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Prevalence of intestinal helminthes in owned dogs in Kerman city, Iran

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ABSTRACT

Objective: To survey the prevalence of canine gastrointestinal helminthes in dogs presented to the Veterinary faculty of the University of Kerman between May and November 2011. **Methods:** A total of 70 fecal samples were evaluated by the fecal sedimentation method. **Results:** The prevalence of gastrointestinal helminthes was 7.14%. The parasites most frequently detected were *Toxocara canis* (*T. canis*) (4.3%); *Toxascaris leonina* (*T. leonina*) (1.4%) and *Teania* spp. (1.4%). The age distribution of intestinal parasites in dogs showed that the dog less than 1 year old had a higher overall prevalence than those dogs over 12 months of age but there was not significant ($P>0.05$). Also there was no significant difference in the prevalence between male (7.7%) and female (6.5%) dogs ($P>0.05$). **Conclusions:** It is thought that the reduction in the frequency of the dogs with those helminthes may be mainly a result of the improvement in breeding environment and the routine use of anthelmintics. The significance of zoonotic diseases caused by intestinal helminthes makes it necessary for us to know the infection status of domestic dogs and to take measures for further control. It is concluded that veterinarians have an important role in educating dog owners of these potential risks and means for preventing or minimizing zoonotic transmission.

1. Introduction

Intestinal parasites are among the most common pathogenic agents encountered by veterinarians dedicated to companion animals and they constitute one of the main causes of pathologies of the intestinal tract in dogs^[1]. Dogs and other canine act as definitive hostes for many intestinal parasites, some of which are responsible for several zoonotic diseases such as hydatidosis. It is caused by the *Echinococcus granulosus* (*E. granulosus*)^[2,3]. In fact dogs are associated with >60 zoonotic diseases among which parasites in particular helminthiasis can pose serious health concern, as well as significant economic impact from veterinary standpoint^[4,5].

It is common to observe gastrointestinal helminthes in canines of all ages, but the prevalence of infection is

usually high in puppies, mainly due to the fact that certain modes of transmission are exclusive to the newly whelped or neonates, and also, because young dogs have not yet acquired immunity to parasites^[6,7]. Geographically, a higher diversity of parasites is found in moderate, tropical and sub-tropical climates, where humidity and temperature conditions are appropriate for their development.

It is important to highlight the zoonotic aspects of some intestinal helminthes infections in canines, which can represent a potential worldwide public health risk^[1,8]. This applies to traditionally acknowledge zoonotic diseases, such as visceral larval migrants caused by *Toxocara canis* (*T. canis*) and cutaneous larval migrants caused by *Ancylostoma braziliense* (*A. braziliense*)^[1,9,10].

Numerous epidemiologic studies of intestinal parasites in canines have been reported worldwide^[1,3,5,10–12]. But there are no data available concerning epidemiology and prevalence of gastrointestinal helminthic in owned dogs in the Kerman state of Iran. The main objective of this research was to determine the prevalence of gastrointestinal

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helminthic in owned dogs presented to the Veterinary faculty of the University of Kerman.

2. Materials and methods

Between May and November 2011, fecal samples from 70 dogs were examined for the presence of parasites. All fecal samples were obtained from privately owned dogs presented to the Veterinary faculty of the University of Kerman, Fecal samples were collected directly from the dog's rectum and were stored in 10% formalin neutral buffer solution until examination.

In examination of samples at first seeming disposition of the fecal samples were observed. Because in same time can with survey by non-armed eye same helminthic infection distinguished.

The coprological examinations were conducted by the direct smear method and the sedimentation methods which include formalin/ether technique. The fecal samples were carefully examined using the 10 × objective, field by field covering the entire coverslip. Each observed egg or cyst was identified by using their morphological characteristics previously described[7]. A dog was classified as positive if at least one egg or cyst was observed.

Data were analyzed by SPSS software and *Chi* square test analysis. The significance level was $P < 0.05$.

3. Results

T. canis Eggs (Figure 1), *Teania* spp. Eggs (Figure 2) and *Toxascaris leonina* (*T. leonina*) Eggs were found in 3, 1 and 1 stool samples, respectively. The overall prevalence of infection with gastrointestinal helminthic was 7.14%. Of the 70 dogs evaluated, 5 samples were positive for at least one species of gastrointestinal helminthes.

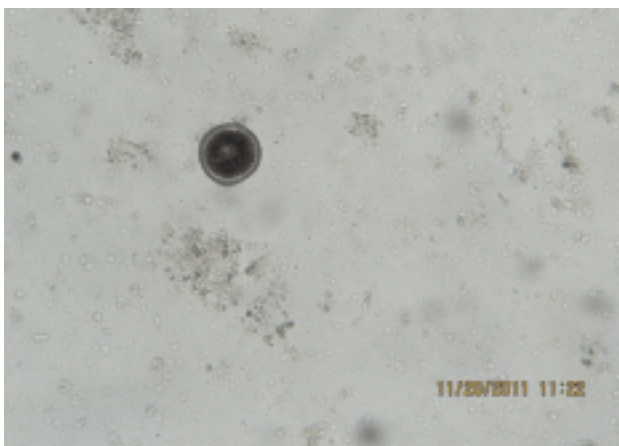


Figure 1. Unembryonated egg of *T. canis*.

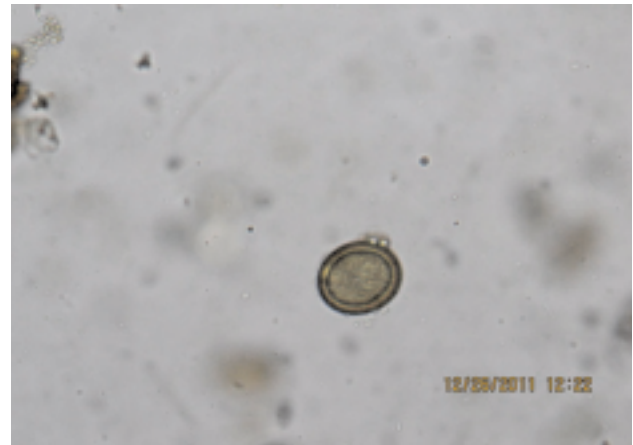


Figure 2. Egg of *Teania* spp.

The most frequently observed parasite in this population was *T. canis* (4.3%), followed by *T. leonina* (1.4%), and *Teania* spp. (1.4%).

Dogs were divided to 2 groups based on their age: group 1 included the dogs of less than 12 months old and the group 2 included the dogs more than 12 months. The number of dogs for groups 1 and 2 was 30 and 40 respectively. Four and one infected dogs were detected in groups 1 and 2 respectively. The prevalence of infection for group 1 was 13.3% and, for group 2 was 2.5%. When the general prevalence was analyzed by age, it was observed that dogs < 12 months old had a higher overall prevalence than those dogs over 12 months of age. But there were not significant differences in the prevalence of infection between dogs < 12 months old and dogs over 12 months old ($P > 0.05$).

Thirty nine male and thirty one female dogs were examined. The frequency of infected dogs for male and female was 3 and 2 dogs respectively. The prevalence of infection for male was 7.7% and, for female was 6.5%. No significant difference in overall prevalence of gastrointestinal helminthes was found between male (7.7%) and female (6.5%) dogs ($P > 0.05$).

4. Discussion

The overall prevalence of gastrointestinal helminthes in dogs was 7.14%. These results are in general conformed by Pullalo, who reported a general prevalence of 5.9% in dogs in Finland[10]. Lighter *et al* also reported less than 10% general prevalence in dogs in Iowa[12]. Similar results were obtained by Razmi, who observed a general parasitic prevalence of 14.11% in dogs at Khorasan, Iran[3]. This similarity in values is probably due to the similarity between the populations studied, most of these fecal examinations carried out on dogs presented for veterinary care, in other words, the prevalence obtained through this study differs from that reported by Yagoob *et al* in Iran, and Ramirez-Barrios

et al in Maracaibo, who encountered canine parasitic general prevalence of 41% and 35.5%, respectively^[1,5]. Also, our overall prevalence was lower than that found at the University of Pennsylvania Veterinary Teaching Hospital^[8] and at the Thessaloniki^[11].

In this study, the general prevalence of intestinal helminthes in dogs was higher in pups under 12 months of age than in dogs over 1 year old but there was not significant ($P>0.05$) ($P<0.05$). The same occurred with the specific prevalence of *T. canis*, which coincides with other studies^[1,8,10,12,13].

All this suggests that in the case of the gastrointestinal helminthes found specific immunity in dogs would develop with age, probably as consequence of one or more exposures.

The sex of dogs was not significantly associated with prevalence of gastrointestinal helminthes in this study despite the higher frequency in males (7.7%) compared with females (6.5%) ($P>0.05$). A similar finding was reported by Ramirez–Barrios et al.

In this study, the overall prevalence of gastrointestinal helminthes was very lower than the results of other studies in Word (7.14%). These results can be easily explained, because, most of previous studies were done in stray dogs that have no health control measure but most of the dogs in our study were dewormed regularly, also one action which could be put into practice immediately to reduce the prevalence of gastrointestinal helminthes in infected animals is the introduction of a program of deparasitation to take place every 3 months together with parasitological analysis of the feces. Deworming of kittens, as mentioned above, should take place at 6–8 weeks of age.

The findings of this study confirm the declining trend in Kerman city in the prevalence of helminthes in dogs. It is thought that the reduction in the frequency of the dogs with those helminthes may be mainly a result of the improvement in breeding environment and the routine use of anti-helminthics.

The significance of zoonotic diseases caused by intestinal helminthes makes it necessary for us to know the infection status of domestic dogs and to take measures for further control^[14]. It is concluded that veterinarians have an important role in educating dog owners of these potential risks and means for preventing or minimizing zoonotic transmission.

Conflict of interest statement

We declare that we have no conflict of interest.

References

- [1] Ramirez–Barrios RA, Barboza–Mena G, Munoz J, Angulo–Cubillán F, Hernández E, González F, et al. Prevalence of intestinal parasites in dogs under veterinary care in Maracaibo, Venezuela. *Veterinary Parasitol* 2004; **121**: 11–20.
- [2] Eslami A. *Veterinary Helminthology. Vol. 3. Nematoda and Acanthocephala*. 4 ed. Tehran: Tehran University Publications; 2008.
- [3] Razmi GR. Survey of dogs' parasites in Khorasan Razavi Province, Iran. *Iran J Parasitol* 2009; **4**: 48–54.
- [4] Ranjbar–Bahadori S, Lotfollahzadeh S, Vaezi G, Eslami A. Epidemiological study of the human cystic echinococcosis in Iran. *Res J Parasitol* 2008; **3**: 130–136.
- [5] Yagoob G, Mashaei SS. Prevalence of gastrointestinal helminthic infestation in pet and stray dogs in Tabriz (East–Azerbaijan Province), Iran. *J Anim Veterinary Adv* 2011; **10**: 1477–1479.
- [6] Asano K, Suzuki K, Matsumoto T, Sakai T, Asano R. Prevalence of dogs with intestinal parasites in Tochigi, Japan in 1979, 1991 and 2002. *Veterinary Parasitol* 2004; **120**: 243–248.
- [7] Soulsby EJJ. *Helminths, arthropods and protozoa of domesticated animals*. 7 ed: UK: Bailliere Tindall London; 1986.
- [8] Kirkpatrick CE. Epizootiology of endoparasitic infections in pet dogs and cats presented to a veterinary teaching hospital. *Veterinary Parasitol* 1988; **30**: 113–124.
- [9] Despommier D. Toxocariasis: clinical aspects, epidemiology, medical ecology, and molecular aspects. *Clin Microbiol Rev* 2003; **16**: 265.
- [10] Pullola T, Vierimaa J, Saari S, Virtala AM, Nikander S, Sukura A. Canine intestinal helminths in Finland: Prevalence, risk factors and endoparasite control practices. *Veterinary Parasitol* 2006; **140**: 321–326.
- [11] Haralabidis ST, Papazachariadou MG, Koutinas AF, Rallis TS. A survey on the prevalence of gastrointestinal parasites of dogs in the area of Thessaloniki, Greece. *J Helminthol* 1988; **62**: 45–49.
- [12] Lightner L, Christensen BM, Beran GW. Epidemiologic findings on canine and feline intestinal nematode infections from records of the Iowa state University Veterinary Clinic. *J Am Veterinary Med Assoc* 1978; **172**: 564.
- [13] Purwaningsih E, Mumpuni. New host and locality records of snake intestinal nematode *Kalicephalus* spp in Indonesia. *Asian Pac J Trop Biomed* 2011; **1**(2): 121–123.
- [14] Swai ES, Schoonman L. A survey of zoonotic diseases in trade cattle slaughtered at Tanga city abattoir: a cause of public health concern. *Asian Pac J Biomed* 2012; **2**(1): 55–60.