

## AN EPIDEMIOLOGICAL STUDY OF GASTRO-INTESTINAL PARASITISM IN TAMED DOGS AND ITS ZONOTIC PREVALENCE IN THE SOCIETY OF SOUTHERN KERALA

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### ABSTRACT

An epidemiological study was undertaken to reveal the prevalence of gastro-intestinal parasitism in domesticated dogs and its zoonotic prevalence in the contemporary picture of health privileged society of south Kerala. Faecal samples from 1318 dogs presented to the District Veterinary Centre, Thiruvananthapuram with clinical signs suggestive of gastro intestinal disorders like anorexia, vomiting, diarrhoea and rough hair coat formed the material for the present study. The duration of study period was 2 years (2015 September to 2017 September). The faecal samples were collected from the rectum with a sterile swab and examined by qualitative methods as per standard procedure. Out of the 1318 samples, 526 samples (39.90 percent) were found positive for parasitic infestation. Single and mixed parasitic infestation were observed in 94.67 and 5.32 percent cases respectively. Out of the 39.90 percent cases: *Ancylostomacanthum*, *Toxocara spp.*, *Coccidialoocyst*, *Strongyloides spp.*, *Trichuris spp.*, *Tainea spp* and *Echinococcusgranulosus* were detected in 38.15, 18.47, 34.13, 0.81, 2.81, 5.22 and 0.41 percent cases respectively. Out of the 5.32 percent of the mixed infection, combined infestation with *Ancylostomacanthum* and *Toxocara spp.* were detected in 26.66 percent cases, 26.66 percent cases were *Ancylostomacanthum* and *Coccidialoocysts*, 13.33 percent cases were *Toxocara spp.* and *Trichuris spp.*, 20 percent cases were *Coccidialoocysts* and *Tainea spp.* and remaining 6.68 percent cases were *Ancylostomacanthum* and *Trichuris spp.* Most of the dog intestinal parasites identified in the present study are cosmopolitan in their distribution, but the prevalence of each species and its involvement in human infection varies from one region to another as a function of climate, cultural habits, diagnostic resources, and level of notification. On analysing the mean occurrence of parasites with respect to the climatic variations, it was found that the incidence of *Ancylostomacanthum* infection and coccidiosis is at its peak during winter (December- February) and *Toxocara spp.* infection is found prevalent though out the year. Thus regular deworming schedule must be followed to control the infection.

**KEYWORDS:** *Ancylostomacanthum*, *Toxocara spp.*, *Coccidialoocyst*, *Strongyloides spp.*, and *Trichuris spp.*

Domestication of dog is an age old practice and presently it has become a trend to keep a dog as a companion as well as a guardian. In the current scenario, the global phenomenon of urbanization cobwebbed in the advancement of science and technology has got rooted in the life style of the people. The role of the dog as a definitive host for a number of zoonotic parasites has been widely studied and recognized as being a significant public health problem worldwide, especially in developing countries (Craig et al., 2000). In socially and economically backward communities, poor levels of hygiene and overcrowding, together with a lack of veterinary care and zoonotic awareness, exacerbates the risk of disease transmission (Hinz et al., 1980 and Malgor et al., 1996). In the existing set-up, some factors have contributed to both the increase in the number of animals and closer conditions of cohabitation with them. Changes in housing conditions have led to a close and frequent contact between animals and owners. Among dog intestinal

parasites, *Toxocara spp.* and *Ancylostomaspp.*, have received great attention due to their zoonotic potential (Blagburn et al., 1996). The clinical signs of parasitic infection are variable and occasionally some infected animals will be asymptomatic. However, severe clinical cases in young dogs will lead to diarrhoea, anaemia and death (Bowman, 1999). Intestinal parasites are diagnosed by finding adults or eggs or protozoan cysts in faeces (Williams and Zajac, 1980; Hendrix, 1998). Different techniques may be used to perform the parasites diagnosis; the most common laboratory procedure is the faecal flotation method. This technique is very useful and widely used in assessing most of the parasites affecting dogs (Williams and Zajac, 1980; Hendrix, 1998; Bowman, 1999). Understanding the epidemiology of the different parasites infections in specific canine population is a useful tool for the veterinary practitioner when he/she has to provide a clinical diagnostic (Smith, 1991; Nolan and Smith, 1995). Considering these aspects related to public

and animal health, study of the prevalence of parasite infections in pets should, therefore, be a continuous task, with the most relevant aim being the establishment of control measures. Numerous epidemiologic studies of intestinal parasites in canines have been reported worldwide (Lightner et al., 1978; Chiejina and Ekwe, 1986; Haralabidis et al., 1988; Robinson et al., 1989; Abo-Sheada and Ziyadeh, 1991; Minnaar et al., 1999; Schantz, 1999; Fok et al., 2001). As, the need of the hour., present study was undertaken to show light towards prevalence of gastro- intestinal parasitism in domesticated dogs and its zoonotic risk potential in the current scenario of health privileged society of Southern Kerala.

## MATERIALS AND METHODS

Faecal samples from 1318 dogs presented to the District Veterinary Centre, Thiruvananthapuram with clinical signs suggestive of gastro intestinal disorders like anorexia, vomiting, diarrhoea and rough hair coat formed the material for the present study. The duration of study period was 2 years (2015 September to 2017 September). The faecal samples were collected from the rectum with a sterile swab and examined by qualitative methods as per standard procedure. Both the direct smear and flotation methods described by Urquhart et al., (1996) were performed to screen out the positive samples. Modified McMaster Counting technique developed by Soulsby et. al., (1986) and Tibor, (1999) was also carried out to determine the parasitic eggs load.

## RESULTS AND DISCUSSION

Out of the 1318 samples, 526 samples (39.90 percent) were found positive for parasitic infestation. Single and mixed parasitic infestation were observed in 94.67 and 5.32 percent cases respectively (Figure 1). Out of the 39.90 percent cases: *Ancylostomacanthum*, *Toxocara spp.*, *Coccidialoocyst*, *Strongyloides spp.*, *Trichuris spp.*, *Taineaspp* and *Echinococcusgranulosus* ova were detected in 38.15, 18.47, 34.13,0.81,2.81, 5.22 and 0.41percent cases respectively. Out of the 5.32 percent of the mixed infection, combined infestation with *Ancylostomacanthum* and *Toxocara spp.* were detected in 26.66 percent cases, 26.66 percent cases were *Ancylostomacanthum* and *Coccidial* oocysts, 13.33 percent cases were *Toxocara spp.* and *Trichuris spp.*, 20 percent cases were *Coccidialoocysts* and *Tainea spp.* and remaining 6.68 percent cases were *Ancylostomacanthum* and *Trichuris spp.* Significant number of *Ancylostomacanthum* is of high zoonotic potential. *A.*

*caninum* larvae can cause the visceral larva migrans syndrome and human intestinal infections.

Most of the dog intestinal parasites identified in the present study are cosmopolitan in their distribution, but the prevalence of each species and its involvement in human infection varies from one region to another as a function of climate, cultural habits, diagnostic resources, and level of notification. On analysing the mean occurrence of parasites with respect to the climatic variations, it was found that the incidence of *Ancylostomacanthum* infection and coccidiosis is at its peak during winter (December- February) and *Toxocara spp.* infection is found prevalent though out the year. Hence, climatic variations has got profound effect on the prevalence of the gastro- intestinal parasitism in Southern most Kerala.

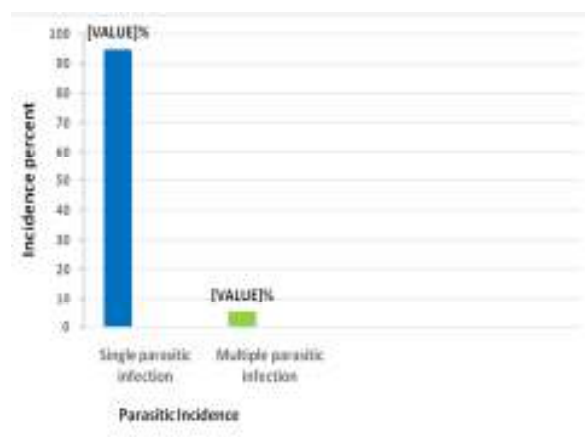


Figure 1: Prevalance of Parasitic infestation in dogs

Single infections were the most common situations discovered, and multiple parasitisms were less commonly detected. These results agree with Visco et al., (1977), Hoskins et al., (1982), Kirkpatrick (1988) and Vanparijs et al., (1991). Therefore, the control in the most of the parasitized dogs could be done with a single drug. The most commonly encountered parasites were *Ancylostomaspp.*, *coccidialoocyst* and *Toxocara spp.* which coincides with other research findings (Viscoetal., 1977; Lightner et al., 1978; Hoskins et al., 1982; Kirkpatrick, 1988; Vanparijs et al., 1991; Jordan et al., 1993). This is of great importance since *Toxocara spp.* and *Ancylostomaspp.* are well recognized zoonotic agent, which may constitute a significant public health risk, mainly due to the frequent contact between humans and their pets (Chiejina and Ekwe, 1986; Kirkpatrick, 1988; Castillo et al., 2000) and greater population of *coccidialoocyst*, which shows that these coccidia are the main intestinal protozoa found in these pets, mostly in

younger animals, as indicated by Visco et al. (1977), Hoskins et al. (1982), Kirkpatrick (1988), Lindsay and Blagburn (1991), Vanparijs et al. (1991) and Blagburn et al. (1996).

Also, the male population showed a greater incidence of gastrointestinal parasitism compared to the females, especially during the winter season. Among the groups of dogs the utility groups are more prone to the parasitic attack when compared to the gun dogs and working breeds. The Non- descript breeds are more susceptible as compared to other classified breeds of dogs.

It is apparent from this study that many owners are not aware of the zoonotic parasites carried by their pets or their mode of transmission to humans. The chances of transmission of these parasites to the humans are high because of the improper deworming schedule and management practices. Thus it is necessary to make awareness among the people about the significance to follow a proper deworming schedule for their pets. Special care must be taken during the winter season as the chances of getting Ancylostomosis is high. Even though the majority of anthelmintics used in pets are broad spectrum, most of the dogs were infected with a single species of parasite. Faecal examination prior to anthelmintic treatment would enable the clinician to select suitable anthelmintic which had spectrum against either nematodes or cestodes, thereby the chances of incidence of drug resistance can be minimized. Finally, in order to prevent an increase in the prevalence of pet parasite infection and zoonoses, it is imperative that veterinarians continue to educate their clients on the importance of good husbandry practices and correct anthelmintic and antiprotozoal drug administration. Thus, Veterinarians should play an important role in increasing the level of awareness of canine zoonotic parasites, thus helping to prevent or minimize zoonotic transmission (Bugg et al., 1999; Robertson et al., 2000; Irwin, 2002). Emphasis on client education as a means of parasite prevention should also be instilled during veterinary training. Also, Government authorities must undertake strategies to enhance the awareness among the people of hasty modernising world where human to human bonds are getting weaker and human- animal bonds are getting stronger.

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