



Echinococcosis: A Zoonotic Potential

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Abstract

In recent years, the impact that foodborne parasites exert on food safety, food security, quality of life and livelihoods has begun to receive well-deserved global attention. Echinococcosis, an important zoonotic parasitic disease caused by metacestode of *Echinococcus granulosus*, tapeworm of dog. It is an important disease as it causes condemnation of affected visceral organs of domestic animals. In human being it is of zoonotic importance. A year-round study from 2020-21 was conducted in dogs of Navania, Udaipur to assess the zoonotic potential. The results of faecal sample examination revealed the presence of eggs of parasites and regular monitoring of the health and treatment was done in dogs to control the disease occurrence.

Keywords: Dogs; Faecal Examination; Ovas; Echinococcosis

Introduction

Echinococcosis is a widespread a cyclozoonotic helminthosis and zoonotic parasitic disease which has major medical and socio-economic costs for humans and also threatens livestock productivity [1,2]. Echinococcosis, a disease caused by the metacestode (hydatid cyst) of *Echinococcus granulosus*, a tape worm of dog is considered as one of the major zoonotic cestode. It is considered as an economically important disease due to the condemnation of affected visceral organs of domestic animals that act as intermediate host. *Echinococcus granulosus*, parasitizes canids (definitive hosts) where the adult inhabits small intestine and herbivores act as the intermediate hosts for the parasitic larval stage (metacestode) which is most commonly found in lungs and liver [3]. Human contamination occurs following the ingestion of eggs through contaminated food, essentially vegetables and water [4] or by direct contact with contaminated dogs that retain eggs on their coat [5] leading to cystic echinococcosis. The post-mortem examination of organs of intermediate host were also examined in the present study for the presence of hydatid cyst and organ wise incidence of hydatidosis was also reported. The lungs and liver were the most

common organs affected in animals. As little study is done on dogs of Udaipur region, so the present study was designed to put a note on occurrence of echinococcosis. The infection is transmitted via the eggs of *Echinococcus granulosus* which are passed in the faeces of the definitive canid host.

Echinococcosis in dogs is of great importance as a zoonotic disease. It is mainly diagnosed by the presence of adult tapeworms attached to the dog's small intestine on post-mortem. In live animals' detection is based on examination of faecal samples by copromicroscopy, but the *Taenia* eggs are difficult to be differentiated from *Echinococcus* species but as a gold standard method still copromicroscopy is used and the present study is done with the same method.

Materials and Method

A total of 123 dog faecal samples were collected from different areas of Udaipur and nearby pet units as well as from samples received from TVCC of college. The faecal samples were examined by routine faecal examination method. The parasite eggs were recovered from faecal samples using a flotation technique in modified

Sheather's solution followed by centrifugation at 1200 rpm. The eggs were subsequently identified morphologically. Even on post-mortem examination of the domesticated animals of nearby areas it was seen that they have the cyst on their visceral organs.

Results and Discussion

Out of total of 123 faecal samples 46 were found to be positive for the Echinococcus eggs showing an occurrence rate of 37.39% in the area. This may be due to the growing number of keeping dogs as pet in their houses as well as watchdogs and they were in close association with the animals acting as intermediate host as well as on feeding of their raw offal's too. Even it has been reported that the moving of dogs from one place to another increases the risk of environmental contamination by *Echinococcus* eggs in uninfected or hypoendemic areas.

The eggs of *Taenia* sp. are extremely similar to this and thus identification by microscopic examination of the faeces is always risky and non-specific but by morphometry it was identified. Eggs were small and round (35-49 µm in diameter), thick-shelled and contained a hexacanth (6-hooked) embryo (oncosphere). Even the faeces were examined macroscopically to establish if the adult tapeworm or its proglottids were present. They were collected and the permanent slides were prepared for identification and was identified morphologically. Although this method is 100% specific but is bio-hazardous and time-consuming, requires trained personnel, and its sensitivity varies.

The relationship between human and dog infections corresponding to high prevalence in dogs as transmission was strongly linked to human behavior and hygiene also. It was suggested to owners that disease can be prevented by carefully washing the hands after handling of animals/pets and not consuming food or water that may be contaminated with dog stool to prevent its zoonotic potential. In animals' treatment with albendazole group was suggested as well as not to offer offal's of slaughter/dead animals feeding on pastures of contaminated areas. It was concluded that there is need of timely reporting and controlling of this disease in large scale to control its zoonotic potentiality.

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