



Therapeutic Management of Winter Coccidiosis in Cattle calves of Morigaon, Assam

A. Hazarika¹ • M. Das^{2*}

¹Key Village Centre, Charaibahi, Morigaon, Animal Husbandry and Veterinary Department, Assam

²Division of Animal Health, ICAR Research Complex for NEH Region, Umiam, Meghalaya

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ABSTRACT

Winter coccidiosis was observed in nine (9) non-descript cattle calves of about 4-10 months of age from Charaibahi village, Morigaon, Assam. Examination of fecal samples revealed presence of five species of *Eimeria* viz. *E. bovis* (88.88%), *E. zuernii* (66.66%), *E. auburnensis* (55.55%), *E. ellipsoidalis* (33.33%) and *E. alabamensis* (22.22%). Oocyst count per gram of feces ranged from 50 to 950 in infected calves. All the calves were treated successfully with Sulphadimidine @ 0.2g per kg b. wt. orally for 5 days, Paracetamol and Nimesulide @ 1 bolus per 100 kg b. wt. orally for 3 days and fluid therapy @ 500ml intravenously daily for 3 days. Multivitamin @ 250g per 100kg of feed was given daily as a supportive supplement for 1 month. After 5 days of treatment, the calves recovered gradually and started normal feeding.

1. Introduction

Coccidiosis is an important intestinal disease of calves caused by various species of *Eimeria* belonging to phylum-apicomplexa (Almeida *et al.*, 2011). Generally, coccidiosis is seen in late summer as well as in winter months in India but, it may occur throughout the year. When it occurs in winter season then it is known as winter coccidiosis. In winter months the disease may occur due to environmental stress and limitation of host and parasite concentration due to shortage of water shed (Chakrabarti and Jha, 2016). Coccidiosis in cattle commonly occurs as subclinical disease causing great economic losses. Signs of clinical coccidiosis include reduced appetite, reduced body weight, unthriftiness, diarrhea, dysentery and anemia (Abebe *et al.*, 2008). Coccidiosis in cattle is observed in all age groups but it is most common and important in young animals. They are responsible for huge economic losses to the livestock industry in terms of mortality and morbidity in young calves (Nalbantoglu *et al.*, 2008; Nisar Khan *et al.*, 2013).

The disease is particularly a problem of confined animals kept under intensive husbandry practices and is more common in housed animals than in those on pastures. In associations with other enteropathogens, coccidia have been indicated as an important cause of diarrhea in calves (Radostits *et al.*, 1994). The disease occurs in acute, subacute and chronic forms. Bloody diarrhea, dehydration, rough hair coat, reduced growth rate, anemia, weakness and weight loss are the signs of coccidiosis (Bastianetto *et al.*, 2007). Clinical coccidiosis in cattle mainly depends on factors like species of *Eimeria*, the age of the infected animal, the number of oocysts ingested, the presence of concurrent infections and management practices (Dauguschies and Najdrowski, 2005). Overcrowding and lack of sanitation increases the chance of infection. More than 13 species of *Eimeria* and one species of *Isospora* have been described to infect cattle. *Eimeria bovis* and *Eimeria zuernii* are the most pathogenic species and associated with clinical coccidiosis under the field conditions while other species have been shown to be mildly or moderately pathogenic. The major damage is due to the rapid multiplication of the parasite in the intestinal wall, and the subsequent rupture of the cells of the intestinal lining. Several stages of multiplication occur before the final stage, the oocyst, is passed in the feces.

*Corresponding author: meenad3@gmail.com

Oocysts are extremely resistant to environmental stress and are difficult to completely remove from the environment. The disease is transmitted by ingestion of sporulated oocysts. Infection is acquired from the contaminated feed, water, soiled pastures or by licking contaminated hair coat.

2. Case History and Clinical findings

In the month of December' 2017, nine (9) non-descript cattle calves of about 4-10 months of age from Charaibahi village, Morigaon, Assam showed symptoms of anorexia, emaciation, rough hair coat, discharge of foul smelling diarrhea, smudging of the perineum and tail with dung as well as bottle jaw condition (Fig. 1). Clinical examination of the calves revealed high temperature (103-104°F), increased pulse rate (100-105/min), normal respiratory rate (28-30/min), sunken eye balls, rough hair coat and dehydration in animals.

3. Diagnosis

For diagnosis of disease in infected animals fecal samples were collected directly from the rectum of the individual animal and kept in marked plastic pouch/vials. Three grams of fecal samples were examined by direct flotation technique using saturated salt (specific gravity: 1.20) and sucrose (specific gravity: 1.27) solution (Pyziel and Demiaszkiewicz, 2013). Positive samples were then quantified to estimate the oocysts per gram (OPG) of feces by using modified McMaster technique (MAFF, 1986). Samples not being examined on the same day were preserved in 2.5% potassium dichromate solution and stored at refrigerated temperature (4°C) for next day examination. Sporulation of the oocyst was done by mixing positive fecal sample containing oocyst of *Eimeria* spp. with 2.5% potassium dichromate solution in a ratio of 1:5

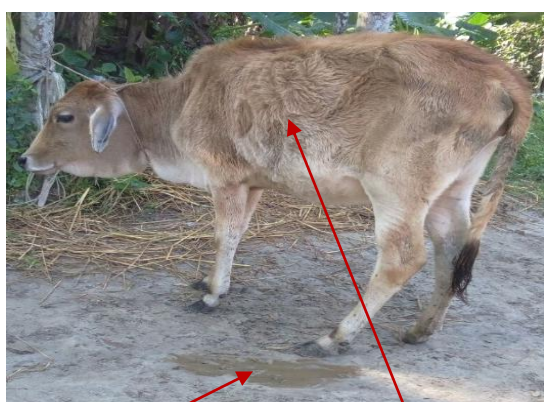
Volume as per the procedure described by Duszynski and Wilber (1997) and incubated at room temperature for 4-7 days, checked daily. Morphological characterization and measurement of oocysts was done as per the guidelines of Duszynski and Wilber (1997) and Soulsby (1986) by using an Olympus BX51 light microscope at ×200 and ×400 magnifications.

4. Treatment and Discussion

All the cattle calves were found to be infected with coccidia. Five species of *Eimeria* were identified viz. *E. bovis* (88.88%), *E. zuernii* (66.66%), *Eimeria auburnensis* (55.55%), *Eimeria ellipsoidalis* (33.33%) and *Eimeria alabamensis* (22.22%). The OPG of feces ranged from 50 to 950 in infected animals (Table 1). All the species of *Eimeria* were identified on the basis of their morphological characters (Fig. 2). The length × width (mean±standard error) of each species were *E. ellipsoidalis* (15.2±0.53×12.3±0.58 μm), *E. zuernii* (15.4±0.41×13.3±0.29 μm), *E. alabamensis* (16.8±0.27×10.9±0.31 μm), *E. bovis* (24.7±0.49×19.2±0.67 μm), *E. auburnensis* (35.2±0.31×20.9±0.37 μm).

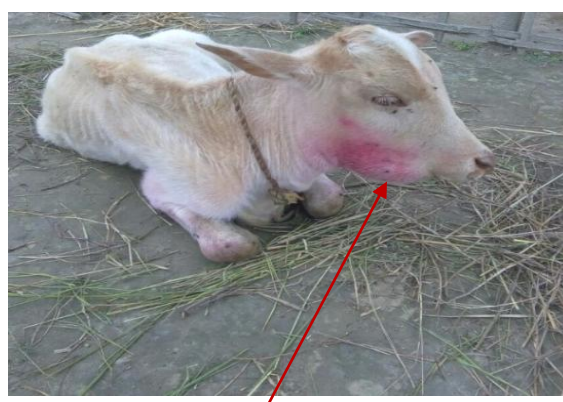
Table 1. Species of *Eimeria* in Cattle calves of Charaibhai, Morigaon

<i>Eimeria</i> spp.	Prevalence (%)	OPG of feces
<i>Eimeria bovis</i>	8 (88.88)	50-950
<i>Eimeria zuernii</i>	6(66.66)	50-600
<i>Eimeria ellipsoidalis</i>	3(33.33)	50-450
<i>Eimeria auburnensis</i>	5(55.55)	50-300
<i>Eimeria alabamensis</i>	2(22.22)	50-150



Diarrhea

Rough hair coat



Bottle jaw

Figure 1. Calves showing clinical signs and symptoms

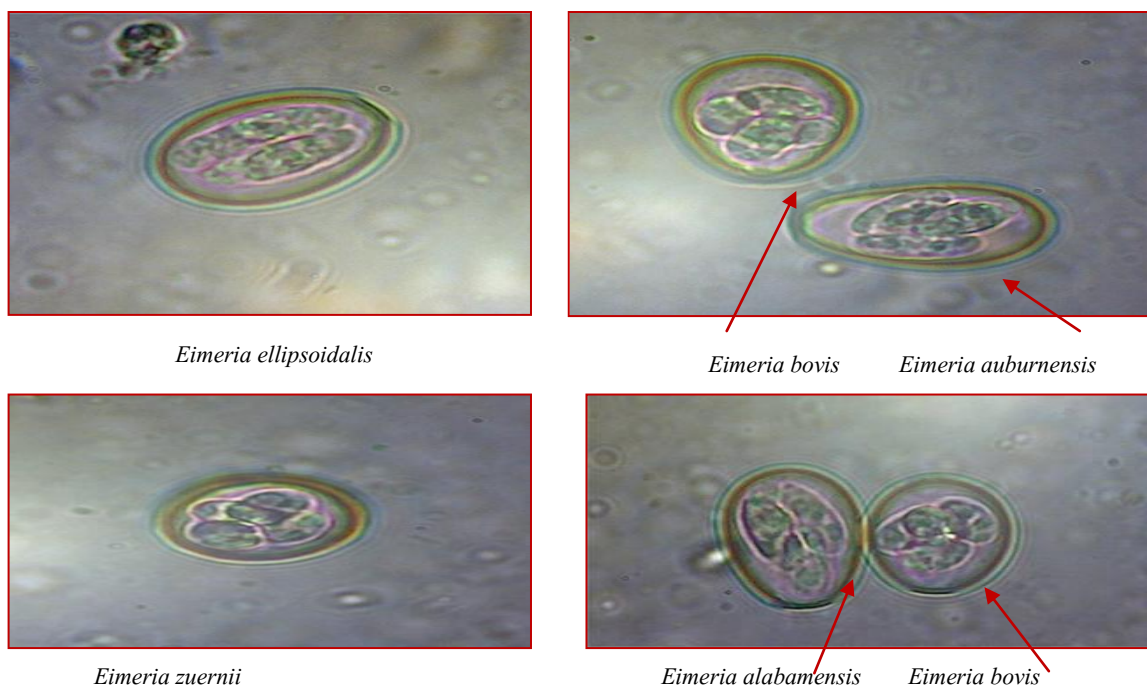


Figure 2. Oocysts of *Eimeria* spp. in calves of Charaibhai, Morigaon

Damage to the intestinal mucosa by the coccidia reduces calf's ability to absorb fluids and nutrients from the intestine and thus infected calves become dehydrated. To prevent dehydration and electrolyte imbalance, parental treatment with fluid therapy (Intalyte, Intas Pharmaceuticals Ltd., Ahmedabad) @ 500ml was given intravenously once daily for 3 days. Sulphadimidine (Pabidine tablet, Intas Pharmaceuticals Ltd., Ahmedabad) @ 0.2g per kg body weight was given for 5 days. To prevent fever Paracetamol and Nimesulide (Paralgin NP bolus, Excellar Healthcare Pvt. Ltd., Mumbai) was given @ 1 bolus per 100kg body weight for 3 days. Multivitamin (Minerex Forte, Excellar Healthcare Pvt. Ltd., Mumbai) @ 250g per 100kg of feed was given daily as a supportive supplement for 1 month. After 5 days of treatment with Sulphadimidine and fluid therapy, the calves recovered gradually and started normal feeding. Since the infections in calves were observed in the month of December, so it may be considered as sporadic cases of winter coccidiosis. This might be due to the non-administration of coccidiostat or coccidicidal drugs by the farmers during rainy season. Earlier coccidiosis in calf during winter season was reported by Chakrabarti and Jha (2016) from Ranchi, Jharkhand. Among all the identified *Eimeria* species only three (*E. bovis*, *E. zuernii* and *E. auburnensis*) are associated with clinical manifestation of disease in cattle. Geurden *et al.* (2005) found that *Eimeria zuernii* is involved with winter coccidiosis but, *Eimeria bovis* is also common. Mostly young calves of one month age to one year are affected (Chakrabarti and Jha, 2016). *E.*

bovis and *E. zuernii* accounted for highest prevalent species in the present study which is in conformity with the findings of Heidari *et al.* (2014) and Yu *et al.* (2011) from Iran and China, respectively. Borkakoty *et al.* (1984) and Das *et al.* (2015) earlier reported prevalence of *E. bovis*, *E. zuernii*, *E. auburnensis*, *E. ellipsoidalis*, *E. cylindrica*, *E. bukidnonensis* and *E. subspherica* in calves and adult cattle from Kamrup district of Assam. The infection rate was observed higher in young calves which may be due to housing in overcrowded conditions and easy contact with adult animals. Priti *et al.* (2008) and Das *et al.* (2015) also observed higher prevalence in younger animals than adult and stated that immature immunity might be a critical factor for determining the clinical and subclinical infections in younger animals. Thus, we can conclude that the coccidiosis in cattle calves should not be neglected in field condition because this infection is opportunistic and may occur either as summer or winter coccidiosis.

Conclusion

Present communication reports the etiology and the therapeutic management of winter coccidiosis in cattle calves of Charaibahi, Morigaon, Assam.

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