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

Amjad Husain Mirani¹, Muhammad Ghias uddin shah², Khuda Bakhsh Mirbahar³, Muhammad Shuaib Khan⁴, Ghulam Murtaza Lochi², Imdad Ullah Khan⁴, Farooq Alam⁵, Syed Mubasher Hasan³ and Muhammad Tariq⁴

¹Department of Veterinary Medicine, Faculty of A.H. and Veterinary Sciences, Sindh, Agriculture University Tandojam Pakistan.
²Department of Anatomy and Histology, Faculty of A.H. and Veterinary Sciences, Sindh, Agriculture University Tandojam Pakistan.
³Department of Animal Reproduction, Faculty of A.H. and Veterinary Sciences, Sindh, Agriculture University Tandojam Pakistan.
⁴Gomal College of Veterinary Sciences, Gomal University, D.I. Khan, Pakistan.
⁵UBL main branch, Area office D.I. Khan Pakistan.

Accepted 19 July, 2012

A total of 1000 bovine feacal 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 ostertagi* 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 (Daugschies and Najdrowski, 2005). Coccidiosis is an important disease for calves and case 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 (*Bubalis 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...
Table 1. Prevalence of Eimeria and nematodes in buffalo calves.

<table>
<thead>
<tr>
<th>Species</th>
<th>No. of calves examined</th>
<th>No. of calves infected</th>
<th>Prevalence (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Eimeria bovis</td>
<td>1000</td>
<td>66</td>
<td>6.6</td>
</tr>
<tr>
<td>Toxocara vitulorum</td>
<td>1000</td>
<td>80</td>
<td>8.0</td>
</tr>
<tr>
<td>Hemonchus contortus</td>
<td>1000</td>
<td>9</td>
<td>0.9</td>
</tr>
<tr>
<td>Strongyles</td>
<td>1000</td>
<td>5</td>
<td>0.5</td>
</tr>
<tr>
<td>Ostertagia ostertagai</td>
<td>1000</td>
<td>4</td>
<td>0.4</td>
</tr>
</tbody>
</table>

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

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

carriers. They continue to pass oocysts in their feaces (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 anticoccial 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 fecal 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

Feecal samples were examined by using Floatation method and McMaster Technique as described by Soulsby (1986). Fecal oocysts count was carried out by using a modified McMaster technique. After examination of fecal 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 fecal 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
nematodes species were also determined and it was observed that \textit{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 overall 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 \textit{Eimeria} and four species of nematodes were identified from the different localities of Hyderabad. \textit{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 \textit{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, \textit{T. vitulorum} (8.0\%), \textit{H. contortus} (0.9\%), Strongyles (0.5\%) and \textit{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 Khattar (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 Kucukcobanli 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.

**ACKNOWLEDGEMENT**

This project was sponsored by Sindh Agriculture University, Tandojam.

**REFERENCES**


Davoudi Y, Yagoob G, Freydoun Nm, Zahra E, Saied S (2011) Study on prevalence rate of Coccidiosis in diarrheic calves in East-


