Case Report

Fatal Outbreak of Eimeriosis in a Rabbitry In Ibadan, Nigeria


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ABSTRACT

This report investigates an outbreak of coccidiosis in a rabbitry in Ibadan, Nigeria. The rabbits were raised in a commercial breeder rabbitry with a total stock of 700 rabbits. The duration of mortality was 5 days, with an average of 140 rabbits per day giving a total of 635 (85%) mortalities. Clinical signs, necropsy findings, cytological, Histopathological and confirmatory diagnosis were reported and discussed. This case report further showed that coccidiosis in rabbitry is still a serious problem which should be monitored and controlled.

Keywords: Coccidiosis, Eimeria, Rabbit, Outbreak, Diagnosis, Nigeria

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INTRODUCTION

Coccidiosis is a contagious protozoal disease of rabbits (Darwish and Golemsnansky 1991). It is caused by Eimeria sp., and different species have been reported to parasitise rabbits, with majority localizing in the gut (Soulsby 1968, Barriga 1979, Levine 1985). The organisms enter the intestinal mucosal epithelial and cryptal cells. The individual species are host and tissue specific (Brooks 1979, Percy and Barthold 2007). E. stiedae infects domestic rabbits globally (Vargar 1982, Al-Mathal et al 2008). Despite the worldwide distribution of the disease, the report in Nigeria is scanty. This case report presents the investigative outcomes of an outbreak of coccidiosis in a rabbitary in Ibadan, Nigeria.

CASE PRESENTATION

Three female rabbits of mixed breeds between the ages of 2-6 months of age were presented for necropsy to the Diagnostic Laboratory, Veterinary Teaching Hospital, University of Ibadan. The rabbits were raised in a commercial breeder rabbitary with a total stock of 700 rabbits. Some of the rabbits on the farm were being used for an ongoing breeding research while the rest were raised for breeding and commercial purposes. 48 additional rabbits were purchased on July 8th, 2016 and were quarantined on the farm. A week later (July 14th, 2016), mortality started on the farm. On the first day of the mortality (14th of July), 4 rabbits were found dead while 11 died the next day. The mortality rapidly spiked to 120 on 16th July, 2016 while 300 and over 200 rabbits were found dead on the 17th and 18th July, respectively. The duration of mortality was 5 days, with an average of 140 rabbits per day giving a total of 635 (85%) mortality.

At the onset of mortality on the farm, the appetite of the rabbits was normal and no obvious clinical signs were observed until about one hour prior to death when they become weak and subsequently die. At necropsy, the carcasses were fresh but slightly emaciated. The mucous membranes (ocular and oral membranes) were moderately pale. There was moderate congestion of the dorsal turbinate and ecchymotic haemorrhages on the ventral and distal parts. There was also moderate hyperaemia of the trachea mucosa with reddish froth extending into the cut portion of the lungs. The lungs were mildly congested and moderately consolidated with the right lungs being more affected. The liver was friable, with a few multifocal raised white nodules (plate 1) of varying sizes on the dorsal and ventral aspects of the liver. These nodules oozed out creamy exudate. There was moderate congestive splenomegaly. There were mild petechial haemorrhages on the mucosa of the caecum. There was capsular adhesion and roughening of the renal cortex with marked multifocal petechial to ecchymotic hemorrhages on the cortical and cut surfaces of the kidney.
The liver has multifocal raised whitish nodules of varying sizes on the dorsal and the ventral surfaces (arrows). 2. Eimeria oocysts (arrows) from wet mount intestinal scrapings. x400. 3. Eimeria oocytes (arrows) at different stages of development from liver impression smears. Giemsa stain x1000. 4. Degenerate to necrotic bile duct epithelium, flooded by inflammatory cells and intralesional eimeria oocysts (arrows). HE x400

The femoral bone marrow was solid and reddish along the entire length while there were widespread meningeal congestion and haemorrhages extending from the distal part of the cerebrum towards the cerebellum.

Microscopic examination of wet mount intestinal scrapings (duodenum and caecum) revealed 15–20 oocysts per HPF (plate 2) consistent with the morphological appearance of Eimeria stiedae. The Giemsa stained liver impression smears revealed abundant Eimeria oocytes at different stages of development. There were abundant degenerate, necrotizing and regenerative hepatocytes (evidenced by the hyperplastic and binucleated hepatocytes with basophilic cytoplasm). There were also numerous biliary epithelial cells and within a biliary epithelial cell is a macrogametocyte. There were abundant inflammatory cells composed chiefly of lymphocytes, macrophages and few heterophils.

At histopathology, there were multifocal areas of coagulation necrosis of hepatic parenchyma. The bile ducts were tortuous, proliferative and severely distended (up to 4 mm), compressing the limiting hepatic plate and moderate fibrosis. There was a large vacoule representing nodule and ectatic bile ducts. There were abundant degenerate to karyorrhectic, karyolytic, or pyknotic nuclei (necrosis) epithelial cells bordered by inflammatory cells. Most of the degenerate epithelia show eimeria oocyst in different stages of gametogony. The morphometry of the oocysts were in range of 20-50 um in diameter. There was severe inflammatory cell infiltrates in the portal area and around necrotic hepatocytes and bile ductules.

**DISCUSSION**

This case report describes the pathological changes associated with fatal coccidiosis in rabbits for the first time in our environment. The peculiarity of the case is the 85% case fatality of coccidiosis in a rabbitry.

Two anatomic forms coccidiosis includes enteric and hepatic occur in rabbit. The enteric eimeria include *E. perforans*, *E. magna*, *E. media*, and *E. irresidua*, while *E.*

*Eimeria stiedae* colonizes the bile ductules resulting in morbidity and losses in rabbitries (Aly 1993). Infection of either forms of the parasite is through ingestion of feed and water containing sporulated oocysts. The severity of the lesions are more in caged or intensively managed and young rabbits (Cheeke 1987, Varga 1982, Al-Rukibat 2001). The influence of age on the severity of coccidiosis was reported by Al-Mathal (2008). The managemental system would have contributed to the infection, spread and fatality in this case. The mortality of 85% recorded in this outbreak of coccidiosis was higher than the 9% and 5% of morbidity and losses in rabbitries respectively reported by Meek (1943, 1982) and Pakes et al (1994). There was 48% (Cheeke 1987), and 64% (Pakes et al 1994). There was 40% and 80% mortality in young rabbits in an experimental infection (Percy and Barthold 2007). Diagnosis and confirmation of hepatic eimeriosis is usually based on histopathology and characteristic intra-lesional oocysts in the liver.

In conclusion, coccidiosis in rabbitry is still a serious problem which should be monitored and controlled.

**Ethical approval:** “All applicable international, national, and/or institutional guidelines for the care and use of animals were followed.”

**REFERENCES**


