GASTROINTESTINAL HELMINTHIC INFESTATIONS IN LOCAL CATTLE OF DIBRUGARH DISTRICT OF ASSAM

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ABSTRACT

A total of 200 faecal samples were randomly collected from either sex of local cattle of different age groups. Egg per gram of faeces (EPG) was determined by the Stoll's technique. The most prevalent gastrointestinal helminth parasite eggs detected were Fasciola, Paramphistomum, Cooperia, Toxocara, Strongyloides, Haemonchus and Ostertagia. Before occurrence of flood, EPG count of different helminths was less than 400, which markedly increased beyond 400 after flood. Our study clearly indicated that flood had a significant role in multiplication of different helminthic infestations.

Key words: Gasterointestinal helminths, flood, clinical manifestation, cattle, Dibrugarh

Introduction

Gastrointestinal (GI) nematode infestations of cattle are constraints on the efficient raising of cattle on pasture throughout the world (Gasbarre *et al.,* 2001). These parasites have two main features of epidemiological importance: there is no multiplication of their pre-parasitic stages and their infective stages, whether acquired directly by the host or indirectly via intermediate hosts, always give rise to a single adult male or female parasite in the definitive host (Chiejina, 1994). Therefore, the number of infective stages present in the host environment at any given period is related to the number of worm eggs passed by the host and this largely determines the number of parasites potentially capable of being established in a susceptible host. However, characteristics such as breed, age and nutritional status of the host as well as characteristics of the environment also have a considerable influence on the parasites and their capacity to infect and inflict damage to the host (Rivera *et al.,* 1983). Most studies on GI nematode ecology in cattle have concluded that climatic conditions play an important role in the survival and transmission of parasite eggs and larvae (Rivera *et al.,* 1983). Helminth infestation, especially sub clinical gastrointestinal nematode infestations are among the major health problems limiting the productivity in dairy animals (Dimaner *et al*., 2000; Johannes *et al*., 2009). Therefore, to be effective, control measures depend on a sound understanding of the epidemiology of the disease in both the host and the environment. Keeping in view the immense economic losses of GI helminthic infestation, the present study was planned to know the prevalence of these infestations during pre and post flood situation under agroclimatic condition of rural Assam.

Materials and Methods

The investigation was carried out from February, 2013 to September 2013 in Phutahola village of Dibrugarh district of Assam. The village, located at a distance of 5 km way from the Krishi Vigyan Kendra, Dibrugarh, was selected on the basis of previous agro meteorological records of recurrent flash flood condition that lead to water stagnation for prolong period in the open grazing pasture. For the study, a total of 200 local cattle of 1-6 years of age of either sex were selected. The cattle were reared in open grazing method comprising of loosing the animals in the morning in the pasture and bringing the animals evening to the shelter. Two samples were collected from the same cow i.e. one during February to April and other during July to September. Monthly temperature, rainfall and humidity of the study area during the study period is shown in Table 1. Faecal samples were collected from the cattle on random basis. Faecal samples were collected per rectum and put into faecal pots, labelled and kept cool prior to transportation to the laboratory where they were examined immediately or stored in refrigerator for a maximum of 6 hours before processing. The samples were processed by Standard Floatation and Sedimentation techniques to investigate the eggs of helminth parasites. The ova of parasites were identified from their morphological features (Soulsby, 1982). Quantitative examination of faeces was conducted to record the intensity of parasitic infestation (EPG; egg per gram of faeces) by Stoll's technique. The quantum of infection among the animals was derived in terms of percentage positive of the total samples examined.

Results and Discussion

Out of 200 local cattle examined during the study period, 114 animals (57.0%) were shedding helminth eggs in the pre flood situation and 156 (78.0%) in the post flood situation. The most commonly occurring parasite egg recovered from faeces were *Fasciola, Paramphistome, Coccidian oocyst, Toxocara, Strongyloides, Haemonchus, Ostertagia.* During pre-flood condition, out of 57% positive cases, 16% and 41% cattle excreted eggs in their faeces ranged from < 200 and 201- 400, respectively. Number of eggs beyond 400 was not encountered during preflood situation. In the post flood condition, out of 78% positive cases, 1.5, 11, 21 and 44.5% cattle shed eggs in their faeces that ranged from < 200, 201-400, 401-600, 601 and above, respectively (Table 1). Several earlier workers reported the presence of numerous helminths in cattle of Assam (Borkakoty, 1984; Borthakur and Das, 1998; Hafiz and Bhattacharyya, 2009).

The onset and advancement of monsoon rains have a profound effect on the incidence and seasonality of fascioliasis in India. Most of the available information on the prevalence of

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Table 1: Monthly temperature, rainfall and humidity pattern during the study period (Source AWS data, KVK-Dibrugarh)

2013					
Month	Rainfall (mm)	Temperature (^{0}C)		Humidity (%)	
		Max	Mini	Morning	Evening
Jan	6	24.27	8.62	98.35	40.13
Feb	4.75	29.03	11.67	95.80	28.64
Mar	132	29.34	16.35	94.87	41.03
April	186	27.77	19.21	97.57	55.80
May	335.5	29.85	22.04	99.42	63.68
June	345.25	33.33	24.99	99.07	61.37
July	346.5	32.22	25.39	99.03	68.55
August	200.5	35.21	27.25	100	66
September	57.7	34.	30.12	100	49

infestation like diarrhoea, gradual emaciation, body weight loss, foul smelling mucus discharged stool. Increased parasite burden both inside host as well as on pasture during rainy season has been reported in dairy animals (Sanyal and Singh, 1995; Jitendran and Bhatt, 1999; Rahman *et al.*, 2012). The study indicated that under normal condition, the animals harboured worm burden without any clinical signs but would reach threshold pathogenic level in the monsoon and post monsoon seasons. The EPG count revealed that July to September were the months with the highest risk of GI helminths and pasture contaminations.

Based on the findings of study it is concluded that monsoon has a drastic effect on harbouring gastrointestinal helminthic infestation in flood prone areas of Dibrugarh district of Assam. It is hoped that this study would pave the way for timely eradication and control of parasitic diseases with prophylactic use of anthelmintic and ultimately improving the living status of livestock holders of Assam.

Table 2: Prevalence of GI helminthes under pre and post flood condition (Nos and %age in parenthesis).

S.No.	Name of helminths	Pre flood situation (n=200)				Post flood situation (n=200)			
		< 200	201-400	401-600	>600	< 200	201-400	401-600	> 600
1	*Fasciola* spp.	-	41(20.5)	-	-	-	-	-	68 (34.0)
2	*Paramphistome* spp.	8(4.0)	-	-	-	-	-	12(6.0)	-
3	Coccidian oocyst	-	28(14.0)	-	-	3(1.5)	-	-	-
4	*Toxocara* spp.	12(6.0)	-	-	-	-	18 (9.0)	-	-
5	*Strongyloides* spp.	-	13(6.5)	-	-	-	-	20(10.0)	-
6	*Haemonchus* spp.	8(4.0)	-	-	-	-	-	10 (5.0)	-
7	*Ostertagia* spp.	4(2.0)	-	-	-	-	4 (2.0)	-	-
	Total	32	82	0	0	03	22	42	68

Fasciola gigantica comes from abattoir surveys and coprological studies on animals visiting dispensaries and is thus biased. It is however, apparent that the prevalence of fasioliasis in tropical country like India is largely determined by rainfall and production systems (Copeman and Copland, 2008). The rate of prevalence and intensity of various gastrointestinal parasites are severely affected during drought conditions (Chauhan *et al.*, 1981).

In our study, prevalence of helminth eggs was slightly higher during post flood situation as compared to pre flood condition. The EPG count for *Fasciola, Coccidian oocyst and Strongyloides* spp ranged between 200-400 and *Paramphistome, Toxocara, Haemonchus and Ostertagia* spp. were less than 200 during pre flood situation. During the post flood situation (from July to September, 2013), prevalence of *Fasciola* spp. was highest ranging above 600 EPG. Prevalence of *Paramphistome, Strongyloides, Haemonchus* spp. ranged from 401-600 EPG while EPG of *Coccidian oocyst, Toxocara, Ostertagia* spp. were in between 200-400. Higher rate of infection could be possibly due to continuous rearing of the animals in the pasture where flood water retained for prolong period and thereby exposing to infestation and availability of infective larvae on the water stagnated ground as reported earlier in sheep (Singh *et al*., 2005; Sharma *et al*., 2007). Earlier report from India revealed that incidence of helminths especially Strongyloides and Haemonchus in sheep was higher during August to October (Sharma *et al.*, 2007). High rainfall and humidity lowers the resistance of animal that in turn establishes heavy infection in the host. Moreover, high humidity and moderate temperature during the monsoon also favours bacterial multiplication aggravating the parasitic load. With the onset of winter from December onwards, the mean total EPG count decreases and again accelerates with the increase in temperature (Rahman *et al.*, 2012).

Few numbers of animals showed clinical signs of parasitic

References

Borkakoty, M.R. *et al.* (1984) *Indian J. Ani. Hlth*. **23**: 57-62.

Borthakur, S.K. and Das, M. R. (1998) *J. Vet. Parasitol.* **12**(2): 85-88.

Chauhan, P.P.S. *et al.* (1981) *Indian Vet. Med.* **5:** 108-117.

Chiejina, S.N. (1994) *'Epidemiology of some helminth infections of domesticated animals in the tropics with emphasis on fascioliasis and parasitic gastroenteritis', In*: *Helminthology*, N. Chowdhury & I. Tada (Eds.). Springer-Verlag, Narosa Publishing House, New Delhi: 34-72.

Copeman, D. and Copeland, R. (2008) *Importance and potential impact of liver fluke in cattle and buffalo. In: Overcoming liver-fluke as a Constraint to Ruminant production in South East Asia*, ACIAR Monograph no. 133. Gray, G., Copeland, R., Copeman, D. (Eds), pp.21-25.

Dimaner, *et al.* (2000) *Vet. Parasitol.* **90**: 271-284.

Gasbarre, L.C. *et al.* (2001) *Vet. Parasitol.* **98**: 51-64.

Hafiz, A and Bhattacharyya, H.K. (2009) *Indian J. Ani. Res*. **43(3)**: 213-214.

Jitendran, K.P. and Bhatt, T.K. (1999) *Trop. Ani. Hlth.Prod.* **31**: 205-14.

Johannes, *et al.* (2009) *Vet. Parasitol.* 164: 70-79.

Rahman, H. *et al.* (2012) *Indian J. Ani. Sci.* **82**(2): 151-153.

Rivera, B. (1983) *Trop. Ani. Hlth. Prod.* **15:** 107-114.

Sanyal, P.K. and Singh, D.K. (1995) Parasitic Gastroenteritis. *Proceedings of the workshop on Control Strategy agents against gastrointestinal parasites in dairy animals in India with medicated urea molasses blocks.* National Dairy Development Board, Anand, Gujrat, India. Pp. 47.

Sharma, D. K. *et al.* (2007) *J. Vet. Parasitol.* **21:** 141-43

Singh, H. *et al.* (2005) *J. Vet. Parasitol.* **19**(2): 97-101

Soulsby, E. J. L. (1982) *Helminths, Arthropods and Protozoa of Domesticated Animals.* 7th ed. ELBS and Baillere Tindal, London, pp. 766.