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Prevalence of parasitic diseases on Sylhet Government Dairy Farm (SGDF) in Bangladesh

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ABSTRACT

The study was carried out to estimate the prevalence of parasitic diseases in dairy cows kept by Sylhet Government Dairy Farm (SGDF) of Bangladesh from January – December, 2010. The data of SGDF were analyzed for season and age variation. The prevalence of parasitic diseases at SGDF was (11.88%). The highest prevalence of parasitic infection was 12.62% found in the spring following 12.36% in summer, 11.77% in winter and 10.61% in autumn. The animals were mostly affected (5.86%) in the age of 6 months to 2 ½ years following (4.49%) in the age of 2 ½ years to above and (1.52%) in the age of 0 to 6 months of age. The young animals were affected by parasitic gastroenteritis infection mostly (0.26%). Among the diseases, the liver fluke infection was (0.96%), paramphistomiasis (0.30%), parasitic gastroenteritis (1.53%), babesiosis (0.11%), ectoparasites (8.96%). Though parasitic infection causes loss of production, our study suggests for periodic deworming to control the parasitic loads in the farm.

Key words: parasitic disease, prevalence, SGDF

INTRODUCTION

Bangladesh is a subtropical country with subsistence agro based economy. Production potential of livestock development programs is plagued in tropical and subtropical areas due to prevalence of helminthes which causes high mortality and great economic losses [1]. Livestock is considered to be the backbone of the agriculture [2]. Bangladesh has relative density of livestock population compared to many other countries of the world. Bangladesh was second in number of cattle population in among the SAARC countries and 7th among the Asian countries [3]. The present livestock population in Bangladesh is currently estimated to comprise 22.87 million cattle, 1.21 million buffalo, 20.75 million goat, 2.68 million ship, 206.89 million chicken and 39.08 million ducks [4]. Livestock plays a vital role in the agro based economy of Bangladesh. Livestock is the most prospective subsector that contributes in poverty alleviation. It is reported that more than 20% of the rural population of our country are engaged subsector for their subsistence [5]. Economic losses due to low quality of hides and skin by various parasitic infestations in livestock have been assumed [6]. About 9% of total foreign currency by exporting skin and hides [7]. Among the factors responsible for decreasing heath and productivity of cattle, parasitic disease is one of the main constraints in cattle rearing in Bangladesh [8]. A decrease in profitability up to 15% and 50% weight lose due to gastrointestinal parasitism has been reported [9,10]. Among the helminthes, trematode parasites of ruminant livestock have a worldwide distribution even has zoonotic importance [11]. The main source of animal protein is livestock and their products. Parasitism is one of the main constrains limiting livestock productions. Mortality of animals from parasitic diseases may not be alarming at time but they are direct effects in terms of reduced milk, meet, wool, hide production, infertility and loss of stamina of working animals' especially zoonotic impact on human health and considerably greater [12]. So far literature available, limited studies on epidemiological aspects of parasitic diseases have been carried out .For this reason the present study has been undertaken at Sylhet Government Dairy Farm (SGDF) in Sylhet district to find out the prevalence of parasitic diseases and to use this information to recommend appropriate measures to control.

MATERIALS AND METHODS

The data was collected from the Sylhet Govt. Dairy Farm (SGDF) under Sylhet district of Bangladesh during January to December 2010. Data collection was dependent on the daily patient register of the farm. There were about 168 cattle in the study area. The study period was divided in four season i.e. summer, autumn, winter and spring and the animals were separated into three groups according to their age (0 to 6 months to 2 ½ years, 2 ½ year to above). Cattle were reared in farm condition.

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Methods of diagnosis

The diagnostic procedures of parasitic diseases were followed by standard methods [13]. Skin is examined to detect external parasites or their eggs. If mange (ectoparasites) is suspected deep scrapings were made with the help of scalpel till blood oozes out, scraped materials were examined intact after treatment with 10% KOH or NaOH.

Faeces

It was examined for the detection of whole parasites, segments of tapeworms, larval and ova parasites protozoan cysts. Dark red to coffee color urine, stable froth and swelling of lymph nodes mainly parotid lymph nodes was used as a tool for presumptive diagnosis of babesiosis and theileriosis in field conditions. In most cases, the clinical findings of parasitic diseases are so characteristics that the diagnosis was made both from laboratory and clinocopathological methods were reliable than any other method alone.

Direct smear method

A small quantity of faeces were placed on to a glass slide mixed with a drop a sterile distilled water and spread out with help of a sterile tooth pick and examined under the microscope. Motile protozoa, cysts, sometimes aqueous examined of iodine is added which stains the protozoa, leaving debris and other food materials unstained [13].

Nasal secretion

Nasal secretions were usually examined to detect ova of nasal schistosomiasis. This was done by collecting nasal secretion in a petridish; few drops of 5-10% formalin may be added to prevent hatching of miracidium [14].

Urine

Urine was collected in the clean containers or obtained by catheterization. About 5-10% formalin was added before microscopic examination of sediment. Ova of kidney worm or schistosomes were detected by the process.

RESULTS AND DISCUSSION

The data showed the infection of parasitic diseases at Sylhet Government Dairy Farm (SGDF) under Sylhet district of Bangladesh. The severity of parasitic infection depends upon the age of the animals and in the seasonal variation of the year. Various parasitic infestations were found like trematodes, nematodes, ectoparasites and protozoal diseases also. It is recorded that the parasitic infection of cattle in SGDF is 11.88%. Among the parasitic infection liver fluke infection was 0.96%, Paramphistomiasis 0.30%, babesiosis 0.11%, parasitic gastroenteritis 1.53% and ectoparasitic infection was 8.96% (Table 1). Table 2 showed the age wise prevalence of parasitic infection in SGDF. The age wise prevalence in specific season i.e. summer (May-June), autumn (August - October), winter (November - January), spring (February - April) are shown in Table 3, Table 4, Table 5 and Table 6 respectively.

The prevalence of gastrointestinal helminthes is related to the agro-climatic conditions like quantity and quality of pasture, temperature, humidity and grazing behavior of the host [18]. Liver fluke infection is found highly (1.32%) in spring season and it affects the animal above 2 years old mostly. Study also reported that the prevalence of liver fluke was found higher during post monsoon and winter periods (September-February) [21]. The prevalence of liver fluke depends upon the availability of intermediate host-snail and low lying pasture land [22]. The infection of paramphistomiasis is higher summer season (0.58%) and it affects mostly in young animals <6 months of age. The increase in prevalence of this parasite with age has been reported before [23]. Prevalence increased with age in a linear pattern. The high rate of infection in autumn season is quite reasonable. The temperature and humidity become optimum for larval development of parasites in this season and favorable for the migration and development of infective stage in snails. It was found that among the parasitic disease at SGDF, parasitic gastroenteritis incidence was very high in autumn season (1.75%).

The overall prevalence of parasitic infection in the farm surveyed could be attributed to lower immunity of host as a result of malnutrition. All the livestock in the farm under investigation largely depended on grazing deteriorated range-lands. It was also observed that in this farm lack of fences and cattle, goats and sheep use the same pasture for grazing. Keeping in view the above result, some control measure for gastrointestinal parasites can be undertaken to reduce the intensity of the parasitic infection. In this regard, it is suggested that practice of separate grazing of animals with low stocking rate

Table 1: Seasonal prevalence of parasitic infection at SGDF, Sylhet

Name of Disease	Summer	Autumn	Winter	Spring	Total
Liver fluke	31 (0.75%)	36 (0.83%)	42 (0.95%)	53 (1.32%)	162 (0.96%)
Paramphistomiasis	24 (0.58%)	6 (0.13%)	11 (0.25%)	11 (0.27%)	52 (0.30%)
Bovine babesiosis	11 (0.26%)	2 (0.046%)	3 (0.068%)	3 (0.075%)	19 (0.11%)
Parasitic gastroenteritis	65 (1.58%)	77 (1.75%)	57 (1.29%)	59 (1.47%)	258 (1.53%)
Ectoparasites	376 (9.17%)	346 (8.04%)	405 (9.20%)	379 (8.97%)	1506 (8.96%)
Total	507 (12.36%)	467 (10.61%)	518 (11.77%)	505 (12.62%)	1997 (11.88%)

may be adopted. Furthermore, during the summer season specifically rainy period, climatic factors like temperature and humidity are favorable for the development and survival of different pre-parasitic stages. It is therefore, suggested that deworming program on quarterly basis may be implemented to reduce the risk of re-infection. However resistance to these drugs has recently been observed on several occasions. In order to delay the development of drug resistant parasite strains, anthelmentics must be delivered at optimal time.

CONCLUSION

After conducting the study it was found that the animals were mostly affected in the age of 6 month to 2 ½ years (5.86%) and the young animals were affected by parasitic gastroenteritis infection mostly (0.26%). Among the diseases, the liver fluke

Table 2: Age wise Prevalence of parasitic infection at SGDF, Sylhet

Name of Diseases	No. of affected animal and their age			
	0 to 6 months	6 to 2 ½ year	2 ½ year to above	Total
Liver fluke	0 (0.00%)	95 (0.56%)	67 (0.39%)	162 (0.96%)
Paramphistomiasis	37 (0.22%)	5 (0.029%)	10 (0.59%)	52 (0.30%)
Bovine babesiosis	0 (0.00%)	16 (0.09%)	3 (0.01%)	19 (0.11%)
Parasitic gastroenteritis	45 (0.26%)	91 (0.54%)	122 (0.72%)	258 (1.53%)
Ectoparasites	174 (1.03%)	779 (4.63%)	553 (3.29%)	1506 (8.96%)
Total	256 (1.52%)	986 (5.86%)	755 (4.49%)	1997(11.88%)

Table 3: Summer season (May to July)

Name of Diseases	No. of affected animal and their age			
	0 to 6 months	6 to 2 ½ year	2 ½ year to above	Total
Liver fluke	0(0.00%)	19(0.46%)	12(0.29%)	31(0.75%)
Paramphistomiasis	19(0.46%)	2(0.048%)	3(0.073%)	24(0.58%)
Bovine babesiosis	0(0.00%)	8(0.19%)	3(0.073%)	11(0.26%)
Parasitic gastroenteritis	14(0.34%)	23(0.56%)	28(0.68%)	65(1.58%)
Ectoparasites	41(1.00%)	197(4.80%)	138(3.36%)	376(9.17%)
Total	74(1.80%)	249(6.07%)	184(4.48%)	507(12.36%)

Table 4: Autumn season (August to October)

Name of Diseases	No. of affected animal and their age			
	0 to 6 months	6 to 2 ½ year	2 ½ year to above	Total
Liver fluke	0(0.00%)	21(0.48%)	15(0.34%)	36(0.83%)
Paramphistomiasis	3(0.069%)	1(0.023%)	2(0.046%)	6(0.13%)
Bovine babesiosis	0(0.00%)	2(0.046%)	0(0.00%)	2(0.046%)
Parasitic gastroenteritis	12(0.27%)	24(0.55%)	41(0.93%)	77(1.75%)
Ectoparasites	48(1.11%)	175(4.06%)	123(2.86%)	346(8.04%)
Total	63(1.46%)	223(5.18%)	181(4.11%)	467(10.61%)

Table 5: Winter season (November to January)

Name of Diseases	No. of affected animal and their age			
	0 to 6 months	6 to 2 ½ year	2 ½ year to above	Total
Liver fluke	0(0.00%)	24(0.54%)	18(0.40%)	42(0.95%)
Paramphistomiasis	8(0.18%)	1(0.022)	2(0.45%)	11(0.25%)
Bovine babesiosis	0(0.00%)	3(0.068%)	0(0.00%)	3(0.068%)
Parasitic gastroenteritis	9(0.20%)	21(0.47%)	27(0.61%)	57(1.29%)
Ectoparasites	45(1.02%)	210(4.77%)	150(3.40%)	405(9.20%)
Total	62(1.40%)	259(5.88%)	197(4.47%)	518(11.77%)

Table 6: Spring season (February to April)

Name of Diseases	No. of affected animal and their age			
	0 to 6 months	6 to 2 ½ year	2 ½ year to above	Total
Liver fluke	0(0.00%)	31(0.77%)	22(0.55%)	53(1.32%)
Paramphistomiasis	7(0.175%)	1(0.025%)	3(0.075%)	11(0.27%)
Bovine babesiosis	0(0.00%)	3(0.075%)	0(0.00%)	3(0.075%)
Parasitic gastroenteritis	10(0.25%)	23(0.575%)	26(0.425%)	59(1.47%)
Ectoparasites	40(1.00%)	197(4.42%)	142(3.55%)	379(8.97%)
Total	57(1.42%)	255(6.37%)	193(4.82%)	505(12.62%)

infection was (0.96%), paramphistomiasis (0.30%), parasitic gastroenteritis (1.53%), babesiosis (0.11%), ectoparasites (8.96%). The prevalence of parasitic diseases at SGDF was (11.88%). The parasitic infection causes loss of production. Thus it has a great economic importance upon the cattle of the farm. Proper tick control measures should be taken to reduce the ectoparasitic infestation. Destruction of intermediate host is important to control parasites. Fluke bearing snails can be controlled to some extent in the low lying areas by drainage, use of molluscicides such as copper sulphate. Avoiding low-lying pastures it is also possible to control fluke infection. Periodic deworming program should be taken to get the maximum benefits from cattle. Further study should be needed to find out the proper preventive and control measures against parasitic infestations.

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