

## Diagnosis and Therapeutic Management of Poultry Coccidiosis- A Case Report

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### ABSTRACT

Coccidiosis in poultry is one of the major parasitic diseases worldwide caused by a protozoan parasite mostly belong to the genus *Eimeria* which affect domestic fowl, turkey, geese, duck. Post-mortem examination of a Kamrupa fowl aged 42 days was conducted in the Department of Veterinary Pathology, which had a clinical history of blood in the feces, depression, mortality. The carcass was highly emaciated and the ceca showed prominent

lesions like enlargement, profuse bleeding. Microscopic examination of caecal scraping showed numerous coccidian oocyst which was confirmed as *Eimeratenella*. Histopathological study with Haematoxylin and Eosin staining, tissues from the affected caecum showed hemorrhage, necrosis and presence of various stages of developing schizonts. The disease was controlled by following therapeutic measures as well as proper managerial care.

**Keywords** Coccidia, Poultry, Oocyst, Histopathology.

### INTRODUCTION

Poultry rearing in Assam now a days is very popular and profitable as majority of the people of Assam are non-vegetarian and they preferred poultry meat and egg. According to 20<sup>th</sup> Livestock Census total poultry population in the country is 851.81 million where total backyard poultry is 317.07 million and total commercial poultry in the country is 534.74 million. Out of this, Assam shares around 46.7 million poultry population (Anonymous 2019). However, the organized as well as the backyard farms frequently suffer severe set back due to various infectious and non-infectious diseases. As a result the farmers are not achieving desired economic return. Among the infectious diseases coccidiosis in poultry is one of the major parasitic diseases world wide which affect domestic fowl, turkey, geese, duck (Hadipour *et al.* 2011). Commercial poultry production are greatly affected due to coccidiosis as it can cause more than 3\$ billion per year losses world

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Fig. 1.

**Fig. 1.** Enlarged, distended ceca with, Hemorrhage and thickened wall.



Fig. 2.

**Fig. 2.** Smooth walled ovoid oocyst of *Eimeria tenella* (Arrow) (40X).

wide (Dolloul *et al.* 2006). Coccidiosis is caused by protozoan parasites of the phylum Apicomplexa where most of the coccidia of poultry belong to the genus *Eimeria*, family Eimeriidae. Total nine *Eimeria* species was described from chicken as aetiology of poultry coccidiosis but out of these only seven are important. They are *E. brunetti*, *E. necatrix*, *E. tenella*, *E. acervulina*, *E. maxima*, *E. mitis* and *E. praecox* (Vegad and Katiyar 2018, Olabode *et al.* 2020). The broiler and growers raised on deep litter system of management are mostly affected leading to heavy mortality. Therefore, in an outbreak of coccidiosis in a farm early diagnosis along with use of proper therapeutic measures is very much essential to save the bird. This case report describes clinical signs, diagnosis of disease, identification of coccidia species and control measures of coccidiosis occurred in a farm of Lakhimpur District of Assam.

## MATERIALS AND METHODS

Carcass of a Kamrupa fowl (Kamrupa is a new dual purpose chicken variety developed under AICRP on Poultry Breeding, Directorate of Research (Vety.) Assam Agricultural University, Khanapara, Guwahati) aged 42 days was brought to the Department of Veterinary Pathology, Lakhimpur College of Veterinary Science, Assam Agricultural University, Joyhing, North Lakhimpur for post-mortem examination

with clinical history of blood in the feces, mortality. Detailed post-mortem examination was conducted with thorough examination of all the visceral organs viz. lungs, heart, liver, kidney, spleen and intestine. From the caecum where lesion was there mucosal scraping was collected and one part was diluted with saline on a slide and covered with a cover slip and observed under microscope. Similarly, the other part was sent to Department of Parasitology for identification of the species of coccidia. Small pieces from the organs were collected in 10% formalin solution. The representative tissue samples from the caecum where prominent lesion was present were processed routinely and this paraffin embedded tissue sections were cut at 5 $\mu$  and stained with Hematoxylin and Eosin (Luna 1968). On the basis of post-mortem report proper treatment and control measures were suggested to the owner.

## RESULTS AND DISCUSSION

The owner reported history of presence of blood in the feces and other clinical signs like depression, frequent closing of eyes, lowered feed intake and huddling. In case of poultry coccidiosis similar findings were also described by other workers (Olabode *et al.* 2020). Total number of fowl in the farm was 95 nos. where morbidity was high and mortality was recorded 11.57% till completion of the treatment.

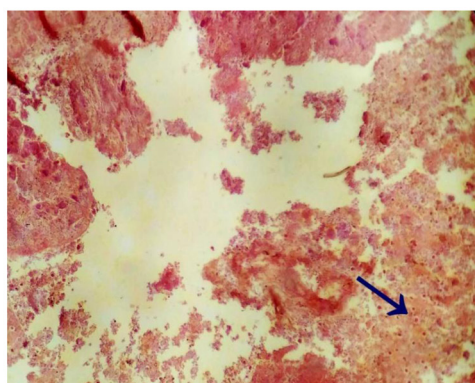


Fig. 3.

**Fig. 3.** Caecum showing necrosis and sloughing. of the villus epithelium, schizonts (Arrow) (10X).

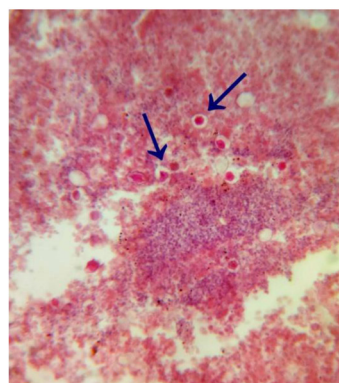


Fig. 4.

**Fig. 4.** Caecum showing hemorrhage, and necrosis of the villous epithelium with presence of numerous developing. schizonts (Arrow) (40X).

Post-mortem examination revealed the carcass was highly emaciated. The most prominent lesion was observed in the caecum. Ceca were greatly enlarged and distended. The caecal contents became consolidated and consist of blood. There was profuse bleeding in the caecum. The wall of the ceca were highly thickened (Fig. 1). The intestine was hyperaemic and it showed enteritis. These findings are in agreement with previous reports (Abebe and Gugsu 2018). Clinical signs like feces with blood dysentery and diarrhoea are suggestive of coccidiosis. Though in the intestine of 3-6 weeks old bird coccidia are usually found but it can be diagnosed as coccidiosis only when gross lesions are serious and associated with mortality (Vegad 2015).

After post-mortem examination caecal scraping was examined under microscope which showed numerous oocysts (Fig. 2) and it confirmed the presence of coccidia parasite.

Histopathological study of the affected caecum revealed excessive hemorrhage, necrosis and sloughing of the villus epithelium, mucosal oedema and presence of numerous developing schizonts (Fig. 3, 4). These findings were in accordance with the findings of earlier workers (Conway and McKenzie 2007, Olabode *et al.* 2020).

Morpholoical characteristics of the oocyst was

studied which revealed the wall of the oocyst was smooth, ovoid in outline and it was devoid of micropyle (Fig. 2). The length/width index of the oocyst was found 1.17 which was closely resembled the reference index value of 1.16 that was found in case of *Eimeria tenella* (McDougald and Fitz-Coy 2008). Similar characteristics in case of *Eimeria tenella* were also described by other worker (Souls by 1982).

#### Treatment and control

After confirmatory diagnosis received from the Department of Veterinary Pathology proper treatment with suitable anticoccidial drugs and managerial care were provided to the entire flock. The whole flock was treated with Amprolium (AMPROLIUM SOLUBLE POWDER® Virbac India) @ 30 g/ 30 liters of drinking water for 7 days.

In addition to the proper therapeutic management with Amprolium, the entire flock was shifted to a well-ventilated room and dry new litter materials were provided in order to prevent any contamination from the previous litter materials. The mortality was completely stopped after following this treatment and control measures. Similarly, Abebe and Gugsu (2018) also emphasised on the implementation of proper hygienic and bio security measures and the use of suitable anticoccidial drugs with appropriate time and dose for control and prevention of poultry coc-

cidiosis. In a farm the key managemental practices for prevention of coccidiosis are good ventilation, dry and clean litter, cleaning and decontamination of drinkers and feeders and maintain proper stocking density in the farm (Ashenafi *et al.* 2004).

## CONCLUSION

Though high mortality occurs in case of poultry coccidiosis leading to economic loss to the farmers but early diagnosis and subsequent use of proper therapeutic measures as well as managemental cares can save the birds from it.

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