

COCCIDIOSIS IN POULTRY

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INTRODUCTION

The members falling under the category of coccidian parasites are spore forming and belong to the Phylum-Apicomplexa and Class-Sporozoa. The presence of an apical complex makes them different from other members of the group. Apical complex is seen in sporozoite and merozoite stages.

In Eimeriidae family, the life cycle is direct and both sexual and asexual reproduction is seen. Inside the host, the zygote develops inside the epithelial cells of intestine of and after the formation of oocyst it leaves the host. It develops a thick protective wall by this time. This stage is characterized by the process of sporogony and thus oocyst possesses a variable number of spores (sporocyst) during this time. The life cycle of a typical coccidian parasite

consists of 2 phases-exogenous (sporogony) and endogenous (schizogony, gametogony and syngamy).

Poultry Coccidiosis is caused by different *Eimeria* species in poultry which causes disease of the intestine. Various agents such as wind, water pets, rodents, insects, etc cause the ingestion of sporulated oocysts and hence the disease occurs. The various species of *Eimeria* causing poultry coccidiosis are *E. tenella*, *E. necatrix*, *E. acervulina*, *E. maxima*, *E. brunetti*, *E. mivati*, *E. hagani*, *E. mitis*, *E. praecox*, *Wenyonella gallinae* and *Tyzzeria* sp. The disease causes occurs within a few span of time (may take few days) and causes 100% mortality in young birds. A large number of sporulated oocysts are supplied by poorly maintained litters. Although all groups are susceptible yet 4 to 8 weeks old birds are the ones that are most prone to disease. Till now, three major forms of poultry coccidiosis have been seen-



CAECAI COCCIDIOSIS

It is caused by *E. tenella*. It is said to be the most common and most pathogenic form of disease. Poultry birds of age group 4 weeks age are most susceptible and prone to develop the disease. In the initial phases signs like drooping of feathers, anorexia, weakness, listlessness and disinclination to move may be seen. Hemorrhagic enteritis (Red diarrhea) is a prominent sign. Hence ultimately, birds become anemic and die without showing any overt clinical signs. At last when 2nd generation schizonts burst due to massive destruction and damage of blood capillaries, then it leads to death of the bird just 5 days post infection (DPI) which thereby results into caecal hemorrhages. Due to excessive blood loss, chicken start dying between 4 and

6 DPI. During this period of time birds appear listless. After 6 days, haemorrhages decrease and oocysts appear in the faeces 7 DPI if birds survive. Post acute phase, the remaining diseased birds show clinical illness. The reason is that there is formation of persistent caecal core by unclotted and clotted blood and faeces. The severity of infection depends upon various factors such as infective dose of oocyst, breed, age, nutritional status, immune status, environmental factors etc

DIAGNOSIS-

Clinical signs- Presence of bloody diarrhea. Confirmatory Diagnosis- by post mortem examination and the intestine showing presence of *Eimeria*. Faecal examination- In acute phase, there is passage of merozoites through diarrheic faeces. However, there may be demonstration of oocytes in recovering birds. Microscopic examination of mucosal scrapping of caeca for the demonstration of schizonts, gametes, oocysts, etc can be done.



Rectal Coccidiosis

It is caused by *E. brunetti*. The most susceptible age group is of birds 4 to 9 weeks. There is presence of hemorrhagic caecal exudates. Also fluidly droppings and sometimes blood stained with mucus cast can be seen. There is also presence of hemorrhagic ladder like streaks on the mucosa of rectum and cloaca along with anorexia and dehydration. Sloughed necrotic material fills up the intestinal lumen. Due to severe dehydration there is loss of body weight and complete inappetence is usually seen.

DIAGNOSIS-

Clinical signs- presence of bloody diarrhea. Faecal examination- done by the demonstration of unsporulated oocysts. Microscopic examination of mucosal scrapping of intestine is done for the demonstration of schizonts, gametes, oocysts etc.

Intestinal Coccidiosis

It is caused *E. acervulina*, *E. maxima* and *E.*

mivati. There is presence of watery diarrhea. Listlessness, anorexia, stunted growth; dropped egg production is usually encountered in affected birds. Droppings comprise of more mucus and occasionally flakes of blood may be present in case of infection by *E. maxima*. It is mostly observed in older and laying birds. The other similar pathogenic *Eimeria* sp. In poultry is *E. necatrix*. Due to accumulation of second generation schizonts developing deep down through the mucosa, the main lesions are observed in the small intestine. Presence of minute grayish white spots which can be seen on the serosal surface of the intestine indicate the presence of colonies of these schizonts which can be detected in the early stages. Severe petechial hemorrhages may appear 5-6 DPI. The intestine is filled with fresh or clotted blood and is markedly swelled, i.e. the wall of intestine becomes highly thickened. Hemorrhagic enteritis is seen (droppings are mixed with blood). The birds become unthrifty, weak, emaciated, anemic, anorectic, pale and die ultimately.



TREATMENT OF COCCIDIOSIS IN POULTRY

1. Amprolium @0.0125%- Effective against *E. tenella*, *E. acervulina*, *E. necatrix*, *E. maxima*. It has both curative and preventive use.
2. Sulphadimidine @0.4 % (feed) or 0.2 % (W) - Effective against *E. tenella*, *E. necatrix*. It interferes with Vitamin K synthesis and egg production.
3. Sulphaguanidine @1 % (feed) and Sulphamerazine @0.25% (feed and water) - These drugs are coccidiostatic.

4. Nitrofurazone @0.022%- Effective against *E. tenella*, *E. necatrix*. Toxic effects- nervous signs
5. Furazolidone @0.011%- Effective against *E. tenella*.
6. Monensin @0.01-0.121%, Lasalocid @0.005-0.0075% and Salinomycin @0.01%- Highly effective against almost all pathogenic *Eimeria* sp. And has both curative and preventive use.



CONTROL-

- ❁ Immunoprophylaxis-Done by Live virulent vaccine like Coccivac or by live attenuated vaccine like Paracox, Livacox
- ❁ Use of prophylactic anticoccidial drugs-like Amprolium @0.0125%, Nitrofurazone @0.005-0.01%, Sulphaquinoxaline @0.025-0.033%
- ❁ Use of nutritional supplement- Provide vitamin A (allows fast recovery), vitamin K rich diets (reduces mortality). Mix some vital minerals in optimum ratio in the ration.

2. Poultry droppings should be properly disposed off.
3. Poultry house should be properly fumigated and cleaned.
4. All the utensils should be washed with detergents and other suitable chemicals.
5. The feed, water and utensils should avoid contamination with poultry droppings.
6. There should be frequent removal of bedding material and exposure against direct sunlight should be prevented.
7. Entry of outsiders should be restricted.

MANAGEMENT PRACTICES-

1. Cage system should be preferred for poultry rearing.

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