Journal of Animal & Plant Sciences, 2010. Vol. 7, Issue 2: 783- 788.
Publication date: 29/06/2010, http://www.biosciences.elewa.org/JAPS; **ISSN 2071 - 7024**

Prevalence of intestinal protozoan parasites of dogs in Ibadan, south western Nigeria

*[1]Johnson O. Adejinmi and[2]Joseph O. Osayomi

1. Department of Veterinary Microbiology and Parasitology, University of Ibadan, Ibadan, Nigeria
2. Federal College of Animal Health and Production, Technology
Institute of Agricultural Research and Training, Moor Plantation Ibadan, Nigeria
** Corresponding author: Olaadejinmi @yahoo.co.uk*

Key words: Intestinal Protozoan Parasite, Ibadan, dog, prevalence.

1 SUMMARY

A twelve month study (January to December, 2007) was done to determine the prevalence of intestinal protozoan parasites of dogs (aged three months and above) in Ibadan, Nigeria. Three hundred and twenty four (324) dogs' faecal samples were examined for intestinal protozoan oocysts of which 154 were from local breeds, 141 exotic breeds and 29 cross breeds. The faecal samples were examined using formol – ether concentration method and modified Ziehl – Neelsen technique and sodium chloride flotation method.

The dogs were brought to Veterinary clinics in the city. Of the 324 dog samples 189(58.2%) were found positive for intestinal protozoan parasites. The local dogs had the highest prevalence 131 (40.4%) followed by exotic 40(12.8%) and cross 18(5.5%). *Entamoeba histolytica, Isospora spp*, *Sarcocystis spp* and *Cryptosporidium spp* were the intestinal protozoan parasites observed. *E. histolytica* was the most frequent parasite in all the breeds as well as in adults (age>12months) and puppies (age 3-12months). *Cryptosporidium* has the least prevalence in all the breeds. Infection rate was higher in puppies (age3-12 months) than adults (age>12months). Veterinary education was recommended for pet owners to avoid the spread of protozoan parasites infections among pets and humans and contamination of the environment.

2 INTRODUCTION

Dogs have evolved to occupy a unique position in the human world, unparalleled by any other successfully domesticated animal (Jane, 1996). The intelligence of these animals has been exploited by man, and this has made dogs useful to man for various activities, which include hunting, retrieving, herding, rescue operations, tracking and guidance (Jane, 1996). Since these animals are useful to man, a huge amount of money is spent for their up keep. Despite all the attempts by man to keep these animals in good health condition, a lot of challenges are faced by the owners, particularly in the area of disease control. Due to the movement of dogs across nations, the dogs are exposed to both the endemic and non-endemic intestinal protozoan infections in Nigeria.

With the increasing number of guard dogs mainly in Ibadan, there is more contact between the dogs and people exposing humans to zoonotic intestinal protozoan parasites. The transmission of these parasites could be by direct contact with the dog and indirectly with dog excretions and secretions, contaminated food and water (Lorenzini *et. al.*, 2007). Considering the importance of protozoan infections in dogs and their implication for public health, this study was done to determine the prevalence of intestinal protozoan parasites in dogs in Ibadan so that the practitioners will be aware

of the probable protozoan parasites they are likely to encounter in the course of their practices and for appropriate control measures.

3 METHODOLOGY

3.1 Samples: A total of 324 faecal samples were collected from household dogs (aged 3months and above) brought to seven Veterinary clinics at various locations in Ibadan between January and December 2007. The faecal samples were appropriately collected from the rectum of dogs using protective disposable gloves into clean and dry universal bottles and taken to Diagnostic parasitology laboratory section of the Department of Veterinary Microbiology and Parasitology, University of Ibadan for processing. The data collected included breed, adults (age>12months) and puppies (age3-12months), sex and consistency of the faeces. The dogs were classified into local breeds, exotic breeds and cross breeds (cross between local and exotic breeds). An Attempt was also made to relate parasite prevalence with age of dogs as adults (age>12months) and puppies (age3-12months).

3.2 Laboratory methods: Faecal smears were prepared from fresh faecal samples by formol –ether concentration method (Chesbrough, 1987), stained using modified Ziehl-Neelsen technique and examined under the microscope for cryptosporidial oocysts (Henriksen and Pohlenz, 1981). Three (3.0) grams of each faecal sample was emulsified in water and poured through a fine mesh sieve as described by Urguhart *et al* (1988). The emulsion was centrifuged at 2000 r.p.m for 2 minutes and the sediment re-dissolved in saturated sodium chloride solution. Test tubes were subsequently filled with the preparation, covered with cover-slips and allowed to stand for 5 minutes. Thereafter the cover-slips were gently removed, placed on clean glass slides and examined under the microscope for protozoan oocysts.

Positive faecal samples for oocysts were cultured in potassium dichromate (BDH Ltd, England) and kept at room temperature as described by Adam *et al.* (1979) in order to identify genera and species of coccidia involved. Identification was based on the number of sporozoites per sporocyst as described by Adam *et al.* (1979) and Soulsby (1982).

All data generated were analyzed using simple averages, percentages, descriptive and quantitative statistics.

4 RESULTS:

The results of the microscopic examination of the faecal samples of the dogs are shown in figures 1, 2, 3 and table 1.

The results showed out of 324 faecal samples examined 189(58.2%) were positive for intestinal protozoan parasites. The local breed dogs had the highest prevalence of 131(40.4%) followed by exotic breed dogs 40(12.8%) and cross breed dogs 18(5.5%).

Four different intestinal protozoan parasites were observed in the dog samples: - *Entamoeba histolytica, Sarcocystis spp, Isospora spp* and *Cryptosporidium spp*

The following prevalences were obtained for the 131 positive local dogs. *E. histolytica* had the highest prevalence 50(15.4%), followed by *Isospora spp 38*(11.7%), *Sarcocystis spp* 29(9.0%) and *Cryptosporidium* 14(4.3%). For exotic dogs, *E. histolytica* 19(5.8%). *Sarcocystis* 8(2.5%), *Isospora spp* 70(3.1%) and *Cryptosporidium spp* 3(0.9%).

Journal of Animal & Plant Sciences, 2010. Vol. 7, Issue 2: 783- 788.
Publication date: 29/06/2010, http://www.biosciences.elewa.org/JAPS; **ISSN 2071 - 7024**

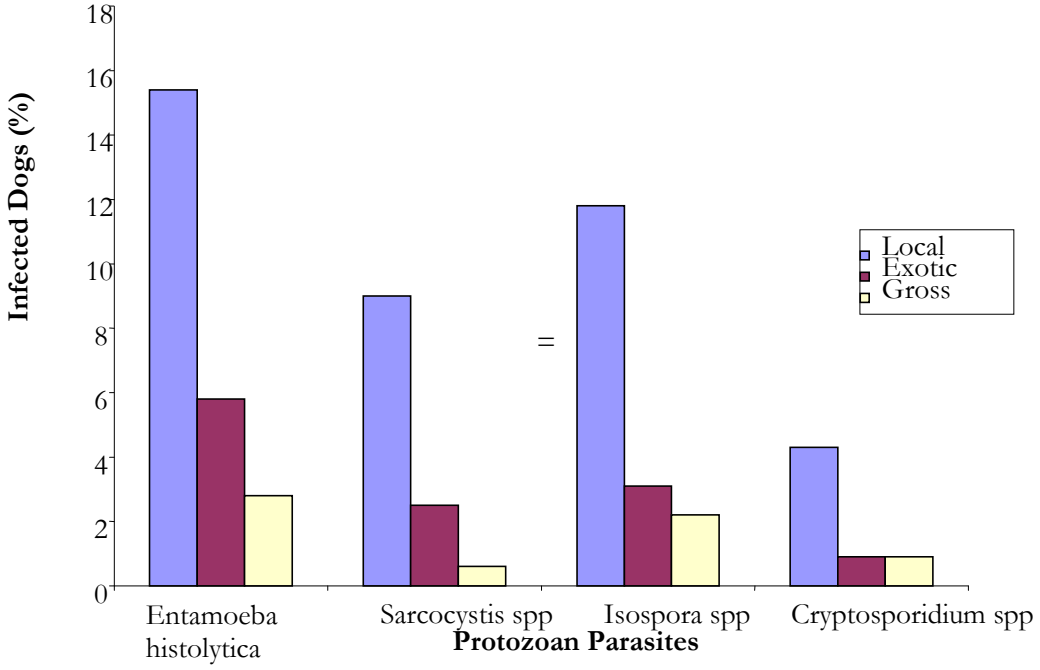

Figure 1: Relationship between Breed and Prevalence of Intestinal protozoan Parasites

For 18(5.5%) positive cross breed dogs *E.histolytica* 9(2.8%), *Sarcocystis spp* 2(0.6%) Isospora spp 4(1.2%) and *Cryptosporidium* spp 3(0.9). *E.histolytica* has the highest prevalence in all the breeds.

E. histolytica also has the highest prevalence in adult dogs 66(20.4%), puppies 11(3.4%) as well as in male and female dogs 29(8.9%) and 45(13.9%) respectively. *Cryptosporidium* has the least prevalence in all the breeds.

TABLE 1: Prevalence of Intestinal Protozoan Parasites in 324 Faecal Samples From dogs in Ibadan

Dog	Total (%) Samples Examined	Positive (%) Samples	Negative (%) Samples
Local	154 (47.5)	131(40.4)	23 (7.1)
Exotic	141(43.5)	40(12.3)	101 (31.2)
Cross	29(9.0)	18(5.5)	11 (3.4)
Total	324(100)	189(58.2)	135 (41.7)

Journal of Animal & Plant Sciences, 2010. Vol. 7, Issue 2: 783- 788.
Publication date: 29/06/2010, http://www.biosciences.elewa.org/JAPS; **ISSN 2071 - 7024**

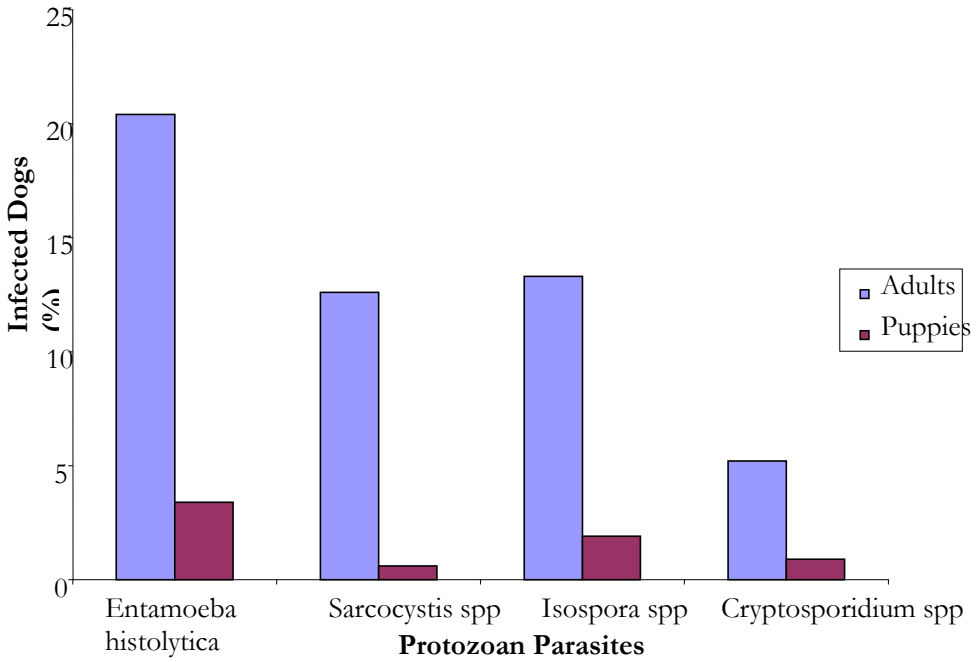

Figure 2: Relationship between Age and Prevalence of intestinal Protozoan Parasites

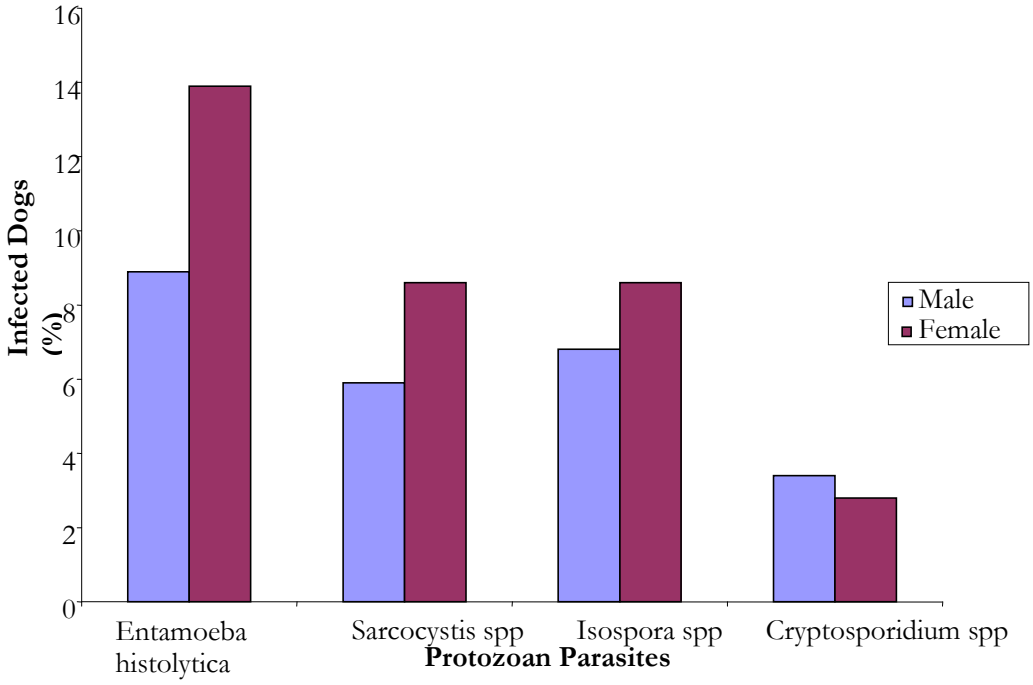

Figure 3: Relationship between Sex and Prevalence of Intestinal Protozoan Parasites

5 DISCUSSION

The intestinal protozoan parasites isolated were *Entamoeba histolytica, Sarcocystis spp, Isospora spp* and *Cryptosporidium spp*. In our study no attempt was made to quantify the oocysts so there was no discrimination between infection levels. The prevalence of the parasites was found to be highest in the local dogs. This might be due to the extensive system of management to which the local dogs were subjected to. In this system dogs are left to fend for themselves. So the dogs roam about and eat anything that comes their way. They feed on human excreta and dead animals and birds. Since most of these dogs are carriers of intestinal protozoan parasites they continually contaminate the environment with cysts and oocysts of the protozoan parasites.

Also because of the low standard of living of many local dog owners little or no care is given to these animals leading to little or no animal health education, which culminates in no or in- complete treatments of infected dogs where such treatments are given. The prevalence of 12.3% obtained for exotic dogs though low could be due to contamination of food and water with the cysts or oocysts as a result of inadequate hygiene in kennels. The high prevalence observed for puppies was in accordance with the findings by other workers (Adejinmi *et al.* 2001; Sarger *et al.* 2006b, Lorenini *et al.*2007; Martinez–Moreno *et al.*, 2007). This might be due to immuno incompetence of the puppies probably as a result of low level of passive immunity received from their dams, as suggested by Oliveira-sequeira *et al.*, 2002. The high prevalence could also be due to high stocking density as observed with some of the dogs sampled. This prevents proper cleaning and disinfection of Kennels leading to horizontal spread of infections with protozoan parasites.

Since some of these parasites are zoonotic, both man and animals stand the risk of infection particularly children who play with dogs. It is therefore very important that adequate care be given to pets.

Therefore Veterinary Doctors have the task of educating pet owners on the importance of hygiene care such as disposal of animal faeces, prompt veterinary medical attention for sick dogs, feeding properly cooked meat to dogs, daily cleaning and disinfection of kennels, proper cleaning of feeding and drinking troughs to prevent contamination of food and water, and prevent dogs from roaming so as to prevent contamination of environment.

They also need to adequately inform dog owners of the risks of infection with protozoan parasites and ways for prevention of transmission. The Government on its part needs to enforce legislation against stray dogs.

6 ACKNOWLEDGEMENT

The authors are grateful to the Directors, Managers, Veterinary Officers and attendants of Magma Veterinary Clinic Osuntokun, Jesswol Vet. Clinic Kongi, K9 Vet. Clinic Bodija Government Vet. Clinic Mokola, Small animal Clinic and Dog Kennel University of Ibadan, I.A.R & T Vet. Clinics Apata, Local dog market Ajibode, Households at Aremo, Gbaremu – Oloba-Ogbere and Agbowo for allowing us to collect faecal samples from their dogs and Mr. J.O. Olanrele for his technical assistance.

7 REFERENCES:

Adam, K.M., Paul J. and Zaman V. 1979. Medical and Veterinary Protozology. an illustrated guide. Revised edition. Published by Churchill Livingstone Edinburgh and London pg 32-49.

Adejinmi J.O, Okewole, E.A, and Obideyi S.A: 2001 Prevalence of Giardia species in dogs in Ibadan, South Western Nigeria. Nigeria Veterinary Journal volume 22 (2), 54-59

Chesbrough M.: 1987. Medical Laboratory Manual for Tropical Countries Volume I Butter worth and Company Publisher pg 208 – 212

Henriksen Sr.Aa., and Pohlenz J.F.h : 1981. Staining of *cryptosporidia* by a modified Ziehl – Neelsen technique – A brief communication. Acta Veterinary Scardinavian 25, 322-326

Jane E: 1996. Collins Gem Dogs photoguide 1st edition pg 5-6.

Lorenzini G., Tasca T. and De Carli G.A: 2007. Prevalence of intestinal parasites in dogs and cats under Veterinary care in Porto Ategre, Rio Grande do Sul, Brazil. Brazil journal of Veterinary Research animal Science, volume 44: 137-145.

Martinez-Moreno F.J. , Hernandez S., Lopez – Coobos E., Becerra C., Acosta I., Martinez-Mareio A: 2007 Estimation of canine intestinal parasites in Cordoba (spain) and their risk to public health. Veterinary Parasitology 143, 7 – 13.

Oliveria – Sequeira T.C.G., Amarante A. F.T, Ferrari T.B. and Nunes L.C: 2002 prevalence of intestinal Parasites in dogs from Sao Panto State Brazil – Veterinary Parasitology Vol.103 Issues 1-2: 19-27

Sarger H. Steiner Moret C., Multer N. Staubli D. Esposito M. Schares G. Hassig M., Stark K. and Gottsterin. B: 2006 b . Incidence of Neospora caninum and other intestinal protozoam parasites in populations of Swiss dogs Veterinary Parasitology 139, 84-92.

Soulsby E.J.L: 1982. Helminths, arthropods and protozoa of domesticated animals 7th edition. Bailliere Tindall, London pg 276 – 284.

Urguhart G. M, Armour J. J., Duncan J.L Dunn A.M. and Jennings F.W: 1988. Veterinary parasitology ELBs, Bath Press Avon Great Britain pg 275-281.