



Research Article

SEASONAL OCCURRENCE OF GASTROINTESTINAL PARASITIC AND PROTOZOAN INFESTATION OF DOMESTIC ANIMALS IN WAYANAD DISTRICT

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ABSTRACT

Gastrointestinal parasitism not only affect the health but also disturbs the feed intake, feed conversion and feed utilization as well as growth of the animals there by severely affects the productivity and reproductive performance of animals. Fecal samples from 172 cattle, 208 goats and 112 dogs were collected from different panchayats belonging to three taluks of Wayanad district with complaints of weakness, emaciation, diarrhoea, inappettance, rough hair coat, pale mucus membrane during the period from April 2014 to August 2018 were examined grossly with naked eye followed by microscopic examination by direct smear method, floatation and sedimentation technique. Samples were collected during three season of the district namely Rainy season (June - September), Winter season (October – February) and Summer season (March - May). The overall prevalence of gastrointestinal parasitism was found to be 54.06% in cattle, 49.51% in goats and 48.21% in dogs. Highest parasitic infestation was noticed during winter season in cattle, summer season in goats and dogs. Gastrointestinal parasites commonly noticed in cattle and goats were amphistome, schistosoma, strongyle, monezia, strongyloid, toxocara and trichuris. Ancylostome, toxocara and Dipylidiumcaninum was noticed in dogs. Among the gastrointestinal protozoa, coccidian was commonly noticed in all species. The parasitic infestation in different species during different seasons of Wayanad district will be discussed in detail. These findings stress the need and time for antihelminthic medication for domestic animals.

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INTRODUCTION

The gastrointestinal tract of animals harbors wide variety of parasites which causes clinical and subclinical parasitism. Gastrointestinal parasites not only affect the health but also disturb the feed intake, feed conversion and feed utilization as well as growth of the animals thereby severely affects the productivity and reproductive performance of animal which can result in loss of body weight, poor productive performance, digestive disturbance, emaciation and increased susceptibility of animals to other infections. Retrospective study of parasitic diseases in domestic and wild animals in Northern Kerala revealed strongylosis as predominant cause of gastrointestinal parasitosis in cattle and goats with prevalence rates of 11.35 percent and 36.63 per cent respectively. Ancylostomosis was predominant in dogs with prevalence rate of 18.23 per cent (Nimisha *et al.*, 2017). Abraham *et al.* (2017) conducted survey on gastrointestinal parasites of dairy cattle in Wayanad and identified strongyle (17.56 per cent) and amphistome

(11.86 per cent) were most prevalent followed by strongyloides (1.86 per cent), monezia (0.3 per cent), trichurid (0.2 per cent) and schistosoma (0.1 per cent). Singh *et al.* (2017) reported overall prevalence of 83.08 percent of parasitic infections in small ruminants in Western zone of Punjab. The most relevant risk factors for prevalence of gastrointestinal parasitism in ruminants were sex, age and season. So the present work was undertaken to study the influence of season on gastrointestinal parasite and protozoan infections of domestic animals in Wayanad district.

MATERIALS AND METHODS

Fecal samples from 172 cattle, 208 goats and 112 dogs were collected from different panchayats belonging to three taluks of Wayanad district (table 1) with complaints of weakness, emaciation, diarrhoea, inappettance, rough hair coat, pale mucus membrane during the period from April 2014 to August 2018 were examined grossly with naked eye followed by microscopic examination by direct smear method, floatation and sedimentation technique. Samples were collected during three season of the district namely Rainy season (June - September), Winter season (October – February) and Summer season (March - May).

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RESULT

Gastrointestinal parasitism of cattle

The overall prevalence of gastrointestinal parasitism in cattle during the study period was found to be 54.06 percent (93/172). Seasonal analysis revealed highest occurrence of parasitic infestation in cattle was during winter season (50 per cent). Seasonal distribution of parasitic infestation in cattle during the study period was shown in table 2.

Among different gastrointestinal parasites, highest incidence was found to be with strongyle (25per cent) followed by amphistome (20.8 per cent), schistosoma (12.5 per cent), trichuris (8.5 per cent), monezia (4.5per cent), strongyloid (4.1per cent) and toxocara (4.1per cent) during rainy season. Prevalence of coccidia was found to be 20.8 per cent.

Highest occurrence was observed with amphistome (30.4per cent) and strongyle (30.4per cent) followed by strongyloid (10.8per cent), schistosoma (4.3per cent), toxocara (2.1per cent), trichuris (2.1per cent) during winter season. Prevalence of coccidia was recorded as 19.5 per cent. During summer season, coccidian (36.3per cent) infestation was found to be highest followed by strongyle (31.8per cent), amphistome (18.1per cent) and schistosoma (13.6per cent).

Gastrointestinal parasitism of goats

The overall prevalence of gastrointestinal parasitism in goats during the study period was found to be 49.51 percent (103/208). Seasonal analysis showed highest occurrence of parasitic infestation during rainy season (46.07 per cent) followed by summer season (34.31 per cent) and then winter season (18.63 per cent) (Table 3).

During rainy season, highest prevalence was with strongyle (56.2per cent) followed by trichuris (10.4per cent) and strongyloid (6.5per cent). Prevalence of coccidian was found to be 22.9 per cent.

Strongyle (68.4per cent) and strongyloid (15.7per cent) was reported during winter season. Coccidia were found to be 15.7 per cent.

During summer season, strongyle (45.7per cent) has the highest prevalence followed by strongyloid (14.2 per cent) monezia (6.5per cent) and trichuris (2.1per cent). The prevalence of coccidia was found to be 14.2 per cent.

Gastrointestinal parasitism of dogs

The overall prevalence of gastrointestinal parasitism in dogs during the study period was found to be 48.21 percent (54/112). Highest occurrence of parasitism was reported during summer season (38.9 per cent) followed by winter (29.62 per cent) and rainy season (27.8 per cent). Seasonal distribution of parasitic infestation in dogs during the study period was shown in table 4.

During Rainy season, highest prevalence was with ancylostoma (58.8per cent) followed by toxocara (41.2per cent). During winter season, highest prevalence was with ancylostoma (87.5per cent) followed by toxocara (12.5per cent). During summer season, highest prevalence was with ancylostoma (47.6per cent) followed by toxocara (19per cent) and *Dipylidium caninum* (9.5per cent). The prevalence of isospora was found to be 14.2 per cent.

Table 1 Sampling Distribution

Vythiri Taluk	Sulthan Bathery Taluk	Mananthavady Taluk
Kaniyampatta		
Kottathara	Ambalavayal	
Meppadi	Meenangadi	Panamaram
Muttill	Noolpuzha	Vellamunda
Pozhuthana	Poothadi	Mananthavady
Thariode	Pulpally	
Vythiri		
Padinjaraathara		

Table 2 Gastrointestinal parasitism in cattle

Parasite	Rainy Season (June-Sept)		Winter Season (Oct-Feb)		Summer Season (March-May)	
	Number	Per cent	Number	Per cent	Number	Per cent
Coccidia	5	20.8	9	19.5	8	36.3
Amphistome	5	20.8	14	30.4	4	18.1
Schistosoma	3	12.5	2	4.3	3	13.6
Strongyle	6	25	14	30.4	7	31.8
Monezia	1	4.1	-	-	-	-
Strongyloid	1	4.1	5	10.8	-	-
Toxocara	1	4.1	1	2.1	-	-
Trichuris	2	8.3	1	2.1	-	-
Total	24	100	46	100	22	100

Table 3 Gastrointestinal parasitism in goat

Parasite	Infestations reported					
	Rainy Season (June-Sept)		Winter Season (Oct-Feb)		Summer Season (March-May)	
	Number	Per cent	Number	Per cent	Number	Per cent
Coccidia	11	23.40	3	15.7	5	14.7
Strongyle	27	57.44	13	68.4	16	45
Strongyloid	4	8.51	3	15.7	5	14.7
Trichuris	5	10.63	-	-	5	14.7
Monezia	-	-	-	-	3	8.8
Total	47	100	19	100	34	100

Table 4 Gastrointestinal parasitism in dog

Parasite	Infestations reported					
	Rainy Season (June-Sept)		Winter Season (Oct-Feb)		Summer Season (March-May)	
	Number	Per cent	Number	Per cent	Number	Per cent
Ancylostoma	10	58.8	14	87.5	12	57.1
Toxocara	7	41.17	2	12.5	4	19
Dipylidium caninum	-	-	-	-	2	9.5
Isospora	-	-	-	-	3	14.2
Total	17	100	16	100	21	100

DISCUSSION

Parasitism, mainly endoparasitism produces various ill effects like emaciation, weakness, inappetance and predisposes to various other potential pathogens (Allwin *et al.*, 2016). The rate of morbidity and mortality due to parasites are increasing, thus it is high time to give more emphasis on systematic control of parasitic diseases (Vanisri *et al.*, 2016). From the study, it can be inferred that cattle were mainly infected by nematodes, followed by trematodes. The occurrence of cestode infections among cattle was relatively low. Similar findings were observed by Vanisri *et al.* (2016) and Nimisha *et al.* (2017). Strongyles were the predominant gastrointestinal parasites of cattle. Amphistomes were the second most important helminths identified. Abraham *et al.* (2017) also identified strongyles as the most predominant cattle parasites followed by amphistomes in Wayanad. Moniezia spp. was the only cestode parasite infecting cattle encountered in the present study. According to Keyyu *et al.* (2006) the occurrence of cestode species is comparatively less in cattle. Highest parasitic infestation in cattle was noticed during winter season an amphistome was reported highest during this season. But

Nimisha *et al.* (2017) reported high incidence of intestinal parasitosis in cattle during rainy season and least during summer. Marskole *et al.* (2016) also observed the high prevalence of parasitism during wet season. High moisture content along with temperature prevailed during winter season in Wayanad district favours the growth and development of larvae may be the reason behind highest prevalence of GI parasitic infections during this season.

Gastrointestinal parasites in goats are of significant importance as they cause heavy morbidity and mortality rates. In the present study, out of 208 fecal samples from goats examined, 103 were positive for intestinal parasitosis, indicating a high prevalence of 49.51 per cent. Strongyles were the predominant parasite. *Haemonchus contortus* is the important strongyle worm present in the abomasum of goats resulting in severe gastroenteritis, poor growth rate and even heavy mortality (Kagira and Kanyari, 2001; Singh *et al.*, 2013). Coccidia were the most important protozoan parasite detected in goats. *Moniezia* spp., *Strongyloides* spp. and *Trichuris* spp. were also identified. The seasonal prevalence of intestinal parasitosis was highest in monsoon and lowest during winter season. (Velusamy *et al.*, 2015; Nimisha *et al.*, 2017). Overcrowding, poor management and increased humidity during rainy season can predispose to increased incidences of parasitic infection. Low prevalence of intestinal parasitism in winter season was due to reduced grazing hours of the animals, which helped in reducing the chances of contact between host and parasites (Katoch *et al.*, 2000).

Faecal sample examination of dogs revealed highest incidence of ancylostomosis. Hookworms were the most commonly identified parasite in dogs (Nimisha *et al.*, 2017; Vatsya *et al.*, 2010; Das *et al.*, 2009; Taub *et al.*, 2014). *Toxocara canis* was the second most predominant helminthic infection in dogs. Incidence of intestinal parasitosis was highest during summer. In contrary to this finding, highest incidence of parasitism in dogs was notice during rainy season and least during summer (Vatsya *et al.*, 2010; Nimisha *et al.*, 2017). *Dipylidium caninum* and isospora were identified during summer.

CONCLUSION

The overall prevalence of gastrointestinal parasitism was found to be 54.06% in cattle, 49.51% in goats and 48.21% in dogs. Gastrointestinal parasitism was more during winter in cattle, rainy season in goats and summer in dogs. Strongylosis was the predominant cause of gastrointestinal parasitosis in cattle and goats. Higher incidence of amphistome was observed during winter in cattle and coccidiosis in calves during summer. *Ancylostoma caninum* was most frequent among dogs. These findings warrant strategic anthelmintic treatment of domestic animals in accordance with season.

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