Epidemiological studies on Coccidiosis in cattle at Bahawalnagar-Pakistan

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ABSTRACT

A total of 2100 rectal faecal samples were collected from Civil Veterinary Hospital, Bahawalnagar, Slaughter house, Bahawalnagar and Private cattle Farmers, in and around Bahawalnagar under different managemental practices. All the faecal samples were screened for the presence of different eimerian oocysts and 1440 were found positive for Eimeria species Viz E. bovis (25.3%), E. ellipsoidalis (23.86%), E. zuernii (18.78%), E. cylinderica (17.56%), E. subspherica (14.5%). The prevalence of E. bovis was highest followed by E. ellipsoidalis. The highest (65.59%) prevalence was noted during July whereas the lowest (25.48 %) during December.

Key Words: Cattle, Prevalence, Coccidiosis, Eimeria.

INTRODUCTION

Coccidiosis is a parasitic disease associated with bloody diarrhoea, poor growth and sometimes death (Dedrickson, 2002). Coccidiosis is caused by an intracellular protozoan that grows in the cells lining the intestines. At least nine species of coccidia have been reported in cattle which include E. subspherica, E. zuernii, E. alabamensis, E. ellipsoidalis, E. cylinderica, E. bovis, E. condenses, E. bukidonensis and E. auburnensis. Two species i.e. E. zuernii and E. bovis are more pathogenic and common, (Pandit, 2009). Most cases of coccidiosis occur during winter but outbreaks may occur sporadically throughout the year. Bovine coccidiosis occurs most frequently in calves between six-to-twelve months of age. The calves become infected when fed on pastures or dry lots contaminated by the faeces of older cattle or other infected calves. Mature cattle become infected when they are taken off pasture and crowded into feedlots or barns (Kennedy, 2007). Once calves reach 6 months of age, they have a 100% infection rate; 5% or less show clinical signs, while 95% cause losses may be due to sub clinical coccidiosis (Dedrickson, 2002).

MATERIALS AND METHODS

The study was carried out in cattle at University College of Veterinary & Animal Sciences, The Islamia University of Bahawalpur, from June, 2008 to December, 2008 after recording their age and sex. A total of 2100 faecal samples (5-10 gm) were collected in seven months 300 samples in each month according to the techniques described by Mundt et al., 2005. All the collected
samples were processed qualitatively by direct smear method, floatation technique and quantitatively by McMaster’s egg counting technique as demonstrated by Zajac & Conboy (2006). The different Eimeria species were differentiated by the faecal culture in petri dishes containing 2.5% potassium dichromate solution. All the species were identified on the basis of their morphological characters like size, shape, colour and record of the sporulated time (Soulsby, 1982).

Temperature, humidity and rainfall were also collected from the local meteorological station and were correlated with prevalence of the disease.

RESULTS AND DISCUSSION

During study the prevalence of coccidiosis was highest (65.59%) in the month of July. Nearly similar results were reported by Niilo (1970). He underlined climate, animal management and sanitation as the possible factors for the spread and outbreak of coccidiosis in bovine. Nearly similar findings were also reported by Kpahra & Singh (1986) who collected fecal examination of buffalo-calves from 17 farms. The incidence of coccidiosis was 43% of 305 samples during March to June, 71 % of fecal samples in rainy season (July to September) and 81 percent in winter (October to February).

During the present study no mortality was recorded in cattle. The present findings are in accordance with those reported by Niilo (1970). He reported that coccidiosis was prevalent throughout the year, although it did not cause heavy mortality.

The prevalence of coccidiosis was influenced by temperature, humidity and rain fall as also reported by Niilo, (1970) and Aiello, (1998). The positive percentage of coccidiosis was slightly high 54.83% (850/1550) in females as compared to males 52.72% (290/550). The findings are supported by the fact that pregnancy, lactation, heat reduced disease resistance.

During the present study prevalence of coccidiosis was highest (61.52%) in Private Cattle Farms, and the lowest (35.28%) seen in Civil Veterinary Hospital, Bahawalnagar. The difference in the epidemiology status of the coccidiosis reported in the present studies may be due to difference in the management condition of farms. The sanitary conditions of the private cattle farms were very poor.

The resistance of adult animals to coccidiosis as compared to young animals reported in the present study was in accordance with findings of bovine coccidiosis usually affected cattle under one year old, but was occasionally seen in yearlings and adults.

In the present study age-wise analysis of Eimeriosis showed that five species were found in all age groups. The most predominant species were E. bovis (25.3%), E. ellipsoidalis (23.86%), E. zuernii (18.78%), E. cylinderica (17.56%), E. subspherica (14.5%). Similar results were reported by Corlyle et al., (1996) who reported five Eimeria species of cattle i.e. E. bovis, E. zuernii, E. ellipsoidalis, E. alabamensis, E. aubernensis. Similar findings reported by Kpahra and Singh (1986) who identified nine species of genus Eimeria namely E. zuernii, E. aubernensis, E. bovis, E. cylindrica E. canadensis, E. ellipsoidalis, E.
*E. subspherica, E. bareillyi and E. bukidonensis.* Similar findings were also reported by Pandit (2009) who reported *E. bovis, E. zuernii* was most prevalent species.

In the present study, the maximum ova per gram (OPG) count observed was 40,000 and the minimum count as 16000. The counts were variable in different age groups and found to be decreasing in adult animals. Similar findings were reported by Boughton (1945) who conducted studies in order to record the spread of coccidiosis from carrier to clinical cases in cattle. The results showed that 5,000 to 10000 oocysts /gram of feces resulted in clinical symptoms of coccidiosis, whereas in case of *E. zuernii* infection a few oocysts may cause the disease in susceptible animals. Our findings are not in accordance with findings of Pilarezyk *et al.*, (2000) who carried out studies on coccidiosis in cattle and reported six species of coccidian i.e., *E. bovis, E. auburnensis, E. zuernii, E. ellipsoidalis, E. subspherica, E. cylindrica.* Number of oocysts per gram of feces in calves ranged from 228 to 2520.

During the study the effect of temperature & humidity on developmental stages of *Eimeria* was studied. It was noted that moderate temperature and humidity greatly enhanced the development of *Eimeria* as was also concluded by Fitzgerald (1959), Davies *et al.*, (1963). They considered that abrupt changes in environment food and weather increased the susceptibility of the calves. In June, 18% of the fecal samples contained oocysts and the proportion increased to 95% during late autumn. No sporulated oocysts were found in the corrals and pastures and following the outbreak, the number of positive fecal samples declined to 30% in early March.

This study also aimed to investigate the effect of season on flaring-up of the disease in calves and to suggest some concrete measures in reducing the infection to a good extent. Though there was variation in the incidence of coccidiosis among various seasons and month under both organized and unorganized system of rearing.

The control of coccidiosis is possible only with high level of management i.e., avoid overcrowding, provide good hygienic and managerial conditions, Feeders and waters should be above the level of the ground, Regular use of coccidiostats, animals should be provided well balanced nutritive food, entry of visitors in the livestock farms should be banned.

**REFERENCES**


