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Original Research Article

Investigation on the prevalence of gastrointestinal parasites in local and exotic dogs in Jos South Local Government Area of plateau state, Nigeria

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The study investigated the prevalence of Haemo and gastrointestinal parasites in slaughtered Dogs in (Kugiya) Jos South L.G.A. of Plateau State. One hundred and fifty faecal and blood samples were collected from both local and exotic breed, age and sex of the dogs were also considered. Samples were taken to the Parasitology division of the NVRI, Vom for analysis. The parasites were determined using floatation concentration methods while the blood smears were analyzed using Giemsa-stained thin blood smears, was examined for haemoparasites. An overall prevalence of 46(100%) for gastrointestinal parasites and 21(14%) for haemoparasites was recorded. The prevalence was higher in the young 28(37.33) and 14(18.67) than in the adult 8(10.67%) and 12(16.00%) in the case of gastro and heamoparasites respectively. The prevalence in relation to sex shows that the male had a higher prevalence 33(44.00%) and 21(28%) than the female 3(100%) in terms of both the enteric and the haemo parasites respectively, no heamoparasite was observed in the case of the female. The prevalence was seen to be higher in the local breed than the exotic breeds. This study provides evidence that parasitic infections are prevalent in dogs in the study areas.

Key words: Investigation, prevalence, gastrointestinal, parasites, dogs

INTRODUCTION

Endoparasite can cause poor performance in animal and can lead to economic loss for the owner, animal keepers must understand the type of parasitism they encounter and the method of controlling parasite in order to minimize loses (Soulsby, 1982, Adejoke, 2005, Stotarczak,2003). Intestinal parasites are common problem of pet health in dogs. Dogs become infected with the parasite before they are born or later with their mother's milk, the microscopic examination of a stool sample will usually help to determine the presence of intestinal parasite. Gastrointestinal parasites are widely recognized condition that can lead to disease in dogs. Parasite are regarded as an organism that derive nourishment by feeding on or within another animal (Berdoy et al., 2000; Adejoke, 2005).Parasitism is an association where parasite are always benefiting while the host of the parasitic association always suffer some degree of injuries which are capable of causing disease (Ogo et al.,2005; Smyth,1979). Gastrointestinal (GI) Parasites are common pathogens in stray dogs and some are reservoirs of parasitic infections of humans, particularly in urban areas and especially in informal urban areas. Some of the important zoonotic diseases include visceral larva migrants due to *Toxocaracanis,* cutaneous larva migrants caused by *Ancylostoma caninum and A. Braziliensis, Giardiasis, Cryptosporidiosis* and *Echinococcosis.* Transmission may occur from dogs to humans directly or indirectly. The prevalence of GI parasites may vary due to several factors, including geographical region, level of veterinary care before straying and habits of the animal. In most cities in developing countries control of stray dogs is practically nonexistent, resulting in an increased risk (Hart, 2011,

John et al., 2006).

It is known generally that the dog was the first domestic animal in most parts of the world. The first dogs may have been brought into the human circle as long as 25,000 years ago, in the Old Stone Age, when humans lived by gathering plants and hunting animals. Dogs today often serve people in ways similar to those for which the breed was originally domesticated, such as guarding flocks of sheep against predators hunting, as police or army dogs, they lead the blind, patrol ,ilitaryinstalations, and do the kinds of jobs that make people's lives easier and safer (Jittapalapong et al., 2007; John et al., 2006). There has been increased interest in keeping dogs in Nigeria mainly as security or pets and in some parts of the country for food. To perform these duties, the dogs ought to be alert and agile. Parasites may infect dogs resulting in anaemia, weakness or death. Similarly, dogs may harbor parasites which constitute a health hazard to owners because of zoonotic implication 3. Screening of dogs to detect parasite infection is recommended to enable owners to institute treatment and safeguard the health of the public. This paper tries to determine the association of parasitic infections and aneamia (Kamara, 1984; Kaewthanasom, et al., 2006)

Generally parasite are classified into two groups; Endoparasite are inside their host and further separated into intracellular and intercellular parasite(Bugg et al.,1999;Cole,1986) Ectoparasite are parasite that live outside its host, they feed with at least part of their body outside the host epithelium(Brodey et al., 1977; Sasaki,2007).Endoparasite can cause poor performance in animal and can lead to economic loss for the owner, animal keepers must understand the type of parasitism they encounter and the method of controlling parasite in order to minimize loses (Barutzki and Schaper, 2003).

Intestinal parasites are common problem of pet health in dogs. Dog become infected with the parasite before they are born or later with their mother's milk, the microscopic examination of a stool sample will usually help to determine the presence of intestinal parasite. Even if veterinarian does not get a stool sample, they may recommend the use of deworming product that is safe and effective against several of the common worm (Alleman,2002 and Fok et al.,2001). Deworming medication has no side effect and because dogs do not pass worm egg every day, so the stool may not detect their present. Deworming is done now and repeated in about two weeks, it is important that is repeated in about two weeks because the medication only kill the adult worm, within 3-4 weeks, the larva stage will have become adult and will need to be treated. Dog remain susceptible to reinfection with hook worm and round worm (Soulsby, 1982). Periodic deworming throughout the dog lives may be recommended for dogs that go outdoors. Tape worm are the most common intestinal parasite of dogs, dogs become infected with them when they swallow flea, the egg of the tape worm life inside the flea. When the dog lick or chew its skin when the flea bite, the flea may be swallowed the flea is ingested inside the dog intestine; the tape worm hatches and then anchors itself to the intestinal lining. Therefore, exposure to flea may result in a new infection; this can occur in as little as two weeks.

Dog infected with tape worm will pass small segment of the worm in their stool. The segments are white in color and look like grain of rice. They are about 1/8(3mm) long and may be crawling on the stool(Chandrasekharo et al.,1978), they may also stick to the hair under the tail, if that occur, they will dry out, shrink to about half their size and become golden in color.

Tape worm segment do not pass in every stool sample; inspection of several consecutive bowel movement may be needed to find them (Georgieva et al,1999). A stool sample may be examined and not find them, then you may find them the next day. If you find them at any time, notify your veterinarian so they may provide the appropriate drug for treatment

MATERIALS AND METHOD

Study area

The study was carried out in bukuru specifically kugiya dog market of Jos south local government area of plateau state. The research was carried out in Jos South Local Government Area of Plateau State which is located around Coordinate 9^0 46'N 8^0 48'E/9.767^{0}N, 8.800^{0}E and the area of 5,104km^2 (1,971m^2).The major ethnic group are Berom beside other major settlers like Hausa, Igbo, Yoruba, Miango and Tarok etc.The major animals found include birds, dog, sheep, goat, cattle, rabbit, rat etc. The area has a temperature of 30.4^{0}C in March and 12.7^{0}C in January by Plateau State government (Press release, 2010).

Samples size

One hundred and fifty samples from approximately dogs were collected (Faecal and blood) from each of the subject matter (dog) for the research work, samples were collected based on the different age categories of the subject sampled, sex, breed, and age of the animal,.

Faeca samples collection

Faecal samples were collected from the dog, the animal were of different age sex breed and color. The fecal samples were collected directly from the rectum of each animal with the used of an disposable hand glove, prior to stool collection, animals were identified, restraint and the perineum thoroughly prepared by cleaning with water to prevent contamination, the samples were transported to the parasitology laboratory located in the national veterinary researchinstitute for further analysis.

Processing of faeca samples

Faecal samples were processed and screened using the the

Table 1. Prevalence of Gastro and Heamoparasites in Dogs in the study area

Parasites	No+ve	%+ve
A. Caninium	13	28
Necatus americanus	18	39
Toxocara canis	12	26
Isospora canis	3	7
Total	**46**	**100**
Heamoparasites		
B.canis	21	14
Total	**21**	**14**

Distribution is significantly different (X^2 (3), 46=11.978 P<0.05)

sodium chloride flotation techniques.

Blood sample collection

Blood sample were collected from the cephalic vein of the dog which is located at the fore limb, swab was used to disinfect the area prior to collection. In other to reduce the presence and activities of microbes present. 5mil syringes and needle were used for the blood sample from the dogs.

Processing of blood samples

A thin blood smear was prepared from each blood sample, air-dried, fixed in methanol for 2–3 min,stained in 5% Giemsa stain with added Azur II (2 g/l of undiluted stain) and rinsed in buffered water.The smears were examined at 1000x magnification (oil immersion) with a microscope; at least 50 fields were searched per slide. Presence of haemoparasites was recorded; identification was carried out to genus and, where possible, to species level. Packed cell volume (PCV) was determined according to standard procedure and the buffy coat examined for motile blood parasites.

Microscopic examination to detect parasites

Identification of parasite eggs was according to Soulsby, (1982). Student t-test was used to analyze PCV and parasitic infection at confidence interval of 95%.

RESULTS

Discussion

We determined the prevalence of haemo- and intestinal parasites in dogs in jos south LGA of plateau state. From the result it was recorded that Heamoparasites transmitted by tick occur mostly in the study area region which agree with (Brodey,et al.,1977,Stich,2008), parasitic protozoa affect the red blood cell and can produce hemolytic anemia which tally with the research work also indicated the prevalence of enteric parasite as agree with that gastro intestinal parasite are seen crawling for the host to attach itself upon.

Helminth parasites were more prevalent *Ancylostoma caninum* 13(28.00),*Necatus americanus* 18(39.00) and *Toxocara canis* 18(39.00) than protozoans Isospora canis 18(39.00) as presented in Table 1. The overall prevalence of GIT parasites in dogs found in this study revealed a very high level of infection comparable with studies in other places. Helminth infection predominated over protozoan infections in this study and this is similar to other studies. The history of deworming of the dogs in our study was unknown and there might have been a mixture of dogs which were routinely dewormed before straying and those that were not dewormed. However, the increased helminth infection and reduced protozoaninfection is most likely due to decreased routine use of anthelmintics in the in contrast to what has been observed in other studies.Ancylostoma sp was the most prevalent parasite species and this is similar to findings from other studies. The species of Ancylostoma are the most pathogenic in dogs and are also involved in human infection as the cause of cutaneous larva migrans.

The high prevalence suggests that the environmental conditions in the are conducive for the survival and transmission of the parasite There is a possibility that Ancylostoma sp. might have developed resistance to the common anthelmintics as some dogs from this study must have been regularly dewormed. Prevalence of T. Canis(Table 1) observed in this study is comparable with that reported in Zimbabwe but lower than what has been reported in dogs from resource-poor communities in South Africa. The difference might have been due to the differences in the age distribution of dogs sampled as young dogs that acquire infection via congenital transmission tend to have a high prevalence compared with adults. Trichuris vulpis one of the common intestinal helminthes in dogs in Europe was not prevalence in this study. Surprisingly, the parasite was absent in the previous studies in Africa but reported in dogs in neighboring Zimbabwe. Human

Table 2. Gastro intestinal vs haemoparasite in relation to location

	Observed N	%
Gastro intestinal	46	
Haemoparasite	21	
Total	67	

There is Significant difference between the parasites X^2 1,67=9.328,P<0.05

Table 3. Prevalence of gastro and haemo parasite of dogs according to age

	Young (n=75)	Adult(n=75)
	No. +ve (%)	No. +ve (%)
Gastrointestinal parasites		
Ancylostoma caninum	11 (78.6)	3 (21.4)
Necatus americanus	7 (100)	0 (0)
Toxocara canis	8 (66.7)	4 (33.3)
Isospora canis	2 (66.7)	1 (33.3)
Total		
HaemoParasites	**28 (77.8)**	**8 (22.2)**
Babesia canis	14 (18.67)	12 (16.00)

Distribution of the parasites is independent of age $X^2(3),36=3.077,P>0.05$

Table 4. Prevalence of Gastro and Haemo parasites of Dogs according to sex

	Young (n=75)	Adult(n=75)
	No. +ve (%)	No. +ve (%)
Gastrointestinal parasites		
Ancylostoma caninum	11 (84.6)	2 (15.4)
Necatus americanus	7 (87.6)	1 (12.5)
Toxocara canis	12 (100)	0 (0)
Isospora canis	3 (100)	0 (0)
Total		
HaemoParasites	**33 (44.00)**	**8 (22.2)**
Babesia canis	21 (28.00)	0 (0)

Gastrointestinal parasite is independent of sex,X2 3,36=2.392,P>0.05

infections by T. vulpis have been reported and have been attributed to humans being in continuous contact with environments contaminated by infected dogs.

Table 2 reveals high prevalence of both the heamo and gastrointestinal parasites more in the young 28(77.8) and 4(18.67) respectively, a lower prevalence was observed in the adult 8(22.2) and 12(16.00) as presented in Table 2.This studies also looked at the distribution of this parasites in relation to age and reveals a high prevalence of both gastro 33(44.00) and heamo parasites 21(28.00) in the female(Table 3).Table In relation to the breed high prevalence of the parasites was recorded in the local breed than the exotic (Table 4).

The prevalence of dogs in some parts of Nigeria has been reported and in dogs. With rates comparable to our study. However, the prevalence rate recorded from our study is on the lower side compared with what has been reported elsewhere Variation in prevalence of this parasite has been mainly attributed to high prevalence of intermediate and paratenic hosts and whether the dogs are stray, farm dogs or pets. The results from this study will serve as baseline information on the potential risk posed by stray dogs to urban environmental contamination by parasites. Feacal waste into water bodies should be highly prohibited and discourage, in other to limit the rate of infection transmission. Dogs should be dewormed as a means of controlling the occurrence. If possible dogs should be vaccinated using the appropriate vaccines. Intensive system of management should be encouraged as a means of controlling tick borne infection. Fumigation should also be done. Meat and fish should be properly cooked before serving to pet.

CONLUSION

The results from this study serve as baseline information

on the potential risk posed by dogs to urban environmental contamination by parasites. The study reveals that both haemo and gastro intestine parasitise has a great significant influence on the animal (dogs) reared in the study area on an extensive system of management.

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