

Prevalence of Helminthes Infection of Stray Dogs in Ilam Province

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ABSTRACT

Stray dogs are considered as an important health problem in societies because they can carry dangerous diseases such as hydatidosis, toxocariasis and coenurus cerebralis to humans and animals. Therefore, the study of helminthes infections in all parts of Iran for evaluation of infection state, and provision of the infection control programs is essential. The aim of this study, was to determine the prevalence of parasitic cestodes in stray dogs around Ilam city. In this study, 65 stray dogs were killed by shooting with the municipality officers and were dissected considering health rules. After laparotomy, internal organs are inspected, and bowels completely collected in separate containers containing 10% formaldehyde. Transferring the samples to the parasitological laboratory, the bowels were cut using forceps, and its contents passed through the sieve, and the worms were separated. Azo carmine & carminic acid staining was used for diagnosis of isolated cestodes. The number of 65 dogs, 54 dogs (83%) had at least one species of cestodes; that 32% (21 dogs) infected by *Taenia ovis*, 9% (6 dogs) by *Echinococcus granulosus*, 15.4% (10 dogs) by *Taenia hydatigena*, 20% (13 dogs) by *Taenia multiceps*, 18.5 /% (12 dogs) by *Dipylidium caninum* and 10.8% (7 dogs) by *Mesocestoides lineatus*. In this study, it was shown that helminthic rate in stray dogs is very high around Ilam. These parasites are important in terms of health and economic aspects. Therefore, it is more essential that we note to parasitic infections, to develop control programs.

Key word: Stray dogs; cestodes; Iran; health

INTRODUCTION

The dog is an advantageous animal and it is needed for ranch preservation in many areas; human infection with its intestinal parasites is one of the most important issues in parasitology. Most parasites that are transmitted to humans are common between humans and animals (Zoonosis) and humans and animals are affected by the larval stage [1-3].

Canine intestinal parasites may cause major diseases such as hydatidosis, coenurus cerebralis and visceral larva migrans in humans and animals that cause the health and economic losses to society [4-7].

Unfortunately, despite the great efforts, national and international investments, and the improvement of health standards, the infection

rate of these diseases has not been reduced due to the lack of changes at epidemiological and ecological conditions; yet, as a major health problem, it is allocated to an important part of social activities. There are different reports for the canine helminthic parasites in different parts of the world such as Syria, Lebanon, Palestine, Iraq, Kuwait and the UAE [8].

Multiple studies have been conducted in Iran and several results are obtained. They include the studies of stray dogs in Mashhad, Hamadan, Kashan, Ardestan, Isfahan, Shiraz, and many other areas [9-14].

Most cestode's eggs are similar; therefore, genus and species of the parasites could not be diagnosed by studying on feces of dogs. The aim of this study was to determine the prevalence of

intestinal worms in the Ilam stray using dissection method.

MATERIALS AND METHODS

In this descriptive study, samples were prepared from the carcasses of stray dogs were killed by shooting with the municipality officers. From October 2011 to March 2012, a total of 65 dogs were dissected and examined macroscopic and microscopic. After physical examination, to determine the age and sex, the dog's carcass in the supine position from end sections of ribs longitudinal and perpendicular was slit with the scalpel. Early the mesenteric, and then the beginning of the stomach to the end of anus were removed.

To prevent removal of intestinal contents and spread of the infection thread, bowel ends were closed and transferred to the laboratory. Intestines were split in enamel basin with splitter scissors and its contents were washed with mild stream of water and passed through sieves containing 1 mm pores. Helminthic samples were collected in glass containers containing 10% formalin for staining for the final diagnosis.

Thus, the azo carmine was used for temporary staining and carminic acid & alcohols 50, 70, 80, 90, and 100% for permanent staining. The samples were carefully evaluated using a microscope. The keys in the Schmidt's book were the reference for identifying gender and species of cestodes.

RESULTS

Six species of cestodes were isolated from a total of 65 dogs. Of 65 dogs, 54 dogs (83%) had at least one helminthic parasite species, including 21 dogs affected by *Taenia ovis*, 6 dogs by *Echinococcus granulosus*, 10 dogs by *Taenia hydatigena*, 13 dogs by *Taenia multiceps*, 12 dogs by *Dipylidium caninum* and 7 dogs by *Mesocestoides lineatus*. *Taenia ovis* and *Taenia hydatigena* cannot transmit to humans, and they have only economic and veterinary importance. *Echinococcus granulosus*, *Taenia multiceps*, *Dipylidium caninum* and *Mesocestoides lineatus* are pathogen in humans and they have health

importance. The highest rate of infection associated with *Taenia ovis* and the lowest rate with *E. granulosus* (table 1).

Table 1. The prevalence of cestodes in dogs around Ilam

cestode	Infection rate	
	number	percent
<i>Echinococcus granulosus</i>	6	9
<i>Taenia multiceps</i>	13	20
<i>Taenia ovis</i>	21	32
<i>Taenia hydatigena</i>	10	15.38
<i>Mesocestoides lineatus</i>	7	10.76
<i>Dipylidium caninum</i>	12	18.46

DISCUSSION

Most intestinal parasites detected in this study, have a worldwide distribution. Although, incidence and prevalence of each parasite, in the larval and adult stages, respectively, in humans and animals is different in various regions based on knowledge, cultural practices, climatic conditions, and diagnostic possibilities. Stray dogs have not the owner, so they had not taken any anti-parasitic drug. Given the uncertain sources of their nutrition, intestinal infections in these dogs are natural.

Echinococcus granulosus is one of the most important cestodes that are reported in this study. Although the prevalence of this parasite in Ilam province is lower than other studies in Iran, because it has multiple interface hosts, and affects a variety of host organs, thus, the presence of the disease in the region is a potential risk; More accurate and comprehensive studies should be implemented to obtain the overall prevalence of the disease through studying on infection rate of slaughter animals, seroepidemiological and surgical assessments of hydatid cyst in treatment centers. Probably, due to drought in recent years that it is redounded to selling cattle by ranchers, may be the cause of the low prevalence of *E. granulosus* in stray dogs around Ilam.

The *Taenia multiceps* infection in this study reported; it's the cause of a serious disease is called coenurus cerebralis. *Coenurus cerebralis* is a specific cerebral disease in sheep, but few

human cases have been reported in the world. This shows that the disease is common between humans and animals and may be transmitted to humans.

Dipylidium caninum is reported in Ilam dogs. This parasite cause human's infection rarely, but is classified as a zoonosis, that is a health problem. *Taenia ovis* infection is the most common cestodes among dogs in this area, thus, there has been usually the cysticercosis disease in the sheep of this region. This issue is causing economic losses.

Bahrani & et al studied on intestinal parasites in stray dogs in Ilam using fecal analysis (rather than dissection in the present study); they reported the prevalence of *Taenia taeniaformis* 19.64 percent and the prevalence of *Echinococcus* species 6.25 percent. But all *Taenia*'s eggs are quite similar to each other, and they cannot be used to differentiate *Taenias*; scolexes & segments are used for this reason that it is possible only with dissection [15].

In a study for helminthic parasites in stray dogs in Isfahan city at 2011, 60% of dogs were infected; and seven species of cestodes including *Taenia ovis* 24%, *Taenia hydatigena* 13.54%, *Taenia pisiformis* 5.21%, *Taenia multiceps* 5%, *Echinococcus granulosus* 27%, *Dipylidium caninum* 22%, and *Mesocestoides lineatus* 5 percent have been reported [16].

Taenia hydatigena infection rate in this study was similar to that of Pestechian's study [16]; this parasite can also cause significant damage to the economy. *Mesocestoides lineatus* has been

reported in a variety of studies; and there are evidences about transmission of the parasite to humans that may cause diarrhea. It increases the importance of the parasite prevalence. Helminthic infection rate in dogs of Hamadan city was 100%, whereas, the prevalence of *E. granulosus* 48.3 percent; it is much higher than our study [10].

Some studies have been conducted in different parts of the world, too. For example, the overall prevalence in Brazilian stray dogs has been reported 54.33 percent [17]. In Kermanshah Province, which is neighbor of the Ilam Province, the overall rate of infection was equivalent that has been reported 82.5% [18].

There is no doubt that presence of millions of dogs in our country, under any circumstances cannot be justified and should be planned in a systematic attempt to destroy them.

Comparison of the infection rate in different areas may represent a positive or negative role of the municipalities in obliterating of the stray dogs. Besides, the better supervision of health systems, and even the role of the veterinary inspection on meat and slaughterhouse waste, is related to the results. Meanwhile, the changes in recent climatic states like rainfall decline and drought should be considered; and role of cities development & urbanism, interfere to natural reservoirs privacy of this parasites should be lionized.

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