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Effect of Treatment with Cylindamycine in an Outbreak of Coccidiosis in Goat Kids in Turkey

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ABSTRACT

The purpose of the present study was to investigate the effect of Cylindamycine in saanen goats kids suffering from naturally occuring coccidiosis. 13 kids were found to be suffering from different degrees of coccidiosis. Fecal samples were submitted from all of the diarrheic kids in the goat flock for virological, bacteriological and coccidial examinations. Bacteriogical cultures and flotation examinations of faecal samples were evaluated. In clinical examinations, all kids showed dysentery, tenesmus, inappetence, and weakness. While total per oocyste counts were detected as 675500 opg (per gram oocysts) before the treatment, were detected as low as 24020 opg at end of day 14. Clindamycine applications in addition to managemental measurements may be useful to reduce the oocyst counts and to improve of clinical status.

Key Words: Coccidiosis, goat kids, clindamycine, treatment

INTRODUCTION

Coccidiosis is a major contributor to enteric disease, mostly in young or stressed goats, under certain management conditions and also an economically important disease (Foreyt 1990; Smith and Sherman 1994). The protozoan organism which causes Coccidiosis is the intestinal parasite of the genus Eimeria and is species specific (Tenter et al. 2002; Smith and Sherman 1994).

Coccidiosis in goats is an important disease resulting from complex interactions between parasites and host, with many factors influencing the severity of disease (Taylor et al. 1995). The disease is more serious in 4–6-month old goat kids and lambs and also when animals of any age are kept in unhygienic and overcrowded houses or in heavily stocked paddocks (Varghese and Yayabu 1985).

A count of over 5000 oocysts/g of feces of ruminants is considered as significant. Although counts below 5000/g of feces do not usually suggest clinical disease, they may indicate a potential source of severe infection if environmental conditions for spread become favorable. Oocyst counts of over 100 000/g are common in severe outbreaks, although similar counts may also be encountered in normal sheep (Stewart and Soll 1994).

Coccidiosis is passed through fecal-to-oral contact (Smith and Sherman 1994; Rodostitis 2006). It invades and destroys intestinal cells, resulting in loss of blood and electrolytes and poor absorption of nutrients. The most common sign of infection is diarrhea, which may be severe and the faces may contain blood (Rodostitis et al. 2006).

Coccidiosis is a self-limiting disease, and spontenous recovery without specific treatment occurs commonly when the multiplication stage of the coccidia has passed. Many treatments have been recommended without taking this into account and it is unlikely that any of the chemotherapeutic agents in common use for clinical coccidiosis has any effect on the late stages of the coccidia. Most of the coccidiostats have a depressant effect on the early, first-stage schizonts and are used for control (Rodstitis et al. 2006)

There is insufficient information available to make reliable recommendations for the specific treatment of acute clinical coccidiosis. None of these chemotherapeutic agents has been adequately tested in clinical trials. A few of them lasalocid in lamb and calves (Foreyt et al. 1979) and sulfonamides in calves and lambs (Rodostitis et al. 2006), monensin in cattle, lambs and goats, decoquinate in calves and goat kids (Parker et al. 1986; Rodostitis et al. 2006), toltrazuril in lamb (Ghanem et al. 2008; Rodostitis et al. 2006) and amprolium (Ghanem et al. 2008) are effective.

The purpose of the present study was to investigate the effect of Cylindamycine in saanen goats kids suffering from naturally occuring coccidiosis.

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MATERIALS AND METHODS

This short communication was conducted in Saanen breeding flock around the town of Nilufer in Bursa-TURKEY. 13 kids were found to be suffering from different degrees of coccidiosis. These kids were of different ages (5-15 days), from different sexes (3 males, 7 females) and weight (7.4±0.8kg). Routine clinical examinations of these animals were performed.

Fecal samples were submitted from all of the diarrheic kids in the goat flock for virological (rotavirus, coronavirus), bacteriological (E.coli K99+) and coccidial (cryptosporidiosis, coccidiosis) examinations. Bacteriogical cultures and flotation examinations of faecal samples were evaluated at the laboratories of Microbiology and Parasitolgy of the Faculty of Veterinary Medicine in Bursa, Turkey.

Cylindamycine (Klindan®, Bilim Inc., Istanbul-Turkey) was given by intramuscular route to goat kids-at a dosage of 10 mg/kg of body weight, single a day for 14 days. Faecal samples were taken individually from the rectum of the animals before and on day 1, 7 and 14. after treatment. Faecal samples were immediately transferred to the laboratory and stored at 4 C until examined. Oocyst counts were estimated by the modified McMaster technique as described in MAFF (1986). In order to identify the oocysts species, prior to treatment all the remaining faecal samples were pooled together and then incubated in 2% potassium dichromate in petri dishes for one week at 27 C (MAFF, 1986) for sporulation to occur. *Eimeria* species were determined based on the morphology of oocysts (shape, colour, form index, presence or absence of micropyle and its cap, presence or absence of residual, polar and stieda bodies) (Levine and Ivens, 1986). In the microcopical examination the slide was scanned in parallel sweeps and the first 500 oocysts seen were identified. All measurements were made using a calibrated microscope under 40X magnification. Arithmetic group mean OPGs were calculated before and after the treatment for each sampling date. The efficacy of treatment was assessed based on the percentage faecal oocyst count reduction.

Statistical analysis

All data for normality were analyzed by Shapiro-Wilk test. All the data were not normally distributed. We used non-parametric Friedman Repeated Measures Analysis of Variance on Ranks, which were used for data with failed normality. $p < 0.05$ and $p<0.001$ was considered significant. All statistical analyses were performed using Sigma Stat 3.1 for Windows statistical package (Systat Software, Inc., Point Richmond, CA, USA).

RESULTS AND DISCUSSION

Rotavirus, coronavirus and E.coli K99+ were not demonstrated in faecal samples. Faecal examination before the treatment revealed that seven species of *Eimeria* were found. The species and infection rate as follow: *Eimeria christenseni* (39.1%), *E. arloingi* (29.6%), *E. alijevi* (12.2%), *E. ninakohlyakimovae* (10.4%), *E. apsheronica* (4.4%), *E. hicri* (2.6%) and *E. jolchijevi* (1.7%). A post-treatment laboratory and consistency evaluation of feces has been shown in Table 1. In clinical examinations, all kids showed dysentery, tenesmus, inappetence, and weakness.

Table 1. The numbers of oocyt per gram faeces in goat kids with *Eimeria* spp. after Cylindamycine treatment.

No. of infected goats	Day 0	CF	Day 1	CF	Day 7	CF	Day 14	CF
1.	500	L	7000	P	700	P	400	P
2.	600	L	400	P	500	P	200	P
3.	15000	L	2000	L	0	P	0	P
4.	400	P	4700	SL	600	P	0	P
5.	10500	L	8750	SL	7200	P	3100	P
6.	13200	SL	2100	P	1900	P	1700	P
7.	51000	SL	41200	P	25200	P	7200	P
8.	87500	L	16000	SL	8200	P	1450	P
9.	118700	SL	6500	p	2200	P	850	P
10.	91100	L	86300	P	6600	P	4000	P
11.	64000	L	28900	P	10450	P	1100	P
12.	187800	P	87000	P	30800	P	1520	P
13.	35200	P	25300	P	10250	P	2500	P
Total	675500		316150		104600		24020	
mean±SE	51961,5±15742,3[a]		24319,2±8380,1[b]		8046,1±2689,6[cb]		1847,6±559,03[c]	

L;liquid, SL; semiliquid, P; pastose; CF; Consistency of feces

abc Differences between the values involving different letters in the same row were that are found to be statistically significant at $p < 0.05$.

Coccidia are a group of protozoon parasite that infect cattle, goat, lamb and many species of animal. Animals may be exposed to high numbers of infective organisms and devalop diarrhea. The diarrhea in goat kids is usually not bloody but it contain blood and mucus and may be very watery. Anorexia, dehydration, weakness, rough hair coat and death all may occur. Even if these animal are treated appropriately, the diarrhea continues until the intestinal mucosa heals which can take several days to weeks (Pugh, 2002). Yunus et al., (2005) reported that clindamycin treatment starting in 1 to 12 days post inoculation is very effective reducing in clinical symptoms and total occyst number. In the present study, clindamycin in 10 mg/kg dose via intramuscular was effective to recovery clinical symptoms. Consistency of feces of nine goat kid at end of first day was treated symptomatically but innapatance was still continuing. Consistency of feces, apatite and weakness of all the kids in 7 and 14 day was treated. Duration of the treatment and total numbers of oocyst may be effective in improvement of the disease.

Many drugs has been used in veterinary medicine for coccidiosis (Rodostitis et al. 2006; Ghanem et al. 2008; Parker et al. 1986). The lincosamide antibiotic, clyndamycine, is active against apicomplexan parasites suchas Plasmodium, Toxoplasma, Babesia (Lell and Kremsner 2002). In a study reported by Yunus et al. (2004) suggested that cylindamycine has a marked inhibitory effect on coccidiosis in mice. In the present study, Clindamycin appeared to be effective in 14 days after treatment. At end of the day 14, oocyte counts were below from 5000 in all goat kids, except one kids. While total per oocyste counts were detected as 675500 opg (per gram oocysts) before the treatment, were detected as low as 24020 opg at end of day 14.

In the present study, clindamycine applications in addition to managemental measurements may be useful to reduce the oocyst counts and to improve of clinical status. The evidence that clindamycin is effective on infection in goat kids emphasizes the need for further evaluation of its effectiveness in goat kids.

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