Research Article

Proceeding of 8th International Scientific Conference, College of Veterinary Medicine University of Basrah, Dec. 7-8, 2022,Iraq.

BASRAH JOURNAL OF VETERINARY RESEARCH, 2022, 21(S1):67-74
https://bjvr.uobasrah.edu.iq/

Detection Of Gastrointestinal Parasites of Cats and Dogs in Basrah Province

Nadia K. Thamer, Suhair R. Al-Idreesi, Noor Naiim Farhood

College of Veterinary Medicine, University of Basrah, Iraq.

Corresponding author email: nadia.thamer@uobasrah.edu.iq

ORCID: https://orcid.org/0000-0001-5410-1665

Accepted: Nov. 2022

Abstract

The present study has been conducted for the detection of gastrointestinal parasites isolated from cats and dogs in Basrah province from November 2018 to January 2019. One hundred fecal samples were collected from cats and dogs. Samples were submitted to the parasite's lab in college of veterinary medicine of Basrah university. for diagnoses by direct microscopic examination and concentration methods. Gastrointestinal parasites of cat identified in this study were: *Toxascaris leonine* 58.8%, *Toxoplasma gondii* 11.7, *Isospora* spp 11.7%, *Entamoeba* spp.17.6% , and for dog were *Dipylidium caninum* 21%, *Toxocara canis* 10.5%, *Isospora canis* 36.8%, *Cryptosporidium* spp. 5.2%, *Giardia* spp. 10.5%, *Entamoeba* spp. 5.2% , *Ancylostoma caninum* 10.5%,

Key words: gastrointestinal parasite, cats, dogs.

Introduction

Intestinal parasites of dogs and cats are distributed worldwide. Though some differences can be noticed between stray and shelter dogs, and even in pets in general, veterinarian concern for these parasites is still living matter due to their zoonotic potential and their significant pathogen effects on carnivore hosts (1). Dogs and cats are the natural hosts of the parasitic disease, like nematodes, cestodes and trematodes (2). It isn't always easy to tell if your dog has worms, unless the dog has a heavy infestation thus making the symptoms more obvious (2). Parasites can cause a serious problem for all animal species; furthermore, some parasitic worms can spread from animals to humans, or spread to the habitat, which

cause a high scale for contamination habitat (2). Several causes might have affected observed variability in intestinal parasite infections, such as host individual features, management, prophylactic treatments, and diagnostic techniques (3). While many potentially zoonotic organisms are associated with dogs and cats, enteric pathogens are de particular concern (4). Intestinal helminths are one of the most common pathogenic agents in dogs and cats (5). Among intestinal helminths, *Toxocara* and hookworm species of dogs and cats are most important to public health. The infections caused by these parasites receive great attention especially in developing countries and communities that may be socioeconomically challenged (4) and they are responsible for some important zoonotic diseases (6). Diagnosis is based on recovery of eggs by fecal flotation. The use of proper fecal flotation techniques is important. The specific gravity flotation solution should be between 1.1 and 1.2 (g/mL) (7). The aim of this study is to identify of gastrointestinal parasites infected cat and dog in Basrah province.

Materials and methods

Samples Collection: One hundred fecal samples were collected from (50) cats and (50) dogs in Basrah province, in a period from November 2018 to January 2019.

Identification methods

Laboratory examination: Fecal samples were subjected to macroscopical; color, diarrhea, softy and semi-solid feces, and microscopical examination. Diagnosis of parasite eggs was carried by applying direct microscopic examination and concentration method, according to techniques and morphological characteristics suggested by (8- 10).

Results

In this study, the direct microscopic examination and concentration methods to the fecal samples of cats and dogs showed the infection with the gastrointestinal parasites (figure 1). They are identified as; *Dipylidium caninum* 21%, *Toxocara canis* 10.5%, *Isospora canis* 36.8%, *Cryptosporidium* spp. 5.2%, *Giardia* spp. 10.5%, *Entamoeba* sp. 5.2%, *Ancylostoma caninum* 10.5%, *Toxascaris leonine* 55.5%,*Toxoplasma gondii* 11.1, *Isospora* 11.1%, *Entamoeba* spp.16.6% The percentage of gastrointestinal parasites species infection in cats and dogs were seen in (Table 1) (Table 2). According to data, gastrointestinal parasites infection cats were (55 %) in November, (22.2%) in December, and (25%) in January (Table 4). According to data, gastrointestinal parasite infection dogs were (50 %) in November, (31.2%) in December, and (20 %) in January (Table 5).

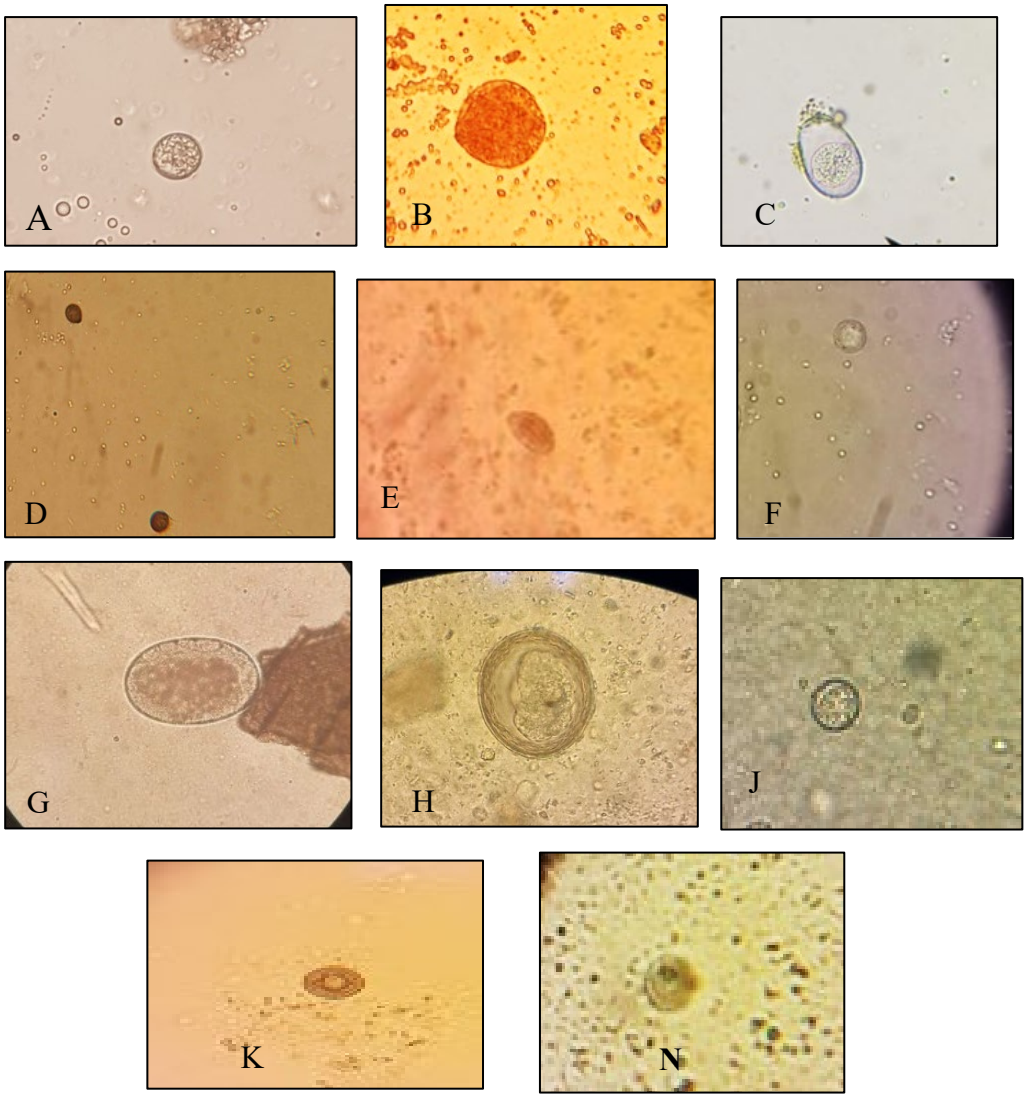

Figure (1) Direct smear examination and concentration methods of fecal samples of dogs (A-*Dipylidium caninum*(100X), B-*Toxocara canis* egg(100X), C-*Isospora canin*(40X), D-*Cryptosporidium* spp. Oocyst(40X), E-*Giardia* spp. Cyst(40X), F-*Entamoeba* spp(40X).,G-*Ancylostoma caninum*(40X)) and cats (H- *Toxascaris leonine*(40X), J-*Toxoplasma gondii*(100X), K- *Isospora*(40X), N-*Entamoeba* spp. (100X))

Table (1) Percentage of gastrointestinal parasite species in cat

Gastrointestinal parasite	N.P.	(%)
Toxascaris leonine	10	58.8
Toxoplasma gondii	2	11.7
Isospora	2	11.7
Entamoebe spp	3	17.6
Number examined(total)=	50	
Number infected(total)=	17	

N.P = Number positive (%) =Percentage

Table (2) Percentage of gastrointestinal parasite species in dogs.

Gastrointestinal parasite	N.P.	(%)
Isospora canis	7	36.8
Ancylostoma caninum	2	10.5
***Cryptosporidium* sp.**	1	5.2
***Giardia* sp.**	2	10.5
Dipylidium caninum	4	21
Toxocara canis	2	10.5
***Entamoeba* spp.**	1	5.2
Number examined(total)=	50	
Number infected(total)=	19	

N.P $\frac{\text{Number positive}}{\text{Number examined}} \times 100 =$ **Percentage.**

Table (3) Relation of gastrointestinal parasites infection with months of year in cats.

Month	N.E	N.I	%
November	20	11	55
December	18	3	16.6
January	12	3	25

N.E = Number examined, N.I =Number infected, (%)=Percentage.

Table (4) Relation of gastrointestinal parasites infection with months of year in dog.

Month	N.E	N.I	%
November	24	12	50
December	16	5	31,2
January	10	2	20

N.E = Number examined, N.I =Number infected, (%)=Percentage.

Discussion

Dogs and cats are important reservoir hosts of various zoonotic helminthes (11). Canine and feline parasites are susceptible to the effects of environmental conditions and to climate change due to their developmental stages and their survival periods in the environment (1). This study was reported the percentage of the zoonotic parasite are include; *Cryptosporidium*, *Giardia* sp., *Entamoeba* spp., *Toxocara* spp.

Ancylostoma caninum and *Toxoplasma gondii*. The results of this study showed that the percentage of gastrointestinal parasitic infections among dogs and cats of areas in Basrah is high. As many of the identified gastrointestinal parasite species can have significant health implications, it is important to have an understanding of regional parasite burden so that public health effects can be minimized.

The percentage of parasites infection dog this study ; *Ancylostoma caninum* 10.5%, *Dipylidium caninum* 21%, *Toxocara canis* 10.5%, *Isospora canin* 36.8%, *Cryptosporidium* spp. 5.2%, *Giardia* spp. 10.5%, and *Entamoeba* spp. 5.2%, which that agreement with (12) found *Isospora canis* 67.5%, *Gairdia* spp. 24.1% and *Cryptosporidium* spp. 20.8% in Baghdad, (13) were reported ; *Dipylidium caninum* 4.7%, *Toxocara canis* 34.4%, *Isospora canin* 1.7%, *Cryptosporidium* spp. 7.8%, *Giardia* spp. 15.6%, *Entamoeba* spp. 3.2%, and *Ancylostoma caninum* 86% in Malaysia and (14) recorded *Ancylostoma caninum* (0.97%) in Italy. *Toxocara canis* was recorded in Iraq, 1957 (15). However, this study recorded a high rate of 10.5% that means the infection still epizootic and may be transmitted to a human. That proved recently by serological survey (a commercial ELISA test), the rate of Toxocariasis in sick children was 30.8% in Mosul province (16) while (17) they reported *Ancylostoma caninum* (7.5%) in Basrah, (18)found *Ancylostoma caninum* (41.2%) in Iran, (17) were found of *Isospora canis* (6.5%) in Basrah**,** (19) was found *Ancylostoma caninum* (2%) in Sulaimani, (20) Whose reported *Isospora* spp. (9.3%) and *Ancylostoma caninum* (2.2%) in Duhok, The current study revealed high a rate of 10.5% of Hookworm infection that include genus *Ancylostoma*, them were recorded for the first time in Iraq by (21, 22). This high rate of infection disagrees with (23) who recorded a low rate of 2% in Kalar city province of Sulaimani. The variation may be due to differences in temperatures and moisture between Basrah and Sulaimani (24). Also, the percentage which reported in this study of parasite infected cat were *Toxascaris leonine* 58.8%,*Toxoplasma gondi* 11.7%, *Isospora* 11.7% and *Entamoeba* sp.17.6%, which that agreement with (25) from Basrah province with a prevalence of *Toxascaris leonine* (2%), (26) from Al-Diwaniya province which records a prevalence of *Toxascaris leonine* (7%), (27) *Toxocara* spp. (3.5 %) in Bangkok, while (28) from Mosul city with a prevalence of *Toxascaris leonine* (30%) and (13) whose found *Toxascaris leonine* 8%, *Isospora* 4%, and *Entamoeba* spp.12%.

All studied months appeared presence of gastrointestinal parasites, However, December and November appeared the high rates of infection that is similar to (29) who also recorded a high percentage infection during the winter months.

Conclusions

In Basrah, the percentage of the gastrointestinal parasites in pet dogs and cats is high suggesting the need for efficient control measures through regular diagnostic testing, the

deworming pattern of dogs and cats, preventive measures, and effective therapeutic protocols against them. Further studies are necessary to identify the potentially zoonotic gastrointestinal parasites in dogs and cats within the different communities in Basrah province.

conflict of Interest

The author(s) declared that there is no conflict of interest.

References:

(1) Lee, A. C., Schantz, P. M., Kazacos, K. R., Montgomery, S. P., & Bowman, D. D. (2010). Epidemiologic and zoonotic aspects of ascarid infections in dogs and cats. *T parasi, 26*(4), 155-161.

(2) Basualdo-Farjat, J. A.; Minvielle, M. C.; Pezzani, B. C. & Niedfelid, G. (1995). Relationship between parasitical inoculum and immunological parameters in experimental toxocariasis. *Zbl. Bakt. 282*: 465-473.

(3) Itoh, N., Ikegami, H., Takagi, M., Ito, Y., Kanai, K., Chikazawa, S., ... & Higuchi, S. (2012). Prevalence of intestinal parasites in private-household cats in Japan. *JFMS, 14*(6), 436-439.

(4) Robertson I.D., Irwin P.J., Lymbery A.J., Thompson R.C. 2000. The role of companion animals in the emergence of parasitic zoonoses. *IJP, 30,* 1369–1377.

(5) Bridger K.E., Whitney H. 2009. Gastrointestinal parasites in dogs from the Island of St. Pierre off the south coast of New foundland. *Vet Parasi, 162,*167-170.

(6) Despommier D. (2003). Toxocariasis: Clinical aspects, epidemiology, medical ecology, and molecular aspects. *CMR, 16*, 265–272.

(7) Hendrix, C. M. and Robinson, E. D. (2014). Diagnostic Parasitology for Veterinary Technicians: USA. Julie Eddy. Pp:313- 321.

(8) Soulsby E.J.L. (1982). Helminths, Arthropods, and Protozoa of Domesticated animals. 7th Ed. Bailiere Tindall, London,UK., pp. 981-1028.

(9) Sullivan, J.T. (2000). Electronic atlas of parasitology, University of the incarnate word. The Mc Graw-Hill company. Pp.539.

(10) Mehlhorn,H.(2016).Animal parasites (Diagnosis, Treatment, Prevention).7th Ed. Springe, Switzerland, Germany.pp.730.

(11) Fang, F., Li, J., Huang, T., Guillot, J. and Huang, W. 2015. Zoonotic helminths. 303 parasites in the digestive tract of feral dogs and cats in Guangxi, China. BMC .304 *Vet. Res. 11*: 211.

(12) Hadi, A. M. (2016). Prevalence of Gastrointestinal Helminthes and Protozoa among Stray Dogs in Baghdad. *IJVetMed* (ISSN-P: 1609-5693 ISSN-E: 2410-7409), 40(1), 1-4.

(13) Ngui, R., Lee, S., Yap, N., Tan, T., Aidil, R., Chua, K., ... & Lian, Y. (2014). Gastrointestinal parasites in rural dogs and cats in Selangor and Pahang states in Peninsular Malaysia. *Acta Parasitologica*, *59*(4), 737-744.

(14) Zanzani, S. A., Gazzonis, A. L., Scarpa, P., Berrilli, F., & Manfredi, M. T. (2014). Intestinal parasites of owned dogs and cats from metropolitan and micropolitan areas: prevalence, zoonotic risks, and pet owner

awareness in northern Italy. BioMed Research International, 2014.
(15) Leiper, J. W. (1957). Report to the government of Iraq on animal parasites and their control FAO report. No. 610 Rome. In (ed.) Hasso, S. A. (2007). A review of confirmed pathogen of dogs and cats in Iraq. Bas. *J. Vet. Res. 6*(2): 156-160.
(16) Al-Saeed, W. M.; Al-Dabbagh, N. Y. and Mahmood, H. J. (2014). Serological study of Toxocariasis in Children in Mosul Province. *Med. J. Babylon.* 6: 4.
(17) Al-Jassim, K. B., Mahmmod, Y. S., Salem, Z. M., & Al-Jubury, A. (2017). Epidemiological investigation of gastrointestinal parasites in dog populations in Basra province, Southern Iraq. *JPD, 41*(4), 1006-1013.
(18) Siyadatpanah, A., Gholami, S., Daryani, A., Sarvi, S., Sharif, M., Seguel, M., ... & Hosseini, S. A. (2019). The Prevalence of Intestinal Helminths in Free-Ranging Canids of Mazandaran, Northern Iran. *IJP,14*(4), 563.
(19) Bajalan, M. M. M. (2010). Prevalence of intestinal helminths in stray dogs of Kalar city/Sulaimani province. *The Iraqi Journal of VetM, 34*(1), 151-157.
(20) Muhamed, T. A., & Al-Barwary, L. T. O. (2016). Prevalence of Intestinal Parasites in the Intestine of Dogs (Sheep-Keeper, Owned, Pet and Stray) in Duhok Province, Kurdistan Region. *JVST, 7*(6), 379.
(21) Al-Alousi, T. I.; Al-Janabi, B. M. and Hayatee, Z. G. (1980). A study of some parasites of the dogs in Mosul (Iraq) with special refrence to Mesocestoides lineatus. *J. Coll. Vet. Med. 1:* 5-16.
(22) Abul-Eis, E. S. (1983). Studies on parasites of public health importance from Mosul, Iraq. M.Sc. Thesis, Coll. Med. Univ. Mosul. Mosul, Iraq. Pp: 142.
(23) Bajalan, M. M. (2010). Prevalence of intestinal helminthes in stray dogs of Kalar city / Sulaimani province. *Iraqi J. Vet. Med., 34*(1): 151.
(24) Pullola T, Vierimaa J, Saari S, Virtala AM, Nikander S, Sukura A (2006) Canine intestinal helminths in Finland: prevalence, risk factors and endoparasite control practices. *Vet Parasitol, 140*:321–326
(25) Abdullah, B. H. 2007. Some helminths parasitized on stray cats *Felis catus* L. in Basrah and epizootiological and biological studies on *Taenia taeniaeformis* Batsch, 1786. Ph. D. Thesis, Coll. Educ., Univ. Basrah: 174pp.
(26) Al-Aredhi, H. S. 2015. Prevalence of gastrointestinal parasites in domestic cats (*Felis catus*) in Al-Diwaniya province/ Iraq. *Int. J. Curr. Microbiol. Appl. Sci., 4*(5): 166-171.
(27) Jittapalapong, S., Inparnkaew, T., Pinyopanuwat, N., Kengradomkij, C., Sangvaranond, A., & Wongnakphet, S. (2007). Gastrointestinal parasites of stray cats in Bangkok metropolitan areas, *Thailand. Agriculture and Natural Resources, 41*(5), 69-73.
(28) Al-Obaidi, Q. T. 2012. Prevalence of internal helminthes in stray cats (*Felis catus*) in Mosul, Iraq. *J. Anim. Vet. Adv., 11*(15): 2732-2736.
(29) Awad, A. H. H. (2005). Epidemiological study of *Toxocara canis* in Basrah city. MSc. thesis. College of Veterinary Medicine of Basrah.

تشخيص طفيليات الجهاز الهضمي للقطط والكلاب في محافظة البصرة

نادية كاظم ثامر، سهير رياض الإدريسي، نور نعيم فرهود

كلية الطب البيطري، جامعة البصرة، العراق

الخلاصة

أجريت الدراسة الحالية للكشف عن طفيليات المعدة والامعاء المعزولة من القطط والكلاب في محافظة البصرة خلال الفترة من تشرين الثاني 2018 إلى كانون الثاني 2019، وتم جمع 100 عينة براز من القطط والكلاب. فحصت عينات البراز في مختبر الطفيليات / كلية الطب البيطري –جامعة البصرة باستخدام الطرق المباشرة والمركزة، توصلت هذه الدراسة وجود طفيليات معوية للقطط تضمنت: , Toxascaris *leonine* 58.8% *Toxoplasma gondii* 11.7%, *Isospora* 11.7%, *Entamoeba* spp.17.6%و للكلاب كانت: *Dipylidium caninum* 21%, *Toxocara canis* 10.5%, *Isospora canis* 36.8%, *Cryptosporidium* spp. 5.2%, *Giardia* spp. 10.5%, *Entamoeba* spp. 5.2%, *Ancylostoma caninum* 10.5%

الكلمات المفتاحية: طفيليات المعدة والامعاء، القطط , الكلاب.