

Short Communication

A survey of gastrointestinal helminth of stray dogs in Zabol city, southeastern of Iran

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ABSTRACT

Canids are reservoir for some zoonoses helminthic disease. They are one of main public health problem. The aim of this study was to ascertain frequency of gastrointestinal helminthic infection of stray dogs in Zabol city, southeaster of Iran. In this descriptive study, 30 stray dogs were euthanized, intestine was removed by necropsy. Then, the intestines was opened by scalpel and their contents passed through mesh sieve. The helminth were collected. The nematodes were preserved in 70% ethanol with 5% glycerin and cestodes were preserved in 70% ethanol. The cestodes were stained by acetocarmine. The nematodes were cleared by lactophenol. The genus and species of helminth were identified by identification keys. Twenty two (73.3%) of stray dogs had at least one intestinal helminthic infection. Recovered helminth from stray dogs include: *Taenia hydatigena* (53.3%), *Taenia ovis* (20%), *Taenia multiceps* (6.6%), *Mesocestoides spp* (10%), *Toxocara canis* (23.3%), *Toxocara cati* (3.3%). Data showed that the stray dogs in Zabol city harbor some important zoonoses helminth parasite like *Toxocara*.

Keywords: dog, gastrointestinal helminth, Iran

INTRODUCTION

Parasitic infections, especially zoonotic intestinal, are public health problem (Razmi *et al* 2006). Canids are the final host for some important parasites like *Echinococcus* (Jacobs *et al.*, 1982). Stray dog habitats are close to human homes and thus they are always threat for our public health (Pestechian *et al.*, 2012). They harbor some zoonoses helminth that cause important parasitic infection like hydatid cyst and visceral larva migrans (Beiromvand *et al.*, 2013). Also, they can harbor *Echinococcus granulosus*, *Toxocara*

canis, *Toxascaris leonina*, *Ancylostoma caninum*, *Taenia hydatigena*, *Taenia ovis*, *Taenia multiceps*, *Dipylidium caninum*, *Mesocestoides lineatus* (Dalimi and Mobedi, 1992; Gholami *et al.*, 1992). The present study was aimed to ascertain the prevalence of intestinal helminth infection of stray dogs in Zabol city, southeastern of Iran in 2015.

MATERIALS AND METHODS

Study area. Zabol city is located in southeastern of Iran. Average altitude is 489.2 m. Average annual precipitation of this area is 21 mm.

Parasitological techniques. In this descriptive study, 30 stray dogs were euthanized by municipal officers. Bowels were removed by necropsy and tow end of them was closed. Then, the bowels were transferred to parasitological laboratory and they were opened by scalpel. Intestinal contents and epithelial scrapings were passed through 60 and 80 mesh wire sieves. Contents of sieves were washed by tap water and helminth were collected. Cestodes were preserved in 70% ethanol and were stained by acetocarmine. Nematodes were fixed in 70% ethanol with 5% glycerin, then located in lactophenol solution as clearing agent. Identification was done according to keys given by Khalil et al. (1994), Anderson (2000) and Yamaguti Yamaguti (1961). Data were analysed as descriptive statistics using SPSS software for windows.

RESULTS AND DISCUSSION

Twenty two (73.3%) of 30 stray dogs were infected at least by one intestinal helminth parasite. Tow (6.6%) of them harbored nematodes, 14 (46.6%) had cestode infection and 6 (26%) of them had both nematode and cestode infection. The helminth that founded in dogs included: *Taenia hydatigena*, *Taenia ovis*, *Tenia multiceps*, *Mesocestoides spp*, *Toxocara canis*, *Toxocara cati* (table 1 and Figure 1). Data were showed that the intestinal helminth parasitic infection of stray dogs in Zabol was 73.3%. There are some recorded data of prevalence of intestinal helminth in dogs: Mashhad 91% Chenaran 66% (Beiromvand et al., 2013), Sari 80% (Gholami et al., 1992), Ilam 83% (Abdi et al., 2013), Chaharmahal and Bakhtiari province 71.4% (Nabavi et al., 2014), Sarab 78.9% (Khanmohammadi et al., 2011), Garmsar 80% (Eslami et al., 2010), Kermanshah 82.5% (Rokni, 2008), Isfahan 60.4% (Pestechian et al., 2012) and west provinces of Iran 89.15% (Dalimi et al., 2006). In this study most frequency belongs to *T. hydatidenga* (45.45%), it is similar to frequency of this tapeworm in west of Iran (53.01%) (Dalimi et al., 2006), but in other area the frequency of this tapeworm was less: Isfahan 13.54% (Pestechian et al., 2012), Ilam 18.5% (Abdi et

al., 2013), Mashhad 37%, Chaharmahal and Bakhtiari province 12.2% (Nabavi et al., 2014). Frequency of *T. hydatigena* with other helminthic infection was 27.27%. Frequency of *T. canis* alone was 9.09% and with other helminth, it was 22.72%. In other study ferequency of *T. canis* was: Mashhad 37%, Chenaran 25% (Beiromvand et al., 2013), Isfahan 6.25% (Pestechian et al., 2012) and west of Iran 6.02% (Dalimi et al., 2006). Frequency of *T. ovis* was 4.54% and in other study it was: Mashhad 8%, Isfahan 24% (Pestechian et al., 2012), west of Iran 7.23% (Dalimi et al., 2006), Chaharmahal and Bakhtiari province 2% (Nabavi et al., 2014) and Ilam 32% (Abdi et al., 2013).

Table 1. Frequency of intestinal helminth parasites among infected stray dogs of Zabol

Intestinal helminth	Number of infected dogs (%)
<i>T. hydatigena</i>	10 (45.45%)
<i>T. ovis</i>	1 (4.54%)
<i>Mesocestoides spp</i>	1 (4.54%)
<i>Toxocara canis</i>	2 (9.09%)
<i>T. hydatigena</i> + <i>T. ovis</i>	1 (4.54%)
<i>T. hydatigena</i> + <i>Toxocara canis</i>	1 (4.54%)
<i>T. hydatigena</i> + <i>T. multiceps</i>	1 (4.54%)
<i>T. ovis</i> + <i>Toxocara canis</i>	1 (4.54%)
<i>T. hydatigena</i> + <i>T. ovis</i> + <i>Toxocara cati</i>	1 (4.54%)
<i>T. ovis</i> + <i>Toxocara canis</i> + <i>Mesocestoides spp</i>	1 (4.54%)
<i>T. hydatigena</i> + <i>T. multiceps</i> + <i>Toxocara canis</i>	1 (4.54%)
<i>T. ovis</i> + <i>Toxocara canis</i> + <i>Mesocestoides spp</i> + <i>T. hydatigena</i>	1 (4.54%)
Total	22 (100%)

Frequency of *T. ovis* with other helminthic infection was 22.72%. Frequency of *Mesocestoides spp* was 4.54% and in other study it was: Mashhad 6%, Isfahan 5.31% (Pestechian et al., 2012), west of Iran 26.5%

(Dalimi et al., 2006), Chaharmahal and Bakhtiari province 8.2% (Nabavi et al 2014) and Ilam 10.8% (Abdi et al., 2013). Frequency of *Mesocestoides spp* with other helminthic infection was 9.09%. In this study we did not find *T. multiceps* infection alone and its frequency mixed with other helminthic infection was 9.09% and for other study was: Mashhad 23%, Isfahan 5.21% (Pestechian et al., 2012), west of Iran 4.82% (Dalimi et al., 2006) and Chaharmahal and Bakhtiari province 8.2% (Nabavi et al., 2014). In one sample we found *T. cati* with other helminthic infection that didn't report in mentioned studies. Despite epithelial scarping of dog intestinals, we didn't find *E. granulosus*. In one seroepidemiological study of human hyatid cyst in Zabol, prevalence was obtained 0% in 2014 (Karimi, 2014). Also, *Dipylidium caninum* was not seen in stray dogs of Zabol. According to the results of this study we conclude that the prevalence of *T. canis* was high. It means that humans in this regions are seriously at risk of visceral larva migrans infection.

Therefore, preventive program, such as elimination of the stray dogs from cities and rural regions, and public health education is necessary.

Ethics

I hereby declare all ethical standards have been respected in preparation of the submitted article and this study has been carried out with ethical committee approval.

Conflict of Interest

The authors declare that they have no conflict of interest.

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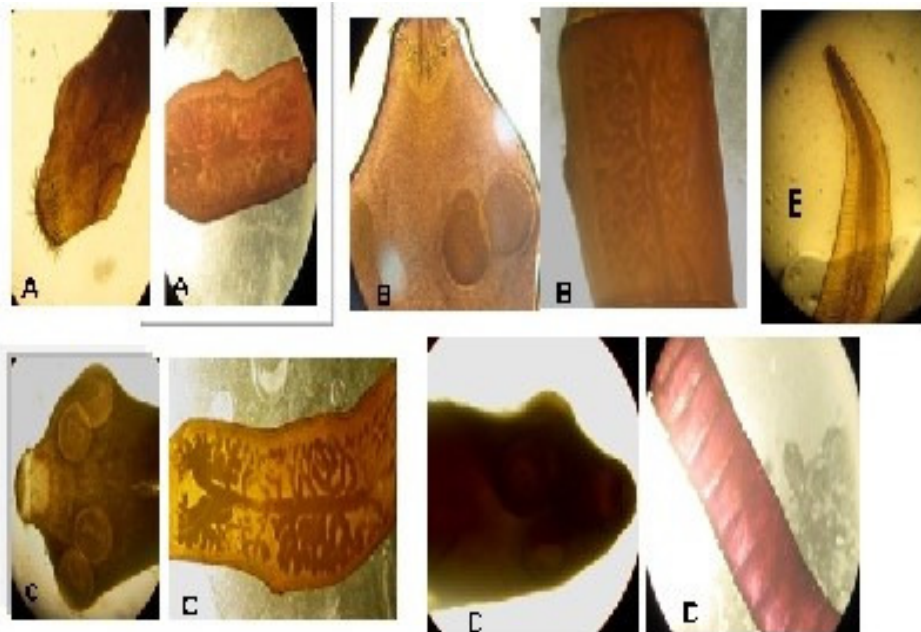


Figure 1. A) scolex and gravid proglottid of *T. ovis*, B) scolex and gravid proglottid of *T. hydatigena* C) scolex and gravid proglottid of *T. multiceps* D) scolex and gravid proglottid of *Mesocestoides spp*. E) head and cervical alae of *Toxocara cati*.

References

- Abdi, J., Asadolahi, K., Maleki, M.H., Ashrafi Hafez, A., 2013. Prevalence of Helminthes Infection of Stray Dogs in Ilam Province. *J Paramed Sci* 4, 47-50.
- Anderson, R.C., 2000. *Nematode Parasites of Vertebrates: Their Development and Transmission*, CABI Pub.
- Beiromvand, M., Akhlaghi, L., Fattahi Massom, S.H., Meamar, A.R., Motevalian, A., Oormazdi, H., Razmjou, E., 2013. Prevalence of zoonotic intestinal parasites in domestic and stray dogs in a rural area of Iran. *Preventive veterinary medicine* 109, 162-167.
- Dalimi, A., Mobedi, I., 1992. Helminth parasites of carnivores in northern Iran. *Annals of tropical medicine and parasitology* 86, 395-397.
- Dalimi, A., Sattari, A., Motamedi, G., 2006. A study on intestinal helminthes of dogs, foxes and jackals in the western part of Iran. *Veterinary parasitology* 142, 129-133.
- Eslami, A., Ranjbar-Bahadori, S., Meshgi, B., Dehghan, M., Bokaie, S., 2010. Helminth infections of stray dogs from garmsar, semnan province, central iran. *Iranian journal of parasitology* 5, 37-41.
- Gholami, S.h., Mobadi, I., Ziaei, H., Sharif, M., 1992. Study of intestinal worms of dogs and jackals in different parts of Sari region in 1992-1993. *J Mazandaran Uni Med Sci* 9, 12-50.
- Jacobs, E.R., Soulsby, M.E., Bone, R.C., Wilson, F.J., Jr., Hiller ,F.C., 1982. Ibuprofen in canine endotoxin shock. *The Journal of clinical investigation* 70, 536-541.
- Karimi, A., 2014. Seroepidemiological study of hydatid cyst by ELISA method in Zabol Province. *Veterinary. Zabol Uni Med Sci*, Zabol, Iran.
- Khalil, L.F., Bray, R.A., Jones, A., International, C.A.B., 1994. *Keys to the Cestode Parasites of Vertebrates*, CAB International.
- Khanmohammadi, M., Fallah, E., Reyhani-rad, S., 2011. Epidemiological studies on fauna and prevalence of parasite helminthes on red fox (*Vulpes vulpes*) in Sarab district, East Azerbaijan province, Iran. *Ann Biol Res* 2, 246-251.
- Nabavi, R., Manouchehri Naeni, K., Zebardast, N., Hashemi, H., 2014. Epidemiological study of gastrointestinal helminthes of canids in chaharmahal and bakhtiari province of iran. *Iranian journal of parasitology* 9, 276-281.
- Pestechian, N., Rasouli, A., Yoosefi, H., 2012. Distribution of Intestinal Worms among Stray Dogs in Isfahan, Iran. *J Isfahan Med School* 29, 2827-2833.
- Rokni, M.B., 2008. The present status of human helminthic diseases in Iran. *Annals of tropical medicine and parasitology* 102, 283-295.
- Yamaguti, S., 1961. *Systema Helminthum: Digenetic trematodes of fishes*, The author