A clinically rare occurrence of rectal mucosal prolapse associated with tenesmus in a calf caused by *Eimeria* sp.

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Abstract *Eimeria* sp. is a host-specific intracellular parasite that mostly affects young animals. This parasite causes great economic losses in livestock sector. A 6 weeks old calf was brought to Referral Veterinary Polyclinic, ICAR-Indian Veterinary Research Institute, Izatnagar with the history of inappetance and passage of foul smelling diarrhoeic feces rich in occult blood and mucous for the last 3 days. On clinical examination, calf was found to be present in lateral recumbency and showed severe tenesmus, prolapsed rectal mucosa along with small quantity of blood mixed feces sticking to the perineum and tail regions. Diagnosis was done based on clinical observations and fecal examination which showed oocysts of *Eimeria* sp. The prolapsed rectal mucosa was corrected aseptically by manual procedure. The calf was treated with a combination of sulfadimidine and amprolium along with supportive therapy. The calf recovered clinically after 5 days of therapy and further fecal examination showed no evidence of oocysts of *Eimeria* sp.

Keywords *Eimeria* sp. · Rectal mucosal prolapse · Sulfadimidine · Amprolium · Calf

Introduction

Coccidiosis is an important protozoan disease, which causes severe economic loss in young livestock. More than twenty identified *Eimeria* sp. have been described in dairy animals, among them most of the species are non pathogenic, few are pathogenic which includes *Eimeria bovis*, *E. zuernii* and *E. alabamensis* (Daugschies and Najdrowski 2005). *E. bovis* and *E. zuernii* are more pathogenic in calves and young animals; but *E. alabamensis* produces clinical symptoms only in older animals (Soulsby 1982). These protozoans cause economic problems to numerous classes of livestock because of reduced performance, death from direct infections and may produce 24% mortality in some cases (Fitzgerald 1975). According to Matjila and Penzhorn (2002), the annual losses approximate \$400 million because of coccidiosis in cattle and buffaloes. Clinical signs of this disease are poor and retarded growth, weakness and voiding foul smelling blood stained feces smudged in the perineum and tail regions (Georgi 1985). But, in severe cases, symptoms of coccidiosis include tarry staining of feces, nervous signs (Teankum et al. 2003) and severe tenesmus which is characterized by continuous painful spasm of the anal sphincter, often accompanied by the passage of feces and may lead to rectal prolapse (Radostits et al. 2010). To date, no clinical case of rectal mucosal prolapse with tenesmus in calves due to *Eimeria* infection is reported. This is the first case report dealing with a unique case of coccidiosis associated rectal mucosal prolapse with tenesmus in a calf and its successful therapeutic management by using a combination of sulfadimidine and amprolium, along with metronidazole and supportive therapy.

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Case history, clinical observations and diagnosis

A 6 weeks old Holstein- Friesian cross breed calf, weighing 30 kg was brought to Referral Veterinary Polyclinic, ICAR-Indian Veterinary Research Institute, Izatnagar with the history of inappetance, weakness, voiding foul smelling bloody mucoid diarrhoea for the last 3 days, during winter season. The calf was present in lateral recumbency for the past 24 h and showed severe tenesmus without defecation along with prolapsed rectal mucosa. The clinical examination of calf showed sub-normal temperature (98.0 °F), reduced heart rate (55/min), weak pulse, slightly congested mucous membranes, severe dehydration, small quantity of feces with streaks of blood and mucous over the perineum and tail regions (Fig. 1). Blood and mucus mixed fecal sample (4–5 g) and whole blood were collected for parasitological and hematological examination, respectively. According to Zajac and Conboy (2006) method, fecal examination was done qualitatively by direct smear and floatation technique for the occurrence of parasitic oocysts. Hematological examination was carried out as per the method described by Jain (1986). Fecal examination showed the presence of oocysts of *Eimeria* sp. (Figure 2). On hematological examination total erythrocyte count ($8.00 \times 10^6/\mu\text{l}$), hemoglobin (9.50 g/dl), packed cell volume (31.0%), total white blood count ($18.5 \times 10^3/\mu\text{l}$), neutrophils (37.0%), lymphocytes (58.0%) and eosinophils (4.0%) were recorded. Based on clinical findings and fecal examination, it case was diagnosed as a case of coccidiosis.

Treatment

The calf was treated with two dose of hyoscine butylbromide (Buscopan, Zydus Cadila Healthcare Ltd) at the dose rate of 0.4 mg/kg intravenously to control contractions of GIT smooth musculature and thus, tenesmus in calf. After

Fig. 1 Calf showing rectal mucosa prolapse

Fig. 2 *Eimeria* sp. oocysts in dung sample ($\times 40$)

control of straining, the prolapsed rectal mucosa was washed aseptically with warm saline; followed by reduction of prolapsed rectal mucosa by applying digital pressure gently and then, it was replaced into its proper anatomical location. The calf was rehydrated using par-enteral fluids (Ringers lactate @ 25 ml/kg and DNS @ 25 ml/kg body weight, intravenously) for the first 3 days of therapy. To counteract *Eimeria* infection, the calf was treated with 33.33% (w/v) of sulfadimidine (SD-VET, Intracin Pharmaceuticals Private Ltd) and 20% of amprolium powder (Virbac Private Ltd) at the dose rate of 140 mg/kg intravenously for 3 days and 10 mg/kg orally for 5 days, respectively (Radostits et al. 2010). Additionally, metronidazole (FLAGYL, Pfizer Inc) was given @ 10 mg/kg intravenously, twice daily, for 3 days, to prevent secondary anaerobic bacterial infections (Sudhakara Reddy et al. 2015). The supportive therapy included chlorpheniramine maleate (Cadistin, Zydus Animal Health Ltd.) @ 0.4 mg/kg intramuscularly, twice daily, and Vitamin B complex (Conciplex, Concept Pharmaceuticals) @ 2.0 ml, intramuscularly, twice daily, for 3 days. The calf recovered clinically after 5 days of continuous treatment and again when the fecal sample was examined, there was no evidence of coccidian oocysts.

Discussion

Coccidiosis mostly affects young animals and sometimes, morbidity can reach up to 100% (Faber et al. 2002). The calves of 3 weeks–6 months of age are more susceptible to clinical form of coccidiosis due to lack of immunity (Gräfner and Graubmann 1979). Generally, the clinical

signs of coccidiosis in calves are anorexia, dehydration, weakness, bloody and mucoid diarrhea containing fragments of intestinal mucosa (Ernst and Benz 1986). But, in calves, rectal mucosal prolapse with tenesmus in coccidiosis has never been reported. However, previously Ernst and Benz (1986) reported that rectal prolapse may occur due to straining without defecation. Sulfadimidine (sulfamethazine) is an ideal coccidiostat which is used for the control of clinical coccidiosis in calves and has a good therapeutic potential against *E. bovis* (Mancebo et al. 2002). The amprolium has both therapeutic and preventive effects against coccidiosis in livestock. Also, it may be used to increase body weight and feed consumption (Radostits et al. 2010). Sanyal et al. (1985) has reported the efficacy of sulphadimidine and amprolium combination in buffalo calves experimentally infected with *Eimeria bareillyi*.

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Authors' contributions This is a first and rare clinical case of rectal mucosa prolapse with tenesmus in *Eimeria* infected calf, being diagnosed and treated by AG, VJ and YA. UD contributed to the designing of this manuscript. VRK helped in microscopic examination of *Eimeria* oocysts and MIY assisted in the correction of manuscript.

Compliance with ethical standards

Conflict of interest The authors declare that there is no conflict of interest.

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