

Prevalence of Coccidia and Gastrointestinal Nematode Infections in Goats of Barramulla District of Kashmir Valley

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Abstract: The prevalence and intensity of oocysts of coccidia, particularly *Eimeria* species and eggs of gastrointestinal nematodes in kids (2-4 months), young goats (5-12 months) and adult goats (>1 year) were determined in five large herds managed extensively in five villages of District Baramulla Kashmir valley. Of the representative examined samples, oocysts were found in 68% of kids, 61% of young and 53% of adult goats. Gastrointestinal nematode eggs were found in 49% of the kids, 58% of the young and 34% of the adult goats. Identification of gastrointestinal nematodes revealed *Haemonchus contortus* (60%) followed by *Trichostrongylus axei* (51%), *Oesophogostomum* spp. (45%) and *Chabertia* spp. (1%) in all three examined age categories. Both *Eimeria* and gastrointestinal nematodes were found in 27% of the kids, 38% of young and 21% of adult goats. The mean oocyst counts per gram of faeces in kids, young goats and adult goats were 9728, 1946 and 2667, respectively. The oocyst counts were not different significantly between age groups ($P>0.05$). The mean egg counts per gram of faeces in kids, young goats and adult goats were 1217, 1641 and 1092, respectively. The egg counts in kids were significantly lower than that in young goats ($P<0.05$). The intensity of *Eimeria* and gastrointestinal nematode infections between herds were significantly different. There was a significant seasonal variation in prevalence and intensity of coccidia and nematode infections but insignificant variation was observed among male and female goats.

Key words: *Eimeria* • Goats • Gastrointestinal nematodes • Prevalence • Egg count

INTRODUCTION

Helminthiasis, especially parasitic gastro-enteritis, represents a serious health threat and a limitation to the productivity of small ruminants due to the associated morbidity, mortality, cost of treatment and control measures [1]. Nematode parasites of small ruminants result in low productivity due to stunted growth, poor weight gain and poor feed utilization [2]. The prevalence of gastrointestinal helminths is related to the agro-climatic conditions like quantity and quality of pasture, temperature, humidity and grazing behavior of the host [3]. *Haemonchus contortus*, found in the abomasum of sheep and goats, causes blood loss resulting in decrease in erythrocytes, lymphocytes, hemoglobin, packed cell volume, body weight and wool growth [4]. A decrease in profitability up to 15% and weight loss up to 50% due to gastrointestinal parasites have been reported [5].

Enteric protozoan parasites are ubiquitous in domestic mammal populations [6]. Many species have

intracellular life-cycle phases in the intestinal epithelia and have the potential to cause disease. Their widespread occurrence, economic importance coupled with limited options for treatment [7] and sometimes zoonotic potential have meant its probable responsibilities for outbreaks on farms [8, 9, 10].

Changes in season, prevalence and relative burden are the key factors to control the parasitic diseases effectively [11]. However, in most areas of Kashmir valley no study has been conducted regarding the prevalence of different gastrointestinal parasites in small ruminants. Therefore, the current study was aimed to investigate the prevalence of various endoparasites of goats in Barramulla District of Kashmir valley.

MATERIALS AND METHODS

The study was carried out during July 2009-June 2010 in five large herds managed extensively in five villages of Baramulla. A total of 144 fecal samples were investigated. The examined goats were divided in three

groups on the basis of their age: kids (2-4 months), young goats (5-12 months) and (> 1 year). The fecal samples were collected from various farms and small stock holders of Baramulla district of Kashmir valley. The samples were transported to the Department of Zoology, University of Kashmir, Srinagar for the identification of endoparasitic infection using direct microscopic examination. Identification of eggs or cysts was made on the basis of morphological characteristics [12].

The data were analyzed statistically using the Chi-Square test (SPSS for windows, Version 12).

RESULTS AND DISCUSSION

Of the representative examined samples, oocysts were found in 68.10% of kids, 61% of young goats and 53% of adults. Gastrointestinal nematode eggs were found in 49% of kids, 58% of young goats and 34% of adult goats. Identification of gastrointestinal nematodes revealed *Haemonchus contortus* (60%) followed by *Trichuris ovis* (51%), *Oesophogostomum* spp. (45%) and *Chibertia* spp. (1%) in all examined animals of three age categories. Both *Eimeria* and gastrointestinal nematodes were found in 27% of kids, 38% of young goats and 21% of adult goats. The mean oocyst counts per gram of faeces in kids, young goats and adult goats were 9728, 1946 and 2667, respectively. The oocyst counts were not different significantly between age groups ($P > 0.05$).

The mean egg counts per gram of faeces in kids, young goats and adult goats were 1217, 1641 and 1092, respectively. The egg counts in kids were significantly lower than that in young goats ($P < 0.05$). The intensity of *Eimeria* and gastrointestinal nematode infections between herds was significantly different ($P < 0.01$). There was a significant seasonal variation in prevalence and intensity of coccidia and nematode infections but insignificant variation was observed among male and female goats.

Various species of endoparasites recovered in the present study has also been reported earlier [13-17, 3]. *Haemonchus* spp. is an important and common nematode parasite and requires special attention for its control. It has been suggested that *Haemonchus* spp. can acquire resistance faster than other gastrointestinal nematodes, like *Chibertia*, because of its high biotic potential [18].

The results of the current study show that *Haemonchus*, *Trichuris*, *Oesophogostomum* and *Chibertia*, coccidia are prevalent in the areas of Baramulla. It has been reported that *coccidia* and other gastrointestinal nematodes as mixed or single infection are the major parasitic diseases of goats in subtropical and temperate climates [19]. The results of this survey indicate that helminthiasis and coccidiosis is rampant in sheep and goat farms. Deaths due to *Eimeria* species may also occur though lowered productivity due to poor growth is usually unnoticed by farmers [20-24].

Table 1: Prevalence of different gastro-intestinal parasites

Parasite Species	No. Positive	Prevalence (%)
<i>Haemonchus</i>	84	60.05
<i>Oesophogostomum</i>	63	51.50
<i>Trichuris</i>	48	45.25
<i>Chibertia</i>	2	1.01
<i>Eimeria</i>	60	52.00
Mixed Infection	87	48.55

Table 2: Proportion of each category investigated and the associated prevalence of parasites

Variable	No. examined	Nematode Prevalence (%)	Protozoan Prevalence (%)	χ^2 (p-Value)
Age category				
2-4 months	32	49.00	68.10	14.0 (0.005)
5-12 months	54	58.00	61.36	
>1 year	58	34.00	53.05	
Gender				
Male	62	42.50	36.02	1.02 (0.02)
Female	82	57.20	38.21	
Season				
Dry	88	32.50	28.70	0.36 (0.002)
Wet	56	48.20	45.50	
History of Deworming				
Yes	102	18.33	32.56	0.70 (0.431)
No	42	61.12	41.00	

Prevailing agro-climatic conditions like overstocking of the animals, grazing of young and adult animals together with poorly drained land provide ideal conditions for transmission of the endoparasites to build up clinical infestation of the host. The overall higher incidence of nematodes infestation in the surveyed areas could be attributed to lower immunity of hosts as a result of malnutrition. As the livestock in that area under investigation largely depended on grazing in deteriorated range-lands. It was also observed that farms in these areas lacked fences and cattle, sheep and goats used the same pasture for grazing. In conclusion, various gastrointestinal parasites have been found in goats. Regular control measures should be practiced to reduce the parasitic burdens in the affected areas.

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