



A Dog with Multiple Infections of Enteric Parasitic Zoonosis in Mashhad City, North-East of Iran; a Case Report

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ABSTRACT

Aims In this study, we examined stool specimen from a 3-year-old domesticated dog, which was referred to a veterinary clinic with clinical signs such as nausea or vomiting, dysentery, cachexia and rash in Mashhad city, northeast of Iran.

Patient & Methods A 3-year-old pet dog was referred to veterinary clinic of Mashhad in February 2016 by symptoms including, nausea or vomiting, dysentery, cachexia and rash in Mashhad City, Northeast of Iran. For parasitological examination, formalin-ether concentration technique was used. Fecal smears were made from the sediment, stained with iodine and observed by light microscope. Modified Ziehl Neelsen method was used for the detection of *Cryptosporidium* spp.

Findings The animal was infected with 10 disease-causing parasites; *Taenia* spp., *Fasciola* spp., *Dicrocoelium dendriticum*, *Acanthocephal* spp., *Trichuris vulpis*, Hook worm, *Giardia* spp., *Blastocystis* spp., *Eimeria* spp., and *Cystoisospora* spp.

Conclusion Domestic and stray dog could be an important sources for distribution of zoonoses disease especially parasitic agents.

Keywords Dog Diseases; Pets; *Echinococcus granulosus*; *Toxocara canis*

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[1] Estimation of canine intestinal parasites in Cordoba (Spain) and their risk to public health [2] Ecological analysis and description of the intestinal helminths present in dogs in Mexico City [3] The role of companion animals in the emergence of parasitic zoonoses [4] Health enhancement and companion animal ownership [5] An epidemiological study of gastrointestinal parasites of dogs from Southern Greater Buenos Aires (Argentina): age, gender, breed, mixed infections, and seasonal and spatial patterns [6] The prevalence of intestinal parasites in dogs from Prague, rural areas, and shelters of the Czech Republic [7] Seroprevalence of toxoplasma gondii infection among patients admitted to Al-Zahra hospital, Isfahan, Iran [8] Pulmonary hydatid cyst: Analysis of 1024 cases [9] Echinococcosis/hydatidosis in Iran [10] The present status of human helminthic diseases in Iran [11] Soil contamination with *Toxocara* spp. eggs in the public parks of Isfahan City, Central Iran [12] Canine gastrointestinal parasitic zoonoses in India

Introduction

Pets play an important role in increasing the psychological and physiological well-being of many people in modern societies [1-3]. Recent studies show that pet owners visit the physicians less often and their blood pressure and cholesterol levels are lower than non-pet owners [4].

Although pets have substantial benefits for their owners, there are many health risks associated with having owning a pet. Bites, scratches and allergies are the most common health risks. However, the whole range of infections, especially parasitic agents can be transmitted from these animals to humans [5, 6]. Recent studies have revealed that prevalence of parasitic diseases is higher in younger animals and those who originate from refuges and shelters [5].

Puppies are frequently provided by families with children, so the risk of parasitic infections goes higher by having animals and increases the chances of infection for people with close contact with these animals, so the pet-owners need to be aware of these potential risks to take added precautions to reduce the risks. The aim of this study was to report a case of infected domesticated dog in Mashhad City, Iran.

Patient & Methods

A 3-year-old pet dog was referred to veterinary clinic of Mashhad in February 2016 by symptoms including, nausea or vomiting, dysentery, cachexia and rash in Mashhad City, Northeast of Iran.

By asking from the dog owner, visiting to the vet, eating contaminated food or water and consuming any drug were all negative. 3 loose stool specimens were collected alternatively. For parasitological examination, formalin-ether concentration technique was used. Briefly, approximately 1-2g of stool samples was mixed with 7ml of 10% formalin and 3ml ethyl acetate in 15ml falcon tube. Then the samples were centrifuged at 2500rpm around 5min. Fecal smears were made from the sediment, stained with iodine and observed by light microscope (Nikon; Japan) under the magnification of 100X and 400X for intestinal parasites. In addition, one smear of fecal sample was prepared with 20µl of formalin-ether sediment and stained by the modified

Ziehl Neelsen method for the detection of *Cryptosporidium* spp.

Findings

The animal was infected with 10 disease-causing parasites; *Taenia* spp., *Fasciola* spp., *Dicrocoelium dendriticum*, *Acanthocephal* spp., *Trichuris vulpis*, Hook worm, *Giardia* spp., *Blastocystis* spp., *Eimeria* spp., and *Cystoisospora* spp.

Discussion

All detected parasites were pathogens and could infect humans. Parasitic diseases often are considered as major public health and economic problem worldwide, especially in developing countries [7]. In addition, the pet dogs are beneficial, but they could severely jeopardize personal and social health by their common zoonotic bacterial and parasitic diseases with humans and playing essential roles in transmission of infection.

Some people kept dogs as a guard for their homes and some of them kept them as a pet. Due to the expansion of keeping domestic dogs in Iran and lack of implementation rules and regulations of keeping dogs in the country, the risk of disease transmission between dogs and humans is always there. On the other hand, the suffering of many domestic dogs from diseases is caused by the lack of enough health and keeping condition information of pet owners. In fact, lack of attention to early treatment and vaccination of dogs leads to emergence of serious diseases which would jeopardize the health of dogs, their owners and those around them [8].

One of the most common microorganisms between human and dog are parasitic diseases and on top of them is *Echinococcus granulosus*. Dog is the definitive host of this helminthes, and some animals and humans are the intermediate, which suffer hydatid cyst [9, 10]. Another human parasite, which causes visceral larva migrans lesion, is *Toxocara canis*. The main host in the life cycle of this parasite is dogs and humans are accidental hosts. In most cases, the infection will involve sensitive organs, especially the brain and eyes [11]. Cutaneous larva migrans in humans could be created through cutaneous contact with the infective stages of canine hookworms. In developing countries and

deprived communities, the level of contamination by hookworm larvae is high [12].

Given the importance of the mentioned diseases, inform and promote education in this field is very important. Most experts and veterinary specialists believe that in terms of health, animals should not be kept in residential areas as all the animals can transmit a number of diseases to humans.

Conclusion

Education plays the most important role in reducing the incidence of parasitic infections in pets and their owners. Veterinarians believe that encouraging pet owners to perform veterinary examinations at the appropriate time could help reducing the spread of infection between humans and animals and the pets can become as integral members of household again.

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