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A Retrospective Study on Chicken Coccidiosis in Ilorin, Kwara State, Nigeria

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Research Paper

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Coccidiosis in poultry is still considered one of the main diseases affecting performance of poultry reared under intensive production systems. So many diagnostic methods are known to exist with some been too expensive. Although a lot of research efforts have been allocated towards molecular techniques, with a lot of progress made in this field, practical use of these techniques are not available today, except in the field of diagnostics, polymerase chain reaction (PCR) tests for chicken *Eimeria* spp. are available, but not yet in common use. Ilorin, Kwara State capital also referred to as the 'gate way' State due to its location between the Northern and Southern parts of Nigeria located on longitude N8^{o} 30' 0" and latitude E 5^{o} 0' 0" 8.5 / 5 is not left out of this invasion by coccidiosis. Suspected cases are submitted to the National Veterinary Research Institutes' (N.V.R.I) laboratory, Ilorin, Kwara State, for diagnosis. Based on the history presented and clinical signs of bloody (diarrhea) feces and carcasses/moribund birds, post mortem examination and microscopy were considered as the best option used to confirm diagnosis. At post mortem, lesions were noticed from the serosal and the mucosal surfaces of the intestines after a careful examination of the carcasses. Some of the lesions observed included; enteritis of the anterior one third, the middle and the posterior one third of the intestine depending on the type of coccidia and these used to be characterized by hyperemia, necrosis of the intestinal mucosa and bloody feces in the lumen, thus serving as pointer to the presence of the disease, and this is complimented by microscopy to observe for, gamonts, schizonts and oocysts usually with a lot of successes recorded.

Key Words: Coccidiosis, diagnosis, retrospective study and Ilorin**,** Kwara state, Nigeria.

INTRODUCTION

Coccidiosis is one of the most important diseases of poultry. The disease is caused by protozoan parasites of the genus Eimeria species of the family *Eimeridae* and order *Eucoccidiorida* (Chauhan and Sushovan, 2003). The parasites develop within the intestine of most domestic and wild animals and bird. Seven species of Eimeria (*E. acervulina, E. brunetti, E. maxima, E. mitis, E. necatrix, E. praecox and E. tenella*) are recognized as infecting chickens Williams, (1999). Although coccidiosis is a disease known for many years, it is still considered as the most economical important parasitic condition affecting poultry production worldwide (Williams, 1999). Poultry has become an important source of protein in Africa, but the disease has played a major role in economic losses to farmers the world over for example, in 1995 the United Kingdom was estimated to have lost 38.5 pounds due to chicken coccidiosis (Mark et al., 2008). Many of our farmers have taken sanitary measures serious in their poultry businesses so diseases like coccidiosis have had its way in destroying such

farms. Coccidiosis is known to largely cause mortality in young animals especially chicks because immunity quickly develops after exposure and gives protection against later disease outbreaks. Unfortunately, no cross-immunity exists between species of *Eimeria* in birds, and later outbreaks may be the result of different species (Chauhan and Shushovan, 2003). This acute infection occurs most commonly in young chicks. They cause subclinical coccidiosis associated with marked weight loss (Agdex, 2001). The species of *Eimeria* are identified based on size and shape of Oocysts, schizonts and site of multiplication in the intestine, gross lesions, and the time required for sporulation, etc. Coccidia oocysts are present in used litter of all poultry.

Also, oocysts are transported easily to poultry farms in blowing dust or on boots, shoes, clothing, crates, and vehicle wheels, and by other animals and insects. Humans also serve as important vectors of coccidia. Susceptible poultry ingest sporulated (mature) oocysts in the feed, water, litter, and soil and become infected. If exposure is moderate, the birds develop immunity, often without clinical signs of infection. Poultry maintain their immunity, to a species of coccidia by repeated re-exposure.

Immune birds upon reinfection become carriers and eliminate oocysts into the environment for long periods of time (Larry and Dougald, 2003).

Eimeria are very effective parasites, one of the main reasons coccidiosis is still a major problem, and it is difficult to diagnose. The classical parasitological methods of diagnosis are labor intensive and therefore costly. Oocysts per gram (OPG) count in feces or litter has a poor relation with the impact of the parasite on the performance of a flock. Identification of different species based on morphology of oocysts is very challenging and requires expertise.

Treatment of mild cases of coccidiosis is not necessary because this disease is self-limiting, when assuming proper measures are taken to hinder re-infection (Maria-Elisabeth et al., 2009).There are basically two means of prevention of coccidiosis: chemoprophylaxis and vaccination (Chapman, 2005). The results were analyzed by the Microsoft excel.

The objectives of this work are to try and know the number of chickens, specific season and age of poultry losses incurred by farmers due to coccidiosis as this will help in proffering solution in the disease control through proper education.

MATERIALS AND METHODS

STUDY AREA

Ilorin the Kwara State capital is located between the Northern and Southern parts of Nigeria on longitude N8^{o} 30' 0" and latitude E 5^{o} 0' 0" 8.5 / 5 Olabode et al., (2012).

SOURCE OF DATA

These are cases that were submitted to the National Veterinary Research Institutes' (N.V.R.I) outstation laboratory, Ilorin, Kwara State, between the years 2000 and 2009 for diagnosis. Post mortem examination and microscopy were used to confirm diagnosis. The moribund birds were also sacrificed for this purpose so that fresh materials could be made available (Maria-Elisabeth et al., 2009 and Chauhan and Sushovan, 2003).

RESULTS

Out of the total number, 741/3,655 (20.27 %) were diagnosed grossly and microscopically positive. Lesions were noticed from the serosal and the mucosal surfaces of the intestines after carefully examining the carcasses. The lesions observed included; enteritis of the anterior one third, the middle and the posterior one third of the intestine depending on the type of coccidia and these were characterized by hyperemia, necrosis of the intestinal mucosa and bloody feces in the lumen. The location of the major lesions gave a good indication of the species of coccidia concerned. For example, cecal lesions represented the presence of *E. tenella*. The mucosal scrapings were examined under the microscope diluted with isotonic saline solution under a cover slip with appropriate lighting was also employed to observe for schizonts, gamonts, and oocysts (Figure 1).

Figure 1. A typical case of coccidiosis in a commercial layer chicken showing bloody intestinal contents. (courtesy Ahmed J.S NVRI Vom, post mortem pictures).

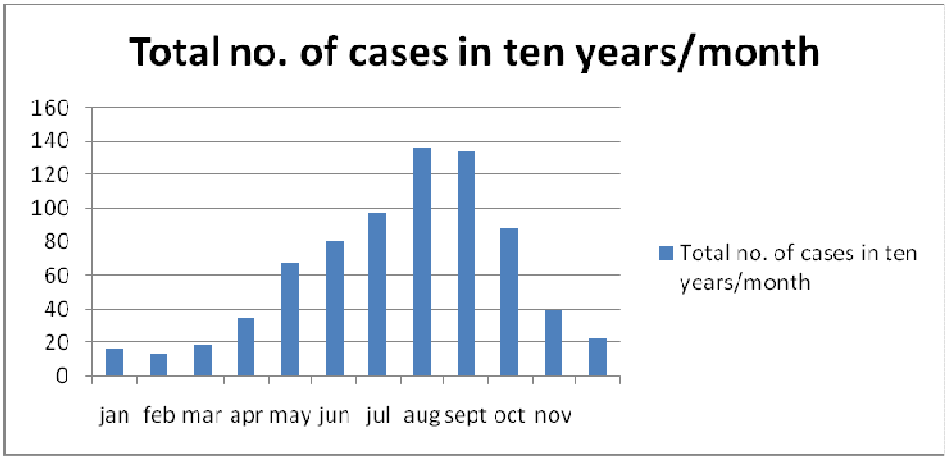

Figure 2. Monthly Cummulative number of cases for ten years.

DISCUSSION

From Figure 2, the prevalence of coccidiosis was higher in the wet warm months (May- October) compared to the dry cold months (November.-April). Oocysts remain viable in litter for many months. In this way, they can contaminate a farm year in year out. Oocysts are killed by freezing and extreme dryness and high temperatures, thus making it a little difficult for infections to wide spread in the dry and cold months as agreed by (Charlton et al., 1996; Chauhan and Sushovan, (2003). The dampness of litter on the other hand gives room for the sporulation of oocysts that might have been transferred by dust in the dry season since oocysts can survive for months only to become viable following the introduction of favorable conditions e.g. wet areas around water fountains often constitute a source of infection. Litters are supposed to be applied in thick layers in order to facilitate maximum absorption. This wet litter facilitates sticking of materials to boots, utensils, shoes, vehicle wheels and clothing leading to a faster rate of transfer of the organism to other farms. Ilorin is a wet and damp place especially in the wet warm season. The factors raised above are common practices by farmers in this part of the world. These points agree with the points earlier raised by (Chauhan and Shushovan,2003). The sanitary conditions of most of these farms are very poor that the birds also appear very dirty. Some floors are poorly constructed that they sip water from below thus wetting the floor and making the litter wet all the time. Normally, most birds pass small numbers of oocysts in their droppings without apparent ill effects e.g. young chickens pick up the infection from contaminated premises (soil, houses, utensils, etc.). These premises may have been contaminated previously by other young infected birds or by adult birds that have recovered from the condition. Other reasons observed here also include; porous pens that permit wild birds into the pens leading to the passage of their excreta on the floor, feeders or even into the water troughs. Most farmers that compound feed on site do not border to add coccidiostats in the feeds and may not even remember to treat prophylactically early. Farmers are supposed to know that coccidiosis becomes important as a disease when animals live, or are reared, under conditions that permit the build-up of infective oocysts in the environment. The intensive rearing of domestic chickens may provide these conditions (Agdex, 2001).

Figure 3 shows that age plays a vital role infectivity of coccidiosis. The disease is much prevalent in the young than the older birds. Chicks of 1-3 weeks of age were diagnosed with coccidiosis. The highest infective period was between 4-6 weeks of age with a slight decline at 7-9 weeks of age and ages 9-12 weeks. This agrees with the report of Chauhan and Sushovan, (2003) and (Mark et al., 2008). Figure 4 shows the specific rates per year with the year 2005 having the highest rate of 35.16% and 2000 been the least with 11.83%. Reason might be due to an increased awareness in poultry production so the number of farmers increased so there will be an increased patronage of veterinarians or an increased awareness in veterinary services. In the treatment of coccidiosis it has been noticed that the emergence of drug-resistant strains of coccidia does present a major problem. Methods used to avoid the development of drug resistance include; good hygiene, switching classes of drugs and the shuttle program, which is a planned switch of drug in the middle of the bird's growing period. Anticoccidial drugs mixed in the feed should be used to limit high levels of infection. Keep chicks, feed and water away from droppings. Place water vessels on wire frames to eliminate a concentration of wet droppings, in which the chicks can walk to pick up or spread the disease adding lime powder and mixed with litter at about 5-7 kg/

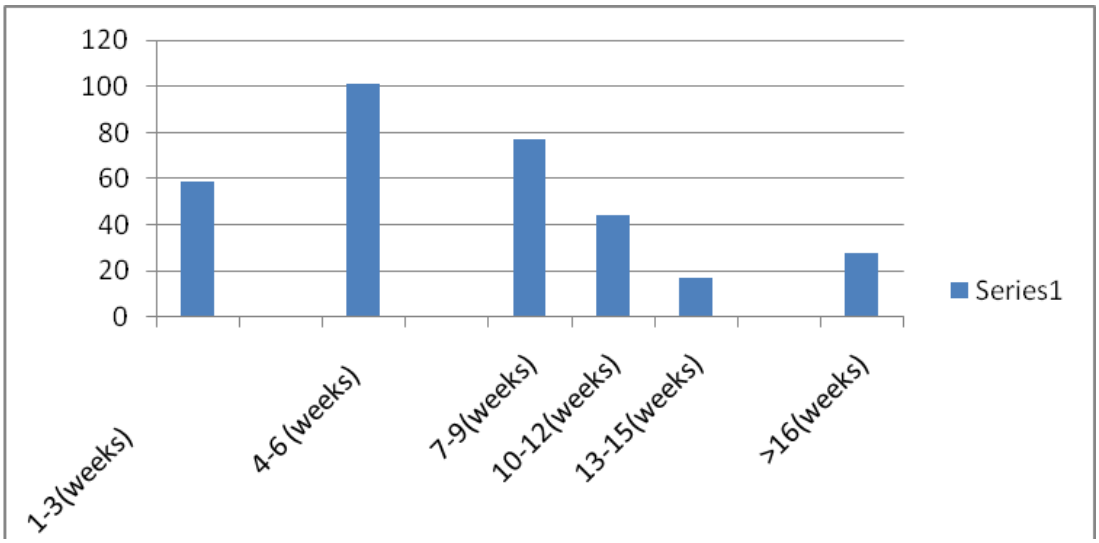

Figure 3. Prevalence of Coccidiosis by Age distribution.

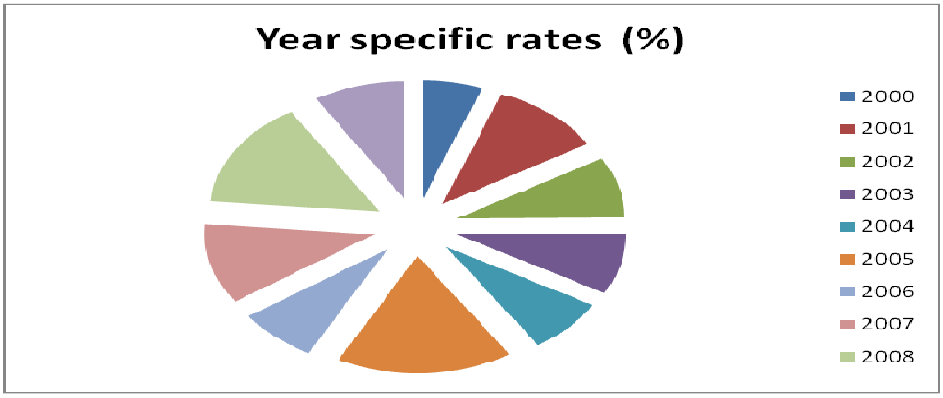

Figure 4. Total year rates as determined.

100ft^2. Keep litter dry and stirred frequently. Remove wet spots and replace with dry litter. Avoid overcrowding, provide adequate ventilation and start treatment immediately coccidiosis outbreak is noticed Chauhan and Sushovan, (2003).

In conclusion, poultry farms are to be kept clean and hygienic. Good biosecurity is also very paramount in order to keep coccidiosis in check.

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