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Early Diagnosis and Effective Treatment of Caecal Coccidiosis in a Flock of White Aseel Fighter Chicken in West Godavari District of Andhra Pradesh

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Abstract: ***Background: Coccidiosis is one of the most important protozoal diseases of poultry worldwide and is characterized by enteritis, bloody diarrhoea. Out of the several forms of coccidiosis, caecal coccidiosis caused by Eimeria tenella is the most pathogenic and most common coccidialspecies in birdsthe purpose of this study is to effectively diagnose and treat the coccidiosis in Aseel flock. A poultry farmer brought adead white Aseel bird of about 8 weeks old for necropsy to Veterinary dispensary, Jeelakarragudem, West Godavari District, with a history of bloody droppings, ruffled feathers, reduced weight gain and appetite for the last 7 days. Methods: Postmortem examination was conducted to ascertain the cause of death. Intestinal scrapings were collected on to the slides and examined for coccidia under microscope (40x). Results: Necropsy examination revealed, enlarged and distended caecal pouches with clotted blood, hemorrhagic caecal mucous membrane, typhlitis. Faecal smears from caecal pouches revealed, unsporulated oocysts of coccidia. Conclusion: Based on the results, it can be concluded that coccidiosis was present in the carcass of the bird, indicating the presence of infection in the Aseel flock. The total flock was effectively treated for coccidiosis by 0.024% amprolium in drinking water for 5 days thereby controlling the spread and death in the Aseel flock.***

Keywords: Eimeria tenella, caecal coccidiosis, Amprolium, Aseel, oocysts

1. Introduction

Poultry production is as an important source of meat around the world. Around 60 billion chickens are being produced worldwide every year. However, *Eimeria* protozoan parasites of Phylum Apicomplexa are considered the main risk to the poultry meatindustry since theycause avian coccidiosis[3].

In domestic fowl (*Gallus domesticus*), seven different species of *Eimeria* were reported. *E. brunetti, E. necatrix,* and *E. tenella* causes haemorrhagic disease. *E. acervulina, E. mitis, E, maxima,* and *E. praecox*causes mild diarrhoea [9].

Eimeria life cycle is complex and comprising of three stages, one occurs under the favourable conditions of humidity, temperature, and oxygen supply (sporogony), and the other two stages occurs in the cells of intestinal epithelium [merogony or schizogony (asexual reproduction) and gametogony (sexual reproduction)]. Gametogony results in the formation of oocyst, later excreted in faeces and upon ingestion, causes infection [6].

Due to the chemical and mechanical action in the gizzard and proventiculus, the oocyst releases the sporozoites, thereby attaching to enterocytes using this anchoring and penetration proteins present in the apical complex (rhoptries and micronemes) and enters into second cycle producing a schizont with thousands of merozoites inside to be released back into the lumen to infect new intestinal epithelial cells. Thus, after many stages of merogonies, some of the merozoites inside the intestinal cell undergoes transformation to formmacrogametocyte and microgametocytes, which later fertilize producing a zygote (oocyst) which is excreted in the faeces again as an unsporulated oocyst to begin another cycle[14].

The most severe form of coccidiosis is caecal coccidiosis which is mostly found in chickens of six to eight weeks of age. Affected birds typically have a dirty appearance, are depressed, off feed, stand with eyes closed, wings hanging down and have ruffled feathers. In severe cases, pure blood is excreted in the droppings. Caecal coccidiosis has a rapid onset, resulting in mortalities up to 50% if not treated. The prominent lesions in affected birds are typhlitis, bloody caecal contents, hemorrhages on the caecal mucosa [15].

Traditional methods for the diagnosis of coccidiosis are based on the oocyst's characteristics, the clinical signs of the affected birds, and the typical macroscopic lesions that are assessed during necropsy [6].Due to drastic effect of coccidiosis on the poultry, different control methods have been employed like thorough biosecurity coupled with the use of prophylactics. Synthetic drugs such as amprolium, nicarbazin, diclazuril, and toltrazuril were used effectively to control coccidiosis disease in poultry for many years[12]. Coccidiosis remains as one of the major diseases of poultry industry, in spite of advances in its prevention and control through chemotherapy, management and nutrition So, the present study is designed with an objective to effectively diagnose and treat the coccidiosis in Aseel fighter birds.

2. Methods

Necropsy examination
The dead bird was opened for necropsy examination according to standard protocols [13].

Sample preparation
About 1 g of feacal mass was collected by deep caecal scrapping of the caeca of bird during necropsy. The presence of coccidial oocysts was determined by making a thin wet smear with distilled water[4].

3. Results and Discussion

The dead Aseel bird, brought for necropsy, showed clinical signs of bloody droppings, ruffled feathers, reduced weight gain and appetite for the last 7 days before its death (Fig.1). Caecal coccidiosis produces bloody droppings and anaemia that is often followed by death according to many authors[1, 8]. Infected birds may huddle together, have ruffled feathers and show depression, consume less feed and water. Faecal droppings are waterywhitish to bloody in colour based on severity. This results in dehydration and poor weight gain as well as mortalities[5].

Figure 1: Coccidiosis affected bird showing ruffled feathers, pale beak, soiled feathers

Necropsy examination revealed, enlarged and distended caecal pouches with clotted blood, hemorrhagic cecal mucous membrane, hemorrhagic enteritis, typhlitis (Fig.2, 3).

Figure 2: Distended caecal pouches with clotted blood

Figure 3: Caecal mucous membrane showing hemorrhagic enteritis and typhlitis

The lesions in coccidiosis depend up on the degree and extent of inflammation present in the intestinal tract. The lesions include thickness of the intestinal wall, mucoid to blood-tinged exudates, petechial haemorrhages, necrosis, haemorrhagic enteritis and mucous profuse bleeding in the caeca[5]. Gross observations by Sharma et al., (2015) also revealed similar lesions like, extremely ballooned intestine and caeca, haemorrhages in intestinal mucosa, watery ingesta mixed with mucus and blood and haemorrhagic enteritis in the caeca.

To date, identification of *Eimeria* spp. has been conducted mainly on the basis of observing oocyst morphology as well as infection site(s). Wet smear examination of intestinal scrapings revealed, *Eimeria* oocysts, which are unsporulated, ovoid in shape and are thick walled (Fig.4). The same morphology of unsporulated oocysts was also observed by Amer et al., (2010).

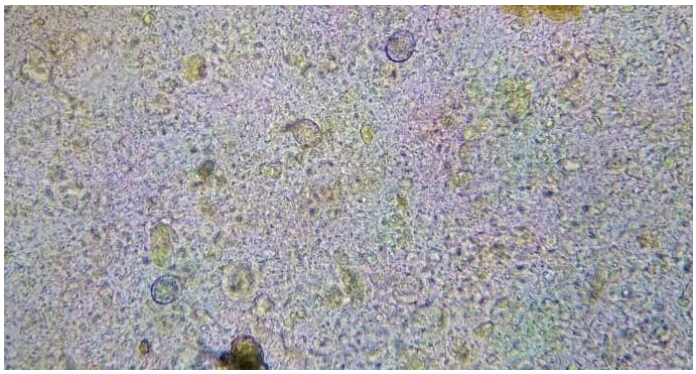

Figure 4: Unsporulated oocysts of Eimeria from the caecal scrapings

The total flock was effectively treated for coccidiosis by 0.024% amprolium in drinking water for 5 days thereby controlling the spread and death in the Aseel flock. Amprolium is a vitamin B1 or thiamine analogue and competitively inhibits the active transport of thiamine in coccidia, thereby preventing its growth. [10].

4. Conclusion

In conclusion, our findings showed that *Eimeria tenella* of chicken occurred in Aseel birds reared under free-range in the wet season. Coccidiosis may pose economic implication to backyard poultry farming due to poor performance of the affected birds that most often look apparently healthy. As coccidia require moisture to become infective, litter must be

kept dry and ventilation must be good, and overcrowding should be avoided and proper control measures must be taken in the form of strict biosecurity, disinfection, vaccination, and good use of anticoccidial drugs.

References

[1] Ali, H., Naqvi, F and Tariq, N. 2014. Prevalence of coccidiosis and its association with risk factors in poultry of Quetta, Pakistan. Asian Journal of Applied Sciences, 2(4): 554-558.

[2] Amer, M. M., Awaad, M. H., El-Khateeb, R. M., Abu-Elezz, N. M., Sherein-Said, A., Ghetas, M. M., Kutkat, M. A. 2010. Isolation and identification of Eimeria from field coccidiosis in chickens. Journal of American Science, 6(10): 1107-1114.

[3] Blake, D. P., Clark, E. L., Macdonald, S. E., Thenmozhi, V., Kundu, K., Garg, R., et al. 2015. Population, genetic, and antigenic diversity of the apicomplexan Eimeria tenella and their relevance to vaccine development. Proceedings of the National Academy of Sciences of the United States of America, 112(38): 5343-5350.

[4] Fleck, S. L. and Moody, A. H. 1993. Diagnosistic technique in medical parasitology 11th Ed. Cambridge University Press, U.K., pp: 10-14.

[5] Hafez, H. M. 2008. Poultry coccidiosis: Prevention and control approaches. Archiv Fur Geflugelkunde, 72(1):2-7.

[6] Lal, K., Bromley, E., Oakes, R., Prieto, J. H., Sanderson, S. J., Kurian, D., et al. 2009. Proteomic comparison of four Eimeria tenella life cycle stages: unsporulated oocyst, sporulated oocyst, sporozoite and second generation merozoite. Proteomics, 9(19):4566-4576.

[7] Long, P. L, Joyner, L. P. 1984. Problems in identification of species of *Eimeria* J. Protozool., 31: 535-541.

[8] Muazu, A., Masdooq, A. A., Ngbede, J., Salihu, A. F., Haruna, G., Habu, A. K., Sati, M. N. and Jamilu, H. 2008. Prevalence and identification of species of Eimeria causing coccidiosis in poultry within Vom, Plateau State, Nigeria. International Journal of Poultry Sciences, 7(9): 917-918.

[9] Reid, A. J., Blake, D. P., Ansari, H. R., Billington, K., Browne, H. P., Bryant, J., et al.2014. Genomic analysis of the causative agents of coccidiosis in domestic chickens. Genome Research., 24(10):1676-1685

[10] Rogers, E. F., Clark, R. L., Becker, H. J, Pessolano, A. A, Leanza, W. J, McManus, E. C., Andriuli, F. L., Cuckler, A. C.. 1964. Antiparasitic drugs V. Anticoccidial activity of 4-amino-2-theoxybenzoic acid and related compounds. Proc. Soc Exp Biol Med. 117:488–492.

[11] Sharma, S., Azmi, S., Iqbal, A., Nasirudullah, N., Mushtaq, I. 2015. Pathomorphological alterations associated with chicken coccidiosis in Jammu division of India. *J Parasit Dis*.39(2):147-151. doi:10.1007/s12639-013-0302-9

[12] Shivaramaiah, C., Barta, J. R., Hernandez-Velasco, X., Téllez, G., Hargis, B. 2014. Coccidiosis: recent advancements in the immunobiology of *Eimeria* species, preventive measures, and the importance of vaccination as a control tool against these Apicomplexan parasites. Vet Med 5(5):23–34

[13] Sriraman, P. K. 2006. A Guide to Postmortem Examination of Animals. Edition. 1st Ed., Jaypee Brothers, New Delhi.

[14] The Poultry Site. 2017. Coccidiosis Management for Natural and Organic Poultry.

[15] Vegad, J. L., 2018. A Textbook of Veterinary Special Pathology: Infectious Diseases of Livestock and Poultry, 2nd Ed, CBS publishers, India.