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Prevalence and Mode of Transmission of Echinococcosis in Dogs of Kashmir Valley

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ABSTRACT: *Echinococcus granulosus* parasite is known to cause echinococcosis in dogs and hydatid disease or hydatidosis in ruminant animals and accidently in humans. In Kashmir valley dogs have a significant role in transmission of zoonotic parasites, as they often come in close contact with local inhabitants, mostly the Gujjars and Bakarwals. Challenges for *Echinococcus granulosus* detection and control exist for Kashmir valley as well as for those nations that may be considering hydatid disease in control now or in the future. A variety of methods are available for its diagnosis in humans but a universal gold standard is lacking. However the use of modern techniques of immunodiagnosis has proved to be the best tool for the diagnosis of intestinal echinococcosis at a larger scale and thus resulted in conducting epidemiological studies on large number of individuals. The prevalence of Echinococcosis infection in canines was determined by examining fecal samples collected from different districts of the Valley. For detection of coproantigens of this helminth in dogs an immunodiagnostic test sandwich ELISA was used. A total number of 390 dog fecal samples were tested (from December 2021 to October 2022) and out of them 38 samples were found to be positive in sandwich ELISA., the fecal sample collection was made from different collection sites like streets, playgrounds, open fields, parks, etc.

Keywords: Zoonosis, Sandwich ELISA, Coproantigen, Kashmir.

INTRODUCTION

Echinococcus granulosus is a tapeworm belonging to the family Taeniidae. This zoonotic parasite maintains itself primarily in a life cycle between domestic dogs (definitive host) and domestic ungulates (intermediate host). This tapeworm has been found to cause Echinococcosis in dogs and hydatidosis in ruminants and accidently in humans (Chhabra and Singla 2009). The two states of Andhra Pradesh and Tamil Nadu have been found to have the greatest prevalence of echinococcosis in India when compared to other regions of the nation (Nepalia et al., 2006). There are also various reports from Kashmir, where studies on different aspects of the same parasite were conducted (Fomda et al., 2015; Chisti et al., 2000; Fomda et al., 2002). However, adequate data on the incidence and prevalence of canine echinococcosis infection in Kashmir Valley are still lacking. In Kashmir valley, dogs have a significant role in transmission of zoonotic parasites, as they are in close contact with humans, but people are less interested in controlling Echinococcosis. In definitive hosts (living dogs) the small proglottids discharged along with the dog feces are usually overlooked the diagnosis of intestinal SO

Echinococcosis infection is very difficult. Routine coprological techniques can not differentiate their eggs with other eggs of Taenia species because the eggs of *Echinococcus* show an extreme morphologic similarity with them (Dinkel et al., 1998). Purgation with arecoline compounds and necropsy of the small intestine of canine definitive hosts are two of the most frequently used diagnostic techniques in dogs (Unruh et al., 1973; Craig et al., 1995). Necropsy is regarded as the gold standard and the preferred method; however both of these approaches have a number of drawbacks (Jenkins et al., 2000; Lopera et al., 2003). However the use of modern immunodiagnostic techniques lead to the improvement of detection of Echinococcus spp. in definitive hosts (domestic and wild carnivores). A very good approach in this field is the detection of parasitic antigens from fecal samples (coproantigens) by the ELISA immunoenzymatic assay. It has been noted that this method has already demonstrated its value for the diagnosis in both live and dead animals. The enzymelinked immunosorbent assay (ELISA), which is used for the detection of Echinococcus specific coproantigens, has been considered as a novel approach for the diagnosis of intestinal Echinococcosis infection (Deplazes et al., 2003). Babos and Nemeth were the 15(1): 320-324(2023) 320