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Study on necropsy findings and successful therapeutic management of coccidiosis in Murrah graded buffalo calves

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Abstract

This paper describes the study on occurrence, pathology and successful therapeutic management of naturally infected intestinal coccidiosis in forty four numbers of Murrah graded buffalo calves within one month age group during the period from October 2020 to March 2021 in orathanadu region of Thanjavur, Tamil Nadu. All the forty four calves were treated with combination of Amprolium and Sulphonamide drugs, in which four calves were died and necropsy procedure was conducted for pathological study. Remaining, forty calves were recovered. This study concluded that earlier treatment with Amprolium per oral and suphadimidine through intravenous route along with supportive fluid therapy increase the recovery rate of new born buffalo calves affected with intestinal coccidiosis.

Keywords: necropsy, successful therapeutic management, coccidiosis, Murrah graded buffalo calves

Introduction

In India, the buffalo is the prime milk producing animal and stands in important place in the agricultural economy of India because of their adaptability to harsh climatic conditions, tolerance to tropical diseases and survival under poor feeding and management practices. Although, the breedable buffaloes are almost one-third in number as compared to cattle, contribute in excess of 50 per cent of the total milk produced in the country. (Thiruvenkatan *et al.* 2013) [8]. Coccidiosis is intracellular protozoan disease that affecting all the domestic animals and poultry. It is one of the most pathogenic intestinal diseases caused by different *Eimeria* species belonging to phylum Apicomplexa. Coccidia infections are responsible for huge economic losses to buffalo population in terms of mortality particularly in young calves (Nalbantoglu *et al.*, 2008) [6]. Bloody diarrhoea, dehydration, rough hair coat, reduced growth rate, anaemia, weakness and weight loss are the signs of coccidiosis in water buffaloes (Bastianetto *et al.*, 2007) [1]. It is mostly a disease of young animals which are reared in the intensive system of livestock production system. Even though some of the adult animals may also affected. It occurs usually, when the host immune resistance get lowered followed by stress, overcrowding, housing under poor hygiene, nutritional deficiency, concomitant infections and adverse weather conditions. The potential damage to the intestinal cells is obvious. It is estimated that as few as 50,000 infective oocysts ingested by a young susceptible calf can cause severe disease.

Humid environment rich in organic matter favour the survival and development of infectious forms of *Eimeria* sp. Animals housed in separate pens may also be infected by airborne transfer of oocysts. An infected animal sheds small number of oocysts in their faeces for long period of time. Sporulated oocysts are very resistant to adverse environmental conditions and may survive on the pastures until the next season which then act as a source of infection. *Eimeria* species are very stable organism which can resistant against the most of the disinfectant. This protozoan is sensitive to formaldehyde and dry heat produced by flame gun. More than 13 species of *Eimeria* and one species of *Isospora* have been described to infect cattle. Of the 13 species recorded, two of the principal pathogens are *E. zurnii* and *E. bovis* (Bowman, 2009) [2]. Coccidia parasites are generally host-specific parasites, and very specific to a particular region in the intestines (Leite, 2009) [5]. Several anticoccidial drugs such as toltrazuril, *Amprolium*, *suphadimidine* etc. are used in treatment and control of experimental infection of *E. bovis* and *E. zuernii* in buffalo calves. The comparative assessment was based on the clinical signs, the number of oocysts per gram faeces (OPG) and the body-weight gain (BWG) (Ghanem *et al.*, 2008) [3].

In Tamil Nadu, there is not enough research study in the coccidiosis in buffalo calves regarding about sequence of clinical signs, pathological lesions and cost effective line of treatment. Keeping these in views, this study was conducted in the naturally infected buffalo calves with coccidiosis from the manifestation of clinical signs to successful recovery achieved by proper line of treatment and common necropsy lesion in fatal calves.

Materials and Methods

The study was conducted in the 44 numbers of Murrah graded buffalo calves less than 45 days of age rearing in the livestock

farm in orathanadu region of Tamil Nadu during the time period from October 2020 to March 2021. Out of 44 calves, 32 calves were male and 12 calves were females. All the calves are reared in solid floor under intensive system of rearing. All the forty four buffalo calves are naturally infected and exhibited similar sequences of clinical signs presented in the Table -1. Faecal samples from all the calves were sent to Animal disease Investigation unit, Thanjavur, Tamil Nadu for examination of any helminths or intestinal protozoa infection before and after treatment. Two types of treatment protocol were assigned to treat the sick calves.

Table 1: Sequence of clinical signs exhibited by Murrah Buffalo calves infected with coccidiosis

Day	Exhibited clinical signs	General behaviour	Feeding behaviour
First day	Foul smell, Whitish grey diarrhoea without blood.	Active and alert	Normal
Second day	Foul smell, Whitish grey diarrhoea without blood.	Active and alert	Normal
Third day	Foul smell, Whitish grey diarrhoea without blood with increased in frequency	Slightly Dull & Depressed. Mild Dehydration	Reduced in milk consumption and feed intake.
Fourth day	Foul smell, Whitish grey diarrhoea without blood with increased in frequency	Dull and depressed, calf reluctant to move. Moderate dehydration	Voluntary feeding absent.
Fifth day	Foul smell, Whitish grey diarrhoea without blood with decreased in frequency and quantity	Dull and depressed, calf reluctant to move. Moderate dehydration. Alopecia starts	Absent
Sixth day	Decreased in diarrhoea frequency and quantity	Emaciated due to Severe dehydration, calf get recumbent, Hypothermia. Severe alopecia all over the body.	Absent
Seven day	No diarrhoea due to Hypovolemia.	Blanched mucous membrane, Calf may died due to shock	Absent

First treatment protocol

Powder Amprolium 10 mg/kg body weight per orally,
 Inj Biotrim (sulphadiazine and trimethoprim) injection at the rate of 1 ml per 30 kg body weight I/M,
 Inj Normal Saline 10 ml/kg body weight I/V
 Inj Ringer's lactate 10 ml /kg body weight I/V
 Inj vitamin B1, B6 & B12, 5 ml I/V.
 Inj Metronidazole 100 ml I/V
 Above treatment was given to first ten naturally infected cases of Murrah graded calves with coccidiosis for seven days.

Second treatment protocol

Powder Amprolium 10 mg/kg body weight per orally,
 Inj Sulphadimidine injection at the rate of 125 mg per kg body weight I/V
 Inj Normal Saline 10 ml/kg body weight I/V
 Inj Ringer's lactate 10 ml /kg body weight I/V
 Inj vitamin B1, B6 & B12, 5 ml I/V.
 Inj Metronidazole 100 ml I/V
 Above treatment was given to next 34 cases of Murrah graded calves affected with coccidiosis for seven days. Calves died during the course of treatment were subjected to necropsy procedure to study the pathological lesion in internal organs affected with coccidiosis. Necropsy was conducted as per standard procedure. Collected internal organs samples were sent to the Department of Veterinary Pathology, Veterinary College and Research Institute, orathanadu, Tamil Nadu.

Results and Discussion

All the pre-treatment faecal samples sent to animal disease investigation unit were positive for Eimeria oocysts with high intensity in microscopic field. Whereas the post treatment faecal samples examination reveals, less reduction of oocysts

numbers in the treatment protocol I and huge reduction of oocysts numbers in the treatment protocol II. Six calves were died out of ten calves under the treatment protocol – I. All the thirty four calves were recovered after seven days under the treatment protocol – II (Amprolium + Sulphadimidine). This indicates combination of Amprolium (oral route) and plain sulphadimidine (intravenous route) along with supportive therapy has high efficacy in treating the buffalo calves affected with clinical coccidiosis. Similar findings have also been reported by Jeyalakshmi *et al.* (2018) [4]. Necropsy examination reveals, all the buffalo calves carcasses condition was weak and emaciated (figure 1), Blanched conjunctiva mucous membrane (Figure 2), Coagulated milk in the rumen of one calf, whole body skin was dry, common post-mortem signs encountered in all carcass of the calves were intestines were severely congested with edema (figure 3). Nature of the intestinal content was grey in colour (figure 4) this result is accordance with study reported by Sharma *et al.*, (2018) [7]. Coccidiosis is the self limiting disease and its etiological agent is resistant to most of the disinfectants. Main predisposing factors for coccidiosis are overcrowding and poor hygiene. Its occurrence is more prevalent in buffalo calves preferably within two month age group reared under the poor hygienic environment. Control of coccidiosis is quite difficult because, Eimeria oocysts can survive in the floor for long time and causes disease when the favourable condition occurs. In farm condition, coccidiosis could be control by emptying the existing calf shed at least for six months. During this period, infection can control by clean the shed with lime powder, 2% formalin or applying the heat over shed. This study concluded with, earlier treatment with sulphadimidine and Amprolium was more effective in treatment of clinically affected young buffalo calves.



Fig 1: Weak and Emaciated carcass



Fig 2: Blanched conjunctiva indicates Anaemia

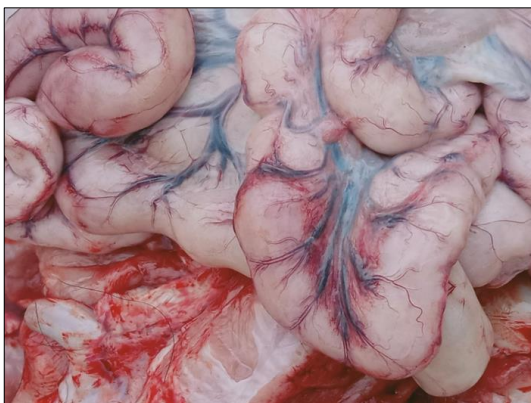


Fig 3: severe congestion of small intestine



Fig 4: Nature of intestinal content in necropsy examination

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