PREVALENCE OF PARASITIC INFECTION IN BUFFALO CALVES IN KHADAGZAI, DISTRICT DIR

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ABSTRACT

Prevalence of ecto and endo-parasites of buffalo calves was investigated in 50 buffalo farms in Khadagzai area of district Dir, N.W.F.P. Province. Faecal examination of calves (n = 118; age ≤ 1 year) revealed that 64.41% of the calves were positive for internal parasites. The worm load significantly varied ($P<0.05$) among the farms and was the highest (1600-3600 EPG) in 2% farms, moderate (800-1600 EPG) in 22%, low (200-800 EPG) in 34% and negligible (less than 200 EPG) in 42% farms. Among the calves examined, 50.84% had the worm load of 200-800 EPG and 13.56% calves showed the worm load of 800-1600 EPG. The highest worm load (1600-3600 EPG) was observed only in 0.85% of the calves. Six species of nematodes and one specie of trematodes were identified. No cestode infection was encountered during the study. The incidence of Trichostrongylus species was 21.19%, followed by Trichuris (9.32%), Haemonchus (8.47%), Strongyloides papillosus (5.93%), Ostertagia (5.08%), Toxocara vitulurum (1.70%), Fasciola (5.93%) and mixed infections (6.78%). Intestinal protozoan infection was recorded in 72% of the calves. Majority of the calves (85%) had mixed infection of Coccidia and Amoeba and the remaining 15% calves were found infected with Coccidia only. A total of 55.93% of the calves studied were found positive for ecto-parasites. The prevalence of ticks, lice, mites and mixed infection was 5.08, 34.75, 11.86 and 4.24%, respectively in the surveyed calves.

Key Words: Buffalo calves, parasitic infection, prevalence

INTRODUCTION

Survival of the neonatal calves is imperative for livestock propagation to produce milk, meat and hides. Successful calf raising needs a proper watch and control over parasitic diseases. Parasitism is one of the major problems affecting cattle and buffalo calves. The associated economic losses are inflicted in the form of low productivity, reduced product quality, high treatment cost and mortality (Gupta *et al.* 1978). Many species of ecto-parasites are also responsible for transmitting babesiosis and theileriosis (Gray and Potgier, 1982). Mite infestation is important because of public health significance. In Pakistan, the prevalence of the parasitic infestation is very common and costs about 26.5 million rupees annually to livestock industry (Anwar *et al.*, 1995). The present study was conducted to assess the prevalence of ecto and endo-parasites in buffalo calves in Khadagzai area of district Dir, NWFP.

MATERIALS AND METHODS

A survey of 50 buffalo farms in Khadagzai area of district Dir, NWFP was carried out during the months of April and May to determine the prevalence of ecto and endo-parasites. Faecal samples of 118 calves, aged upto 1 year, were collected (per rectum) and examined for the presence of ova of endo-parasites using direct fecal smear and floatation methods (Urquhart *et al.*, 1987). Worm load, expressed as eggs per gram (EPG), was estimated through Mac Master technique, as described by Vanparijs *et al.* (1979). The farmers were interviewed for information on animal health status, deworming practices and severity of ecto-parasites. Ecto-parasitic infestation was divided into two groups i.e. heavy infestation, when more than 25% of a calf skin was infested with ecto-parasites or moderately infested when less than 25% of the skin was found infested. Skin scrapings were collected for laboratory examination to identify ecto-parasites. The data collected were analyzed statistically with the General Linear Model (GLM) procedure of Statistical Analysis System (SAS, 2000). Fisher Exact Test was used to compare the means (Steel and Torrie, 1980).

RESULTS AND DISCUSSION

Endo Parasites

The worm load in buffalo calves varied ($P<0.05$) among the farms (Table 1) and was the highest (1600-3600 EPG) in 2% farms, moderate (800-1600 EPG) in 22%, low (200-800 EPG) in 34% farms and negligible (less than 200 EPG) in 42% farms. In 50.84% of all the calves examined, the worm load was 200-800 EPG.

while in 13.56% of the calves the worm load ranged between 800 and 1600 EPG. The highest worm load (1600-3600 EPG) was observed only in 0.85% of the calves (Table 1).

According to Soulsby (1982), a worm load of 300-600 EPG is an indication of infection in cattle and buffaloes. In case of fascioliasis, a load of 100-200 EPG can also produce clinical signs of parasitism. The variation in parasitic load might have been due to divergent egg producing capabilities of different species of parasites. Number of eggs produced by the parasites

Table 1. Severity of worm infestation in buffalo calves at various farms in Khadagzai, Dir

Worm load (EPG)	Farms		Calves	
	No.	%	No.	%
0 – 200	21	42	41	34.75
200-800	17	34	60	50.84
800-1600	11	22	16	13.56
1600-3600	1	2	1	0.85
Total	50	100	118	100.00

could also be influenced by immunity, nutritional status of a host and the developmental stage of a parasite (Soulsby, 1982).

Among the total 118 calves (≤ 1 year of age) examined in the present study, 64.41% were found positive for various helminths (Table 2). Incidence of nematodes was higher than that of trematodes (51.69% VS 5.93%). Mixed infestation of nematodes and trematodes was also observed in 6.78% of the calves. The findings of the present study are in agreement with those of Anwar *et al.* (1996), who reported the incidence of helminthiasis in young buffalo calves in Faisalabad as 63.8% which included 60.2% nematode infestation. Bejsovec (1991) reported the incidence of internal parasites in cow calves of 6-12 months of age as 18.9%. The present study was conducted during the months of April and May (spring season), which is usually considered as conducive for hatching and survival of parasitic ova (Langrova, 1998).

Species wise distribution of helminths

The incidence of nematodes that included Trichostrongylus (mixed group) and different species of the genera Trichuris, Strongyloides, Ostertagia, Haemonchus and Toxocara is summarized in Table 2. The occurrence of Trichostrongylus was the highest (21.19%), followed by Trichuris (9.32%), Haemonchus (8.47%), Strongyloides (*Strongyloides papillosus*, 5.93%), Ostertagia (5.08%), and Toxocara (*Toxocara vitulurum*, 1.70%). The prevalence of parasites varied with the findings of Anwar *et al.* (1996), who reported the incidence of *Strongyloid papillosus* as the highest (40.7%), followed by *Toxocara vitulurum* (18.20%), *Haemonchus contortus* (7.70%) and *Ostertagia ostertagia* (4%). The variable distribution of these worms may be attributed to differences in climatic conditions prevailed in the area at the time of faecal samples collection. On farm managemental practices such as grazing, stall feeding, and sources of drinking water can also influence the relative infection of different nematodes. Malik (1994) reported that the incidence of gastro-intestinal parasites in buffalo was 46.6% in District Charsadda of NWFP. The nematodes observed were Trichostrongylus (mixed group: 23.40%), genera Oesophagostomum (18.9%), Haemonchus (13.40%), Neoascaris (13.14%), Ostertagia (9.16%), Bunostomum (6.41%), Strongyloides (6.09%), Mecistocirrus (5.12%) and Trichuris (3.82%).

Number of eggs excreted in the faeces is not generally considered as an accurate measure of the severity of the parasitic infection because large number of immature worms may be present or egg production ability of mature worm may be suppressed by the immune reaction. Further, some species such as *Haemonchus contortus* have high fecundity as compared to other stomach worms (Blood *et al.*, 1994).

In the present study, the incidence of mixed helminths infection in the buffalo calves was found as 6.78%. Trichostrongylus (mixed group) was also recorded in combination with genera Trichuris, Haemonchus, Ostertagia, Strongyloid and Fasciola. The prevalence of genus Fasciola in the present study was 5.93%. The high prevalence of the Trichostrongylus in the present study may be attributed to the environmental conditions prevailed in the study area. No cestode infection was encountered in the present study. Anwar *et al.* (1996) also reported low incidence of cestodes in buffalo calves in Faisalabad.

Protozoal infection

In the present study, 72% of the calves examined were found positive for intestinal protozoal infection. Only Coccidia spp. was occurred in 15% of the positive calves, while 85% of the infected calves carried mixed infection of Coccidia and Amoeba species. The high incidence of mixed protozoal infection in the buffalo calves was presumably due to the confined housing of the calves in small unhygienic yards. In bovine the coccidiosis is a common cause of diarrhea and dysentery. Nevertheless, the incidence of intestinal protozoa in farm animals may not necessarily be associated with the development of a clinical disease.

Ecto-parasitic infestation

Among 118 buffalo calves examined, 66 (55.93%) were found harboring ecto-parasites. Only 9% of the

positive calves were heavily infested and the remaining (91%) calves had moderate infestation. Major ecto-parasites observed in the present study (Table 3) were ticks (5.08%), lice (34.75%), mites (11.86%) and mixed (4.24%).

Fisher's Exact Test revealed significant differences ($P<0.05$) among the prevalence of different types of ecto-parasites in the surveyed calves. Young buffalo calves are equally prone to ticks, lice and mites. However, their relative distribution may change with seasons.

In the present study, low tick infestation (5.08%) was found in buffalo calves. According to Ansari *et al.* (1987), high tick infestation usually occurs during March-June and August-November. Siddique and Jan (1986) recorded the incidence of ticks in buffaloes as 5.26, 26.67, 10.00, 40.00 and 53.33%, in Dir, Bannu, Chitral, Swat and Mardan districts, respectively. In Hangu district of NWFP, 80% of the cattle population was found infested with ticks during the summer months of May-August (Zaman, 1997). The low incidence of ticks in buffalo calves in the present study was presumably due to unfavorable season (spring) for development of ticks.

In the present study, lice infestation was 34.75% (Table 3). The high incidence of lice in buffalo calves during the spring season was probably due to favorable skin conditions that encouraged lice multiplication (Duncan *et al.*, 1975). The incidence of mite in the present study was 11.86%. Rizwan *et al.* (1995) and Jabeen *et al.*, (1998) reported the incidence of mite in calves from 7.0% to 9.3% in Faisalabad. The season wise data reported by Jabeen *et al.* (1998) revealed low incidence of mite (1.58%) during the months of May to August that increased to 8.3% during September to January and reached its peak (20.53%) in February.

On the basis of the findings of the present study, it can be recommended that a proper deworming program for calves and their dams is required to be adopted to reduce the prevalence of internal parasites in young calves. Proper disposal of manure is necessary to reduce the incidence of endo-parasites. Use of manure in biogas digesters or aging before its application in the fields can successfully break the life cycle of majority of the internal parasites.

Farmer's education is required for the construction of proper feeding and water troughs for young calves to prevent fecal contamination. Young calves should be closely watched for ecto-parasites and suitable insecticides should be used periodically

Table 2. Incidence of various endo parasites in buffalo calves in Khadagzai, Dir

Endo-parasites	Number of calves infected	Percent of the total calves examined
Genus Trichostrongylus	25	21.19
Genus Trichuris	11	9.32
Strongyloides papillosus	7	5.93
Genus Ostertagia	6	5.08
Genus Haemonchus	10	8.47
Toxocara vitulurum	2	1.70
Fasciola	7	5.93
Mixed	8	6.78
Total	76	64.41

Table 3. Incidence of ecto-parasites in buffalo calves in Khadagzai, Dir

Types of ecto-parasites	Number of calves infested	Percent of the total calves examined
Ticks	6	5.08
Lice	41	34.75
Mites	14	11.86
Mixed	5	4.24
Total	66	55.93

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