A RETROSPECTIVE STUDY OF INTESTINAL HELMINTHOSIS AS A CAUSE OF CLINICAL DISEASE IN DOGS

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SUMMARY

A 10-year (1994-2003) retrospective study was carried out to investigate the occurrence of clinical cases due to intestinal helminths in dogs treated at Sokoine University of Agriculture Veterinary Clinic, Morogoro, Tanzania. A total of 546 clinical cases of intestinal helminthosis in dogs were examined and these included 295 puppies, 35 juvenile dogs and 216 adult dogs. Bloody diarrhoea, inappetence, emaciation and vomiting were the major clinical signs used in the diagnosis of helminthosis in the reported cases. The diagnosis was confirmed through identification of helminths eggs on the wet faecal smear. The common types of helminths identified were Ancylostomum caninum, Toxocara canis and Dipylidium caninum. A total of 367 cases (67.2%) observed were due to A. caninum and 117 cases (21.4%) were due to concurrent A. caninum and T. canis infestations. Cases due to D. caninum and T. canis were 6.2% and 5.1%, respectively. The findings show that intestinal helminthosis is an important clinical disease of both young and adult dogs in Morogoro. Creation of public awareness on the need of regular deworming of dogs is recommended in order to maintain the health of the dogs and minimize the risk of helminth-borne zoonoses.

The Tropical Veterinarian

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INTRODUCTION

Although intestinal parasites are among the most common diseases of dogs submitted for treatment in Africa (van Heerden, 1989), little has been published regarding clinical occurrence of these parasites in these countries. Furthermore, the major concern regarding intestinal helminths in dogs in the developing countries seems to be on their zoonotic importance than to the impact they cause on animal health and the economy of the people. Wachira et al. (1993) and Makene et al. (1997) found that where dogs were not regularly dewormed, prevalence of intestinal helminths was about 70% in the population, and Ancylostomum caninum was the leading worm in the dogs examined. Kusiluka et al. (1999) showed that *caninum* caused significant Α. in depression haematological parameters in puppies although no overt clinical signs were observed. Mortalities due to helminths in dogs have been reported to be about 14% of all dogs submitted for postmortem investigation, with majority of them being due to gastrointestinal parasites (Kagira and Wanyari, 2000).

Despite helminths infection being a common problem, there is a dearth of published information on the role they play in the clinical disease of dogs in Tanzania. The present study, therefore, aimed at investigating the frequency of clinical intestinal helminthosis in the dogs attended at the Veterinary Clinic of Sokoine University of Agriculture, Morogoro, Tanzania in relation to age, sex and

Tanzania Veterinary Journal (2008) 25 (1)

types of helminths. This information will assist the Veterinary Clinicians to improve their diagnosis, management and control of canine intestinal helminthosis. Moreover, the data collected from this study can be used for devising effective and economical approaches to the prevention and control of the helminths in humans.

MATERIALS AND METHODS

Case selection

Data for all canine cases recorded at Veterinary Clinic, Faculty of Veterinary Medicine, Sokoine University of Agriculture between January 1, 1994 and December 31, 2003 were obtained from the database. Information retrieved for patient included each case identification, sex, age, examination procedures and final diagnosis. The retrieved cases were those in which helminthosis was the main diagnosis. Identification of helminthosis was based on the clinical signs like bloody diarrhoea, inappetence, emaciation and vomiting being complemented with the history obtained from the owner. The diagnosis was gualitatively confirmed through identification of helminth eggs in the wet faecal smear. From clinical signs and faecal examination results, the diagnosed cases were classified into A. caninum infestation, Toxocara canis infestation, concurrent A. caninum and T. canis infestation and *Dipylidium caninum* infestation.

Data analysis

Descriptive statistics for the entire data set was generated using

Microsoft excel software and Graph Pad Prism® 2001. Annual, monthly, sex, and age based proportions of dogs with intestinal helminthosis were calculated. The age groups were categorized into puppies (less than 6 months of age), juvenile dogs (6 to 18 months) and adult dogs (above 18 months).

RESULTS

A total of 546 clinical cases of intestinal helminthosis in dogs were diagnosed at Sokoine University of Agriculture Veterinary Clinic between January 1994 and December 2003. They included 295 puppies, 35 juvenile dogs and 216 adult dogs. Of these cases 367 (67.2%) were due to *A. caninum*, while 117 cases (21.4%) were due to concurrent *A*.

caninum and *T. canis* infestations, and cases due to *D. caninum* and *T. canis* were 6.2% and 5.1%, respectively. The frequency of occurrence of helminths in different age groups and sex of the examined animals is summarized in Table 1.

The main clinical signs recorded in the affected dogs included bloody diarrhea, diarrhea, inappetence, unthriftness, oedema on ventral abdomen in puppies, pallor of mucous membranes and vomiting (Table 2). Other signs included dehydration, dullness and malaise. In the majority of cases, inappetence was the predominant complaint reported by owners followed by diarrhea, vomiting and bloody faeces.

Table 1. Frequency of clinical cases of intestinal helminthosis in dogs

 attended at Sokoine University of Agriculture Veterinary Clinic (1994-2003)

Parameter		Type of ir			
Age	A. caninum	A. caninum and T. canis	D. caninum	T. canis	Total
<6 months	205(55.9%)	60(51.3%)	13(38.2%)	17(60.7%)	295(54.0%)
6-18 months	18(4.9%)	8(6.8%)	7(20.6%)	2(7.1%)	35(6.4%)
>18 months	144(39.2%)	49(41.9%)	14(41.2%)	9(32.1%)	216(39.6)
Total	367(67.2%)	117(21.4%)	34(6.2%)	28(5.1%)	546
Sex					
Female	154(42.0%)	47 (40.0%)	11(32.0%)	6(21.4%)	218(40.0%)
Male	213(580%)	70(60.0%)	23(65.0%)	22(78.6%)	328(60.0%)
Total	367	117	34	28	546

The Tropical Veterinarian

A.P. Muhairwa et al

Clinical sign (n)	Age group	A. caninum	A. caninum and T. canis	T. canis	Total
Inappetance (209)	Adults	61	24	7	92
	Juveniles	8	6	1	15
	Puppies	74	23	5	102
Frequency (%	5)	143 (68.4%)	53 (25.4%)	13 (6.22%)	
Diarrhoea (94)	Adults	24	5	2	31
	Juveniles	3	2	5	10
	Puppies	40	8	5	53
Frequency (%)		67 (71.3%)	15 (16%)	12 (12.8%	
Vomiting (86)	Adults	15	7	6	28
	Juveniles	1	2	0	3
	Puppies	5	45	5	55
Frequency (%	5)	21 (70.9%)	54 (19.3%)	11 (12.8%	
Bloody diarrhoea (85)	Adults	21	2	2	25
	Juveniles	2	0	0	2
	Puppies	54	4	0	58
Frequency (%	5)	77 (90.6%)	6 (7.1%)	2 (2.4%)	
Emaciation (78)	Adults	29	5	0	34
	Juveniles	1	1	0	2
	Puppies	30	9	3	42
Frequency (%	5)	60 (76.9%)	15 (19.2%)	3 (3.9%)	
Pallor (41)	Adults	5	4	0	9
	Juveniles	1	0	0	1
	Puppies	28	1	2	31
Frequency (%	5)	34 (82.9%)	5 (12.2%)	2 (4.9%)	
Oedema (23)	Adults	1	3	1	5
	Juveniles	1	0	0	1
	Puppies	11	4	2	17
Frequency (%	b)	13 (56.5%)	7 (30.4%)	3 (13%)	

Table 2. Frequency of clinical signs in association with helminth infection

DISCUSSION

The present results has shown that helminthosis is a common disease of dogs in Morogoro Tanzania. These results are in broad agreement with other studies regarding the high prevalence of ancylostomiasis compared with other helminths, and the presenting clinical signs in dogs with helminthosis (Kazacos, 1978; Wachira *et al.*, 1993; Makene *et al.*,

Tanzania Veterinary Journal (2008) 25 (1)

1997). The major difference found was with regard to the high prevalence of clinical disease in adults which was featured mainly by loss of appetite.

The observation that A. caninum is the most common intestinal nematode and that the puppies developed a more severe form of the disease than the adults and the juvenile dogs is in agreement with Makene et al. (1997). Occurrence of clinical disease in adult dogs due to A. caninum might be influenced by deficiency of protein in the diet which has been shown to cause development of clinical ancylostomiasis even in adult dogs (Foster and Cort, 1931). Frequently, dogs scavenge for food in household garbage and sometimes are fed on the table scraps which may be nutritionally poor. Therefore, in this poor nutrition probably studv exacerbated the clinical signs due to helminthosis even in adult dogs. The range of helminths species in the present study appeared to be lower than that reported in the studies, which involved the dissection of intestinal tract in necropsied dogs (Kazacos, 1978; Wachira et al., 1993).

Oduye and Olayemi (1977) found that *A. caninum* was the main cause of diarrhoea in dogs submitted for treatment in Ibadan, Nigeria, although anaemia was not a marked feature in the affected dogs. This was probably due to the extreme diarrhoea seen in the cases, which obscured paleness of the mucous membranes. However, among the cases of diarrhoea seen in the present study, 71% (n=94) were

28

due to *A. caninum* infestations with pale mucous membranes being the main clinical sign.

Clinical signs associated with intestinal helminthosis were similar to those associated with other intestinal diseases or systemic diseases reported elsewhere (Ndiritu and Al-Sadi, 1977; Lefkaditis et al., 2006). There appeared to be no defined pattern of the clinical signs, although inappetence was the most frequently reported clinical signs in the juvenile dogs and adult dogs. Bloody diarrhoea and pallor of mucous membranes were predominantly seen in puppies as has been reported by others (Ndiritu and Al-Sadi, 1977). Leftakiditis et al. (2006) found that most dogs with intestinal helminths were asymptomatic. However, in the present study dogs were presented for clinical examination after being suspected to be sick by the owners. A possible explanation for the discrepancy in these observations is that well nourished dogs may not present overt clinical signs when infested with helminths while poorly nourished dogs easily succumb to the effect of helminths infestation. In view of the present findings it is recommended that all dogs presenting with clinical signs of inappetence be investigated for intestinal helminths, and appropriate management be instituted.

Sanitary deficiencies in the areas where dogs stay and lack of awareness of routine deworming of dogs has been found to contribute to the persistence of these parasites in dogs and the environment (Chiejina

The Tropical Veterinarian

and Ekwe, 1986). Human infections due to dog helminths have been reported following heavy contamination of the environment (Giacommeti et al., 2000). The public health implications of these parasites in human beings especially the children in Morogoro is not known, thereby calling the need to investigate the level of exposure and the clinical importance of the helminths. However, public awareness campaigns dog on deworming and introduction of dog deworming days as a preventive measure is recommended in order to minimize exposure to infection among humans.

Helminthosis remains to be a problem in dogs in Tanzania because of suboptimal dog care. Because *A. caninum* and *T. canis* have been found to be prevalent in Morogoro and both species have been proven (Nelson and Couto, 1998) to cause a disease in human beings there is a need to establish their role in human disease. Such a study would provide data that will serve as the basis for formulating appropriate public health programmes.

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Tanzania Veterinary Journal (2008) 25 (1)

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Retrospective study of intestinal helminthosis in dogs

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The Tropical Veterinarian