

SUCCESSFUL MANAGEMENT OF COCCIDIOSIS OUTBREAK IN A MALE CHICK FLOCK IN KANNUR, KERALA

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ABSTRACT

Three male chicks aged one month were submitted for postmortem examination to the Regional Clinical Laboratory, District Veterinary Centre, Kannur with a history of sudden flock mortality of 10%. On post mortem examination, characteristic salt and pepper appearance of anterior and middle portions of small intestine with hemorrhagic contents in whole intestine were noted. On microscopic examination, coccidial schizonts were observed from the intestinal samples on direct examination and Giemsa staining. Based on the gross and microscopical examination, the case was diagnosed as coccidiosis. Mortality ceased following medication with Sulphaquinoxaline and Diaveridine in drinking water for 4 days.

Keywords: *Eimeria spp.*, Coccidiosis, Salt and pepper appearance, Schizonts

INTRODUCTION

Coccidiosis is one of the avian protozoan disease which is almost universally present in poultry raising areas causing high morbidity and mortality rate. The global cost of coccidiosis to the poultry industry had been recorded to exceed \$2 billion per year (Fornace *et al.*, 2013). The pathogenic process is characterized by rapid multiplication of the pathogen within intestinal cells causing extensive damage to the intestinal mucosa. Among the coccidian pathogens in chickens, *Eimeria necatrix* and *E. tenella* are most pathogenic to the age group of 3 and 18 weeks (Sharma *et al.*, 2013). The dampness in the litter material and temperature of 25-30°C favours the sporulation of oocysts and hence, sudden outbreaks occur after ingestion of high doses of the sporulated oocyst over a short period of time (Musa *et al.*, 2010).

The wetter and warmer climatic con-

ditions influences positively in occurrence of coccidiosis (Prakashbabu *et al.*, 2017) as in Kerala. It is also stated that the prevalence rate of coccidiosis is higher during the rainy season, as the favourable damp conditions are attributed for the growth and development of the infective oocysts (Alawa *et al.*, 2001). In *Eimeria necatrix* infection, typical ballooning of middle gut may be observed with luminal blood and the lesions in the proximal intestine are characteristically described as salt and pepper lesions due to the presence of white spots interspersed with brownish-red petechiae. The white spots are diagnostic for *E. necatrix* as it marks the presence of second generation schizonts, which can be demonstrated microscopically as clumps of large schizonts (Jacobs *et al.*, 2015). *Eimeria brunetti*, *E. necatrix*, *E. maxima* and *E. tenella* are also associated with haemorrhagic coccidiosis and hence, co-infection with different *Eimeria* species is possible which may make the diagnosis complicated (Prakashbabu *et al.*, 2017). This paper describes the outbreaks of coccidiosis in male chicks characterized by the presence of typical postmortem lesions and microscopical findings and its successful control.

CASE HISTORY AND OBSERVATION

One month old chick carcasses (n=3) were submitted to Regional Clinical Laboratory, District Veterinary Centre with a history of sudden mortality of 15 out of 150 chicks within two days. A detailed postmortem examination was carried out and gross lesions

were noted. Deep scrapings from intestine were collected for direct microscopical examination and intestinal impression smears were made for Giemsa staining. The diagnosis was made as per location and characteristics of intestinal lesions described by Long and Reid (1982).

Postmortem examination revealed pale and dry carcass, major haemorrhagic lesions in the anterior and middle part of small intestine resembling salt and pepper appearance. The affected intestinal areas had significant characteristic ballooning with clotted bloody contents (Fig. 1). The caeca were also found hemorrhagic with dark bloody contents



Fig 1: Salt and pepper appearance of the middle part of the intestine with ballooning. The mucosal thickening and the lumen filled with fluid, blood, and tissue debris may be appreciated. The black and white plaques over serosa indicate schizont accumulations.

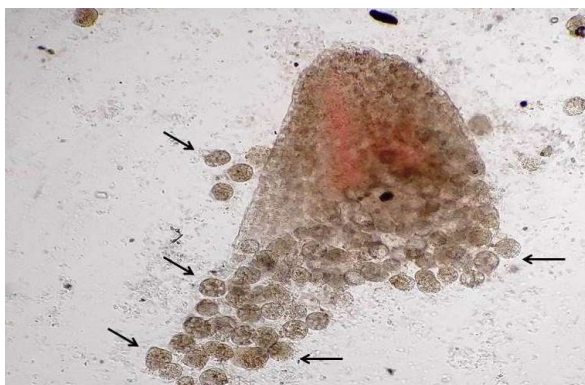


Fig 2: Schizont stage (single wall with little definition) of *Eimeria* spp. upon direct microscopical examination of intestinal scrapings.

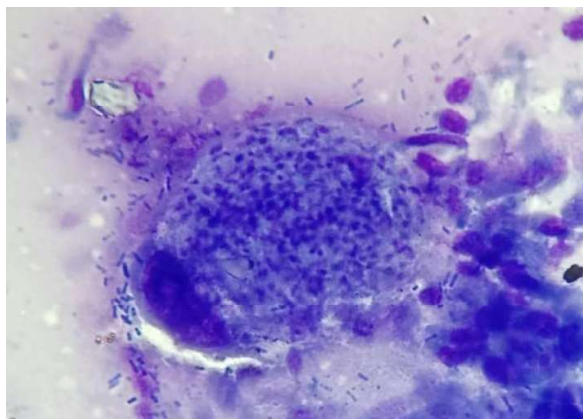


Fig 3: Giemsa stained impression smear of intestine revealing large sized schizont stage of *Eimeria* spp. occupying inside the intestinal cell displacing the nucleus to the periphery

The direct microscopical examination of intestinal scrapings revealed large number of coccidial schizonts (black arrow) releasing

from the intestinal mucosa (fig. 2) and no oocysts could be detected and stained intestinal impression smears revealed large sized schizonts within the intestinal cells (fig 3). Mortality was controlled following medication with Supercox (Sulphaquinaxaline and Diaveridine) @ 1g/litre of drinking water for 4 days. On the fifth day, no medication was given, however, the litter/bedding was changed and on the 6th day, medication was repeated again

DISCUSSION AND SUMMARY

Among the various economic diseases of poultry industry, protozoan parasites of the genus *Eimeria* residing and multiplying in the intestinal mucosa causing coccidiosis is characterized by bloody diarrhea, anemia, enteritis, emaciation, poor growth rate, low production with high mortality and morbidity rates (Sharma *et al.*, 2015). It can be tentatively diagnosed from farm history, clinical signs, autopsy examination and a minimal parasitological examination under field conditions (Adene and Oluleye, 2004). The species identification of *Eimeria* can be done based on the fact that lesions are almost entirely in the intestinal tract and most species often have a distinctive location and appearance in the intestine which is almost diagnostic (Saravanajayam *et al.*, 2016). In the current study, the small intestine was found swollen to twice

the normal size and filled with blood and fluid with black and red focal lesions on the serosal surface particularly in midgut associated with necrosis and sloughing of the intestinal mucosa occurred due to *E. necatrix* infection which is in agreement with Adene and Oluleye (2004). However, there could be possibilities of mixed infection with other species of coccidia like *E. tenella* and *E. maxima* which may require advanced laboratory procedures for definitive identification.

The control of coccidiosis depends on good sanitary measures, importance of farm hygiene, choice of disinfection procedure, avoiding overcrowding, good use of prophylactic anti-coccidial 'shuttle programme' and previous farm history of coccidiosis outbreaks (Saravanajayam *et al.*, 2016). In the present study, the flock was maintained without administration of prophylactic anticoccidial drugs and poor farm management like wet deep litter condition and poor ventilation, which would have possibly played a role in the outbreak. Moreover, litter from infected birds, fomites, personnel, rodents, insects and wild birds would have incriminated in the spread of coccidiosis (Musa *et al.*, 2010). The spread of the infection to the young flocks may be checked by the administration of suitable anticoccidials like a combination of Sulphaquinoxaline and Diaveridine @ 1g/litre of drinking water for 3 days or amprolium (20%)

@ 5g per 4 litres of drinking water continuously for 7 days. Treatment of litter with lime is also a good preventive measure to check the menace of avian coccidiosis. Hence, it can be concluded that the outbreak coccidiosis in the flock possibly of *E. necatrix* due to poor managerial practices and non inclusion of coccidiostats in feed has been successfully managed with prompt diagnosis and treatment.

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