoptes scabiei var canis – 4.18%. While the following species of ectoparasites were identified in cats: C. felis – 88.17 %, Otodectes cynotis – 12.90%, Rh. sanguineus – 6.45%, Felicola subrostratus - 2.15%, Microsporum canis – 2.15%. It was found that 5.57% of patients had multiple infestations in dogs, and in cats 12.90%. To our knowledge, this is the first report on infestation with Rh. sanguineus in cat in the Târgovişte-Dâmboviţa area.

Key words: *cats, dogs, ectoparasites, infestation, prevalence*

INTRODUCTION

Dogs and cats are important hosts for many species of ectoparasites that can produce a wide range of pathogenic effects. Ectoparasites are a common cause of skin diseases in domestic animals (Curtis, 2012). Some ectoparasites, after feeding by stinging, cause skin lesions accompanied by pruritus, erythema, excoriation, papules and crusts (Wall, 2007). Fleas are a common cause reported in the etiology of dermatitis, being responsible for producing allergic dermatitis (Sousa, 2012). Mange is incriminated in producing localized or generalized dermatitis, some being strongly infectious (canine sarcoptic mange). Secondly, some ectoparasites act as vectors, so when they feed, they can inoculate to the (animal or human) various bacterial, viral or parasitic agents (Cosoroabă, 2005). Ticks are responsible for the transmission of infectious (borreliosis, rickettsiosis, babesiosis) (Shaw, 2008) or parasitic (*Cercopithifilaria sp.*) diseases (Brianti et al., 2012).

Due to the low specificity and to the increased mobility they can easily go from one species to another, so that some parasites found in animals can pass to humans, causing serious diseases (Niculescu and Didă, 1998).
In this study we aimed to determine the prevalence of ectoparasites infestation in dogs and cats and their type, at a private clinic in the city of Târgoviste, Dâmboviţa County.

MATERIALS AND METHODS

During the period September 2011 - September 2012 in the Agervet Clinic - Târgovişte a total number of 685 dogs and 180 cats aged 4 weeks to 12 years were examined. Information on the breed, age, gender, diet and place of origin were obtained by interviewing the owners. Part of the animals were found in the streets and brought to examination, making it difficult to obtain such information. Each animal was examined systematically all the body areas, in order to detect and analyse ectoparasites, or skin lesions respectively. For the collection of fleas and lice the Scotch test was used, ticks were collected by hand, and when skin lesions were found scraping was used. For the ear mange cotton sticks were used. The samples obtained were displayed on blades, clarified with a lactofenol solution and examined under a microscope. The identification of ectoparasites was conducted based on the descriptions provided by Niculescu and Didă (1998).

RESULTS AND DISCUSSIONS

Following the clinical and microscopic examination it was found that 359 (52.41%) dogs and 93 (51.67%) cats were positive. We found two species of fleas in dogs, represented by *Ctenocephalides canis* and *Ctenocefalides felis* (Figure 1 and 2), two species of ticks - *Rhipicephalus sanguineus* (Figure 3) and *Dermacentor reticulatus* (Figure 4), a species of louse - *Trichodectes canis* (Figure 5), two species of scabies – *Demodex canis* and *Sarcoptes scabiei var canis*. The following species of ectoparasites were identified in cats: one species of fleas – *C. felis*, one species of scabies – *Otodectes cynotis*, one species of ticks – *Rh. sanguineus*, one species of lice – *Felicola subrostratus* (Figure 6), one species of fungus – *Microsporum canis*. The prevalence of the ectoparasitic infestation in dogs and cats is presented in Table 1.

Figure 1 – Cat flea

Figure 2 – *Ctenocephalides felis*

Figure 3 – *Rhipicephalus sanguineus* female after feeding

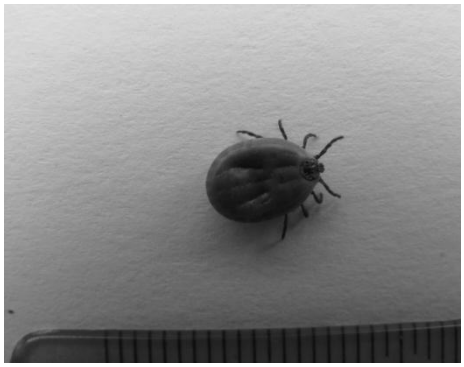

Figure 4 – *Dermacentor marginatus* female after feeding

Figure 5 – *Trichodectes canis* larve *(x20)*

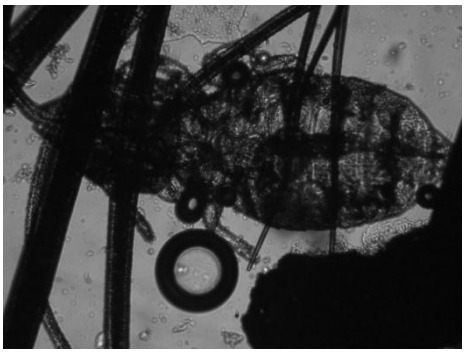

Figure 6 – *Felicola subrostratus (x20*)

Table 1

Prevalence of the ectoparasitic infestation in dogs and cats

	Dogs (n = 359)		Cats (n = 93)	
	Number	Prevalence %	Number	Prevalence %
C. canis	121	33.71	-	-
C. felis	26	7.24	82	88.17
Total fleas	147	40.95	82	88.17
Rh. sanguineus	88	24.51	6	6.45
D. reticulatus	41	11.42	-	-
Total ticks	129	35.93	6	6.45
T. canis	61	16,99	-	-
F. subrostratus	-	-	2	2.15
Total lice	61	16,99	2	2.15
D. canis	27	7.52	-	-
S. scabiei	15	4.18	-	-
O. cynotis	-	-	12	12.90
Total mange	42	11.70	12	12.90
M. canis	-	-	2	2.15

In dogs we have identified 20 (5.57%) cases of polyparasitism, out of which: 11 cases - fleas + ticks and 8 cases - fleas + scabies, 1 case - fleas + lice + scabies. In cats we have identified 12 (12.90%) cases of polyparasitism, out of which: 7 cases – fleas + mange, 4 cases - fleas + ticks, 1 case – fleas + lice.

The distribution according to the age of the animals found positive following the clinical and microscopic examinations are presented in Table 2.

Table 2

Prevalence of the ectoparasitic infestation according to the age of dogs and cats

	< 3 months	3 – 6 months	6–12 months	1- 3 years	3 - 6 years	> 6 years
	No. (Prevalence %)	No. (Prevalence %)	No. (Prevalence %)	No. (Prevalence %)	No. (Prevalence %)	No. (Prevalence %)
Dogs (n = 359)	154 (42.89)	82 (22.84)	63 (17.55)	27 (7.52)	15 (4.18)	18 (5.01)
Cats (n = 93)	23 (24.73)	18 (19.35)	19 (20.43)	13 (13.98)	15 (16.13)	5 (5.38)

In the present study, in the dogs and cats examined in the Agervet-Târgovişte Clinic, 9 species of ectoparasitic arthropods (7 species in dogs and 4 species in cats) and one species of fungi were identified, thus we determined a prevalence of the ectoparasitic infestation of 52.41% in dogs and 51.67% in cats respectively. The presence of ectoparasites in more than half of the number of animals examined in both species indicate the

existence of health problem for them and is a major risk of infestation for their owners and for other animals. Studies conducted in various parts of the world have shown the presence of a large variety of ectoparasitic species in dogs and cats, recording a different prevalence. This aspect may be due to differences in the geo-climatic and epidemiological factors. Thus, in Albania, Xhaxhiu et al. (2009) determined a prevalence of the ectoparasitic infestation of 79% in dogs, identifying 9 species of arthropods, respectively a prevalence of 100% in cats, identifying one species of ectoparasites (*C. felis*). In Ethiopia, Kumsa and Mekonnen (2011) identified a prevalence of 99.5% in dogs, identifying 6 species of parasitic arthropods, and respectively a prevalence of 91.5% in cats, identifying 3 species of ectoparasitic arthropods. In Iran, Bahrami et al. (2012) determined a prevalence of the ectoparasitic infestation of 44.26% in dogs, identifying 7 species of ectoparasites, respectively a prevalence of 58% in cats, identifying 3 species of ectoparasites.

Fleas have the highest prevalence in this study, both in dogs and in cats, 40.95% and 88.17% respectively. These results are similar to previous reports in Turkey (Aldemir, 2007), Thailand (Jittapalapong et al., 2008), Albania (Xhaxhiu et al., 2009), Iran (Bahrami et al., 2012). Farcas et al. (2009) in Hungary, obtained a 14.1% prevalence of fleas in dogs and 22.9% in cats. In Romania, previous studies have reported a prevalence of 45.52% of the infestation with *C. canis* in dogs, which is the main ectoparasites species identified (Tudor, 2009). In this study, two species were identified in dogs, *C. canis* and *C. felis*, and in cats only the latter species was identified. In another study, Borji et al. (2011) identified one species of cat fleas, represented by *C. felis*. In Pakistan, Arijo et al. (2007) identified the presence of the species *C felis* both in dogs and in cats, with a prevalence of 34%, respectively 28%. Beck et al., (2006) determines a prevalence of the infestation with fleas of 5.13% in dogs and 14.33% in cats, identifying 5 species out of which *C. felis* had the highest prevalence, 81.5% respectively. Flea infestation of animals and of their environment is frequently seen. The high prevalence of this ectoparasite is a serious problem for practitioners. Firstly, because they cause discomfort the hosts by stinging, causing allergic reactions and itching. Secondly, they are also a vector for numerous parasitic and microbial agents with medical veterinary and human importance, among which *D. caninum*, the cat scratch disease (*Bartonella sp.*) and the spotted fever rickettsial species (*Rickettsia felis*) (Shaw, 2008).

Ticks were ranked second in frequency of ectoparasites in both species of animals, with an overall prevalence of 35.93%, which is represented by two

species in dogs, i.e. *Rh. sanguineus* (24.15%) and *D. reticulatum* (11.42%). Only one species was identified in cats, i.e. *Rh sanguineus*, 6.45%. Similar results were also reported by Aldemir (2007) in Turkey and Xhaxhiu et al. (2009) in Albania, who nevertheless does not identify ticks on cats. On the other hand, in Nigeria, Adamu et al. (2012) identified ticks as the main species of ectoparasites in dogs, with a prevalence of 47%, and *Rh. sanguineus* was predominant (24.3%). In France, Zenner and Drevon (2003) reported the identification of three species of ticks in dogs (*Ixodes ricinus*, *D. reticulatus* and *Rh. sanguineus*) and 2 species in cats, i.e. *I. ricinus* (97.2%) and *Rh. sanguineus* (2.8%), due to the presence in that region of the three species of ticks, the species *I. ricinus* being predominant. To our knowledge, this is the first report on the infestation with *Rh. sanguineus* in cats in the Dâmboviţa County. Previous studies carried out on dogs in this area showed the prevalence of the species *Rh. sanguineus* compared with the species *D. reticulatus* (Mateescu et al., 2011). Ticks are spread across the continent and occur in large numbers, especially in areas with vegetation, such as forest edges but also in the urban environment, i.e. in parks and gardens. They are responsible for transmitting babesiosis to animals, which is why they require paying increased attention to this ectoparasite. Moreover, ticks are responsible for transmitting certain diseases to humans, which have recorded increased values lately.

Lice were the third ectoparasitic species in terms of frequency in dog and the fourth in cats, with values of 16.99% and 2.15% respectively. Low levels of lice infestations have been reported in previous other (Gonzalez et al., 2004; Jittapalapong et al., 2008; Chee et al., 2008). On the other hand, Mosallanejad et al. (2011) reported lice as the main species of ectoparasites in dogs, with a prevalence of 8.73%. These differences can be explained by the geographical differences, the animal population studied, the time dedicated to the study. Lice cause discomfort and dermatitis to the infested animals, but can also be a host for the tapeworm *D. caninum* (Niculescu and Didă, 1998). The low prevalence of these ectoparasites compared to the other species may be the result of applying preventive treatment against fleas.

Mange reported low values in both species. While two species were identified in dogs, *D. canis* (7.52%) and *S. scabiei var canis* (4.18%) respectively, while only one species was diagnosed in cats, i.e. *O. cynotis* (12.90%). Significantly lower values of scabies infestations have been reported in several previous studies (Aldemir, 2007; Xhaxhiu et al., 2009; Duarte et al., 2010; Bahrami et al., 2012). On the other hand, Chee et al.

(2008) that the most common species of scabies found in dogs is *O. cynotis* (22.3%), followed by *S. scabiei var canis* (19.4%) and *D. canis* (4.9%). Ali et al. (2011) determined a prevalence of scabies infestation of 62.5% in dogs, noting that the most frequent species was *S. scabiei var canis* with 50%, followed by *D. canis* with 35.4%. Jamshidi et al. (2010) au determined a prevalence of scabies infestation of 25.9%, the species *S. scabiei var canis* being the most frequently found, with 21%, followed by *O. cynotis* (2.8%) and *D. canis* (2.1%).

The fungal infestation showed low values, being found only in cats (2.15%). Unlike our results, Mancianti et al. (2002) diagnosed dermatophytes in 18.7% and 24.7% of the examined dogs, and cats respectively, and *M. canis* was the most frequent species, 83% and 97% respectively. Cafarchia et al. (2006) found the presence of dermatophytes in 20.5% dogs and 28.2% cats. Duarte et al. (2010) identified 4 species of dermatophytes in cats, determining a prevalence of 29.4%, while *M. canis* was the most frequent species (12.5%). Tel and Akan (2008) identified the presence of dermatophytes in 7.5% of the examined dogs, and in 42% of the cats. Previous studies have reported an increased occurrence of the infection with *M. canis* in European countries, especially in the Mediterranean ones (Lunder, 1992). Dermatophytosis is a frequent health problem in pets, and its contagious nature and the high cost of the treatment, as well as the implications for public health require increased attention to its causative agents.

The results obtained in this study showed that simple infestations were predominant, in both animal species studied. While polyparasitism, was recorded only in 5.57%, and 12.90% respectively of the examined cats and dogs. Unlike us, Gonzalez et al. (2004) determined that 56.9% of the examined dogs had triple infestation, while 39.6% had a double infestation. Xhaxhiu et al. (2009) also identified polyparasitism in 38.1% of the dogs, 29.8% with two, and respectively 8.3% with three species of ectoparasites.

This study shows that there is a high prevalence of ectoparasites in dogs and cats in the examined area. This aspect is significant both for veterinarians as well as for human doctors, due to the effects these ectoparasites cause on animals and humans. Informing pet owners about the role of ectoparasites in the transmission of zoonoses and educating them to observe the preventive and control measures against parasites is an important step in reducing the prevalence of parasitic infestation. Due to the well-known the role of vector some species of ectoparasites have in the transmission of infectious

diseases, we recommend the application of the preventive treatment against parasites as early as possible to pets.

CONCLUSIONS

The study concerning ectoparazitoses in dogs and cats in the Târgovişte-Dâmboviţa area, recorder a relatively high prevalence in both animal species, 52.41% in dogs, and 51.67% respectively in cats.
The main species of ectoparasites identified in dogs were fleas and ticks, 40.95% and 35.93 %, respectively, while fleas prevailed in cats – 88.17%.
For the first time, the tick infestation was reported in cats, with a prevalence of 6.45%.
Polyparasitism had relatively low values, i.e. 5.57% in dogs and 12.90% in cats.
The young individual of both species was found to have the highest rate of infestation with ectoparasites, compared to adult animals.

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