

Full Length Research Paper

Prevalence of coccidiosis and other gastrointestinal nematode species in buffalo calves at Hyderabad, Sindh, Pakistan

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A total of 1000 bovine fecal samples were randomly collected per-rectum from Hyderabad and its surrounding areas to determine the types and prevalence of coccidian parasites. Coccidian oocysts were found in 6.6% of all samples examined. *Eimeria bovis* 66 (6.6%) was the most prevalent species in the buffalo calves. During the present investigation four species of nematodes were also identified. The species detected and their prevalence were *Toxocara vitulorum* 80 (8.0%), *Hemonchus contortus* 09 (0.9%), *Strongyles* 05 (0.5%) and *Ostertagia ostertagai* 04 (0.4%). The highest percentage of coccidiosis 9.36% was recorded from cattle colony Hyderabad and lowest 1.23% from Pusia village. Other species of gastrointestinal nematodes were also identified from the different localities of Hyderabad but it was concluded that *E. bovis* was the most prevalent species in the calves specifically at the areas of Hyderabad.

Key words: Prevalence, Coccidiosis, Eimeria, nematode, buffalo, calves, Sindh, Pakistan.

INTRODUCTION

Bovine coccidiosis is an infectious disease affecting calves all over the world resulting in considerable economic losses each year to the beef and dairy industries (Dauguschies and Najdrowski, 2005). Coccidiosis is an important disease for calves and cause of diarrhea in animals that cause dysentery in calves especially in 3 months old (Davoudi et al., 2011). Coccidiosis can occur at any age of animals, but clinical

coccidiosis occurs mainly in young calves (Penzhorn, 2002). Neonatal animal's species are most susceptible e.g. calves and kids had significantly higher prevalence of Eimeria than adults (Rehman et al., 2011). Neonatal calf diarrhea is a main health problem that has economical fatalities as a culling, emaciation and treatment costs (Davoudi et al., 2011). Eimeria species are frequently found in water buffalo (*Bubalus bubalis*). Here, we report those Eimeria species that infect buffalo calves during their foremost year of life (Carlos et al., 2009). The most serious losses are seen in dairy herds where large numbers of calves are kept, and older cattle act as

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Table 1. Prevalence of *Eimeria* and nematodes in buffalo calves.

Species	No. of calves examined	No. of calves Infected	Prevalence (%)
<i>Eimeria bovis</i>	1000	66	6.6
<i>Toxocara vitulorum</i>	1000	80	8.0
<i>Hemonchus contortus</i>	1000	9	0.9
<i>Strongyles</i>	1000	5	0.5
<i>Ostertagia ostertagai</i>	1000	4	0.4

Table 2. Prevalence of Coccidiosis in different localities of Hyderabad.

Locality	No. of calves examined	No. of calves infected	Prevalence (%)
Cattle Colony Hyderabad.	427	40	9.36
Moosa khatiar	36	3	8.33
Mir colony	220	18	8.18
Jamali village	72	2	2.77
Chandia village	126	2	1.58
Pusia village	81	1	1.23
Experimental farm, Sindh Agriculture University, Tandojam	17	0	0
Tandojam city	21	0	0
Total	1000	66	6.6

carriers. They continue to pass oocysts in their faeces (Andrews, 2002). There are 13 known species of *Eimeria*, but not all are pathogenic. The two most common pathogenic species are *Eimeria zuernii* and *Eimeria bovis* causing morbidity or even mortality associated with mucus and blood stained diarrhea in calves (Gulegan and Okursay, 2000; Lucas et al, 2006). All domestic animals are susceptible to coccidial infections. Although, coccidiosis is host specific, every host may be infected with several species of coccidia at the same time (Andrews, 2002). In case of poultry large number of research is done on this issue and efficacy of a variety of anticoccidial drugs has been evaluated by many researchers in Pakistan (Ashraf et al., 2002; Abbas et al., 2009). But the coccidiosis in cattle are almost a neglected area in our country because of the scarcity of research on this specific topic, especially in buffalos little is known concerning the impact of coccidiosis in buffaloes (Dubey et al., 2008). The present study was undertaken to find out the prevalence and identification of *Eimeria* species affecting buffalo calves in the study area.

MATERIALS AND METHODS

Sample collection

The present study was conducted in the area of Hyderabad and its surroundings. 1000 faecal samples were randomly collected per rectum. The samples were kept in polythene bags, labeled and brought to the Department of Veterinary Medicine, Faculty of Animal Husbandry and Veterinary Sciences, Sindh Agriculture

University Tandojam for further processing.

Parasitological examination

Faecal samples were examined by using Floatation method and McMaster Technique as described by Soulsby (1986). Faecal oocysts count was carried out by using a modified McMaster technique. After examination of faecal samples the positive samples of *Eimeria* oocysts and other nematodes were subjected to sporulation in 2.5% Potassium dichromate. The oocysts of mixed species were allowed to sporulate at room temperature for 3-4 days. The identification of *Eimeria* species as described by Soulsby (1986).

RESULTS

One species of *Eimeria* and four species nematodes were identified from the faecal samples of 1000 buffalo calves collected in different localities of Hyderabad. The species detected and their prevalence rates are given in Table 1.

E. bovis was the most prevalent species in the calves. It occurred in 6.6% of the samples. The nematodes species were *Toxocara vitulorum* (8.0%), *Hemonchus contortus* (0.9%), *Strongyles* (0.5%) and *Ostertagia ostertagai* (0.4%). The highest percentage of infection (9.36%) was recorded from cattle colony Hyderabad followed by Moosa Khatiar (8.33%) and Mir Colony Tandojam (8.18%). While the lowest (2.77, 1.58 and 1.23%) from Jamali village, Chandia village and Pusia village (Table 2). The prevalence percentage of other



Figure 1. illustrates oocysts of *Eimeria bovis*.

nematodes species were also determined and it was observed that *T. vitulorum* was most prevalent nematode specie having 8.0% results (Figure 1).

DISCUSSION

The present study was carried out to determine the prevalence of coccidian parasites in buffalo calves from Hyderabad and its surrounding areas. The over all prevalence of coccidiosis was 6.6%, as 66 calves were found infected. Waruiru et al. (2000), Pilarczyk et al. (2000, 2002), Romaniuk et al. (2004) and Hatice et al. (2007) reported the infection rate as 61.4, 49.6% and 5.5, 16.6% and 27.23% in buffalo calves respectively. Prevalence of 6.6% observed in present study appeared to be lower than that reported by Waruiru et al. (2000), Pilarczyk et al. (2000), Romaniuk et al. (2004) and Hatice et al. (2007) and higher than the observations of Pilarczyk et al. (2002). The variation may be attributed to management practices and source of animals examined. In this study one species of *Eimeria* and four species of nematodes were identified from the different localities of Hyderabad. *E. bovis* was the most prevalent species in the calves. A number of authors (Gulegan and Okursay, 2000; Gul et al., 2000; Deger et al., 2001) reported that *E. bovis* was the most prevalent species. Our findings are in agreement with the findings of the authors above. In the present study four species of nematodes that is, *T. vitulorum* (8.0%), *H. contortus* (0.9%), *Strongyles* (0.5%) and *Ostertagia ostertagai* (0.4%) were identified from bovine fecal samples. Al-Farwachi (2000) recorded the infection rate of 17.5% *Ostertagia*, 0.5% tapeworms. Waruiru et al. (2000) reported the infection rate of 85.5% strongyles, 34.0% Liver flukes, 30.9% coccidia and 9.6% tapeworms. Present findings are to some extent in agreement with the findings of above workers because we found almost same species of nematodes but the

variation in the infection rate may be due to the number of animals examined. The highest percentage of coccidial infection (9.36%) was recorded from Cattle Colony Hyderabad followed by Moosa Khatiar (8.33%) and Mir Colony Tandojam (8.18%). While the lowest (2.77, 1.58 and 1.23%) from Jamali village, Chandia village and Pusia village respectively. Hatice et al. (2007) at Turkey, observed higher prevalence (25.0%) in Kucukcobanlı followed by Central Afyon (23.3%) and the lowest (4.5%) at Sarayduzu. Matjila and Penzhorn (2002) at South Africa, conducted survey in three localities and reported highest rate of infection (52%) at Pienaars River while lowest (29%) at Mallesons. The variation is probably due to geographical differences.

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REFERENCES

- Abbas RZ, Iqbal Z, Khan MN, Hashmi N, Hussain A (2009). Prophylactic efficacy of diclazuril in broilersexperimentally infected with three field isolates of *Eimeria tenella*. *Int. J. Agric. Biol.* 11:606-610.
- Al-Farwachi MI (2000). Occurrence of intestinal parasites in cattle, Mosul, Iraq. *J. Vet. Sci.* 1(13):187-191
- Andrews T (2002). UK Coccidiosis survey in calves. *Vet. Times* 34(32):22
- Ashraf MA, Pasha TN, Mian NA, Hashmi A, Ali Z (2002). Comparative efficacy of different feed additiveanticoccidials in broilers. *Int. J. Poult. Sci.* 1:185-187.
- Carlos F, Antonio, Noronha D Jr, Wilma A, Starke B, Donald WD (2009). *Eimeria* Spp. in Brazilian Water Buffalo American Society of Parasitologists. *J. Parasitol.* 95(1):231-234
- Daugschies A, Najdrowski M (2005). Eimeriosis in cattle: current understanding. *J. Vet. Med. B.* 52:417-427
- Davoudi Y, Yagoob G, Freydoun Nm, Zahra E, Saied S (2011) Study on prevalence rate of Coccidiosis in diarrheic calves in East-

- Azerbaijan province *Advances in Environ. Biol.* 5(7):1563 -1565
- Deger S, Bicek K, Gul A, Eraslan E (2001). Van yöresi buzagi ve danalarinda *Eimeria* türlerinin yayginligi. *YYU Saglik Bilimleri Dergisi.* 7:69-72
- Dubey JP, Wouda W, Muskens J (2008) Fatal Intestinal Coccidiosis in a Three-Week-Old Buffalo calf (BUBALUS BUBALUS) *J. Parasitol. Am. Soc. Parasitol.* 94(6):1289–1294
- Gül A, Biçek K, Değer S (2000). Van Belediye mezbahasında kesimi yapılan sığırlarda bulunan *Eimeria* türleri ve bunların yayılış oranları. *YYÜ Vet Fak. Derg.* 11:12–14
- Gulegan AE, Okursoy S (2000). *Coccidia* species and their prevalence in cattle in province of Bursa. *Tok. Parasitol. Dergisi.* 3(24):297-303
- Hatice C, Feride S, Esmâ K, Mustafa K, Mustafa E, Nurhan D (2007). Prevalence of coccidia in western Turkey. *Parasitol. Res.* 101: 1239-1243
- Lucas AS, Swecker, WS, Scaglia, G, Lindsay, DS, Zajak AM (2006). Variation in *Eimeria* composition in weaning beef heifers. *J. Pasitol.* 92:1115-1117
- Pilarczyk B, Balicka-Ramisz A, Ramisz A (2000). Studies on coccidiosis in cattle in north-west Poland. *Electronic Journal of Polish Agricultural Universities, Animal Husbandry*, 3:1, <http://www.ejpau.media.pl>
- Pilarczyk B, Ramisz A, Jastrzebski G (2002). Internal parasites of cattle in select Western Pomerania farms. *Wiadomos' ci Parazytologiczne* 48(4):383–390.
- Rehman TU, Khan MN, Khan IA, Ahmad M (2011). Epidemiology and economic benefits of treating goat coccidiosis. *Pak. Vet. J.* 31(3): 227-230.
- Romaniuk K, Reszka K, Lasota E (2004). Influence of animal breeding, manner on the occurrence of internal parasites. *Wiadomości Parazytologiczne* 50(3):647–651.
- Soulsby EJJ (1986). *Helminthes, Arthropods and Protozoa of Domestic Animals.* 7thed. Bailliere Tindal London, pp. 607-612
- Waruiru RM, Kyvsgaard NC, Thamsborg SM, Nansen P, Bogh HO, Muryua WK, Gathuma JM (2000). The prevalence and intensity of helminth and coccidial infections in dairy cattle in Central Kenya. *Vet. Res. Commu.* 24:39-53.