International Journal of Applied and Advanced Multidisciplinary Research (IJAAMR)
Vol.3, No.2, 2025: 153-158

Clinicopathological Findings of Infectious Bursal Disease in Poultry Farm in Jigjiga, Somali State, Ethiopia: A Case Report

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A R T I C L E I N F O

Keywords: Infectious Bursal Disease, Jigjiga, Poultry, Postmortem Findings, Vaccination

Received : 5 December
Revised : 23 January
Accepted: 23 February

A B S T R A C T

Gumboro disease is a viral disease that affects. young chicks and causes immunosuppression and increased susceptibility to subsequent infections. It is acute, highly contagious, and economically significant. The clinicopathological results of infectious bursal disease at a poultry farm in Qumadaha, Jigjiga, Ethiopia, are described in this case report. At first, 200 two-month-old chicks were kept on the farm under ideal management circumstances. Several of the hens showed clinical indications such depression, decreased intake of feed and water, vent picking, white watery diarrhoea, ruffled feathers, trembling, and unwillingness to walk. By the time the outbreak was detected, 17 chickens had perished in a single day. Muscular haemorrhages in the thighs and breast, cheesy lumps in the bursae lumen, and enlarged and oedematous bursae were all discovered during post-mortem investigations. Aminogrow WS (100g per 400 litres of drinking water for 3–5 days) was used to boost immunity, while enrofloxacin (Ashienro 10%) oral suspension (1 ml per litre of drinking water for 5 days in a row) was utilised to combat secondary bacterial infections in order to control the outbreak. Strict biosecurity procedures, such as separating sick birds, keeping enough ventilation, minimising overcrowding, and utilising all-in/all-out management, were also recommended to the owner

DOI: https://doi.org/10.59890/ijaamr.v3i2.356
ISSN-E: 3026-2437
https://journal.multitechpublisher.com/index.php/ijaamr

INTRODUCTION

In Ethiopia, raising poultry is a significant economic activity. In addition to its social and cultural advantages, it contributes significantly to poverty alleviation and family nutrition (Mohamed, Hailemariam et al. 2016) In Ethiopia, poultry farms of all sizes are expanding quickly. The imported strains of chicken are temperate varieties that are less suited to the nation's problems with heat stress and illness. There are outbreaks of endemic and/or newly introduced diseases that coincide with the intensification of poultry production. Infectious Bursal disease is one of the illnesses affecting poultry that is becoming more and more of a worry (Zeleke, Gelaye et al. 2005).

LITERATURE REVIEW

Infectious bursal disease, also known as Gumboro disease, is a highly contagious, acute, immunosuppressive disease that affects young, susceptible chicks and has an impact on the global chicken industry(Mekuriaw, Bitew et al. 2017). The illness causes lymphoid depletion in the bursa of Fabricius and impacts lymphatic tissues such as the spleen and bursa of Fabricius (Hayajneh and Araj 2023). Gumboro disease is caused by the infectious bursal disease virus (IBDV), a member of the family Birnaviridae and genus Avibirnavirus. It has an icosahedral, non-enveloped capsid with a bi-segmented genome that is a double strand RNA virus (dsRNA) (Getachew and Fesseha 2020).

Consuming tainted feed and water is the primary way that infectious bursal disease is spread. Because IBDV can tolerate extreme climatic conditions, it can also persist for extended periods of time in contaminated farms and premises.(Okoye 1984). There have been reports of mechanical dissemination by dogs, guinea fowls, rats, and pigeons. Both intraocular and contact exposure often result in an incubation period of three to five days. Usually, it begins with a decrease in water and feed intake (anorexia), which is followed by drooping wings, drowsiness, and eventually avian prostration and death. (Okoye and Aba-Adulugba 1998).

Therefore, this case report briefly summarized pathological findings of Infectious bursal disease in Jigjiga, Somali state, Ethiopia.

METHODOLOGY

Study Area

The study was conducted at a commercial poultry farm located in Qumadaha, Jigjiga, within the Somali Regional State of Ethiopia. The farm housed 200 two-month-old chicks under optimal management conditions.

Case History and Clinical Observations

A total of 200 two-month-old chicks were reared under an optimal management system at a poultry farm located in Qumadaha, Jigjiga. In September, 2024, a farmer reported a sudden mortality of 17 out of 200 chicks within a single day. The reported clinical signs included depression, a sudden drop in feed and water consumption, a tendency for some birds to peck at their own vents, white watery droppings leading to soiling of feathers around the

vent, loss of appetite, ruffled feathers, unwillingness to move, trembling, and closed eyes.

Postmortem Examination

Ten birds were chosen at random for necropsy out of a total of 17 dead chicks. All chosen birds had a thorough postmortem examination in order to methodically record any abnormal findings. Nine chickens had petechial to ecchymotic hemorrhages in the leg, thigh, and/or pectoral muscles, enlarged and edematous bursa, and muscular hemorrhages in the breast, according to the postmortem examination of the deceased birds. A cheesy mass was found in the lumen of five chickens' bursae after they were cut (Fig. 1 and Fig. 2).

Figure 1. Prominent swelling of the Bursa of fabricius.

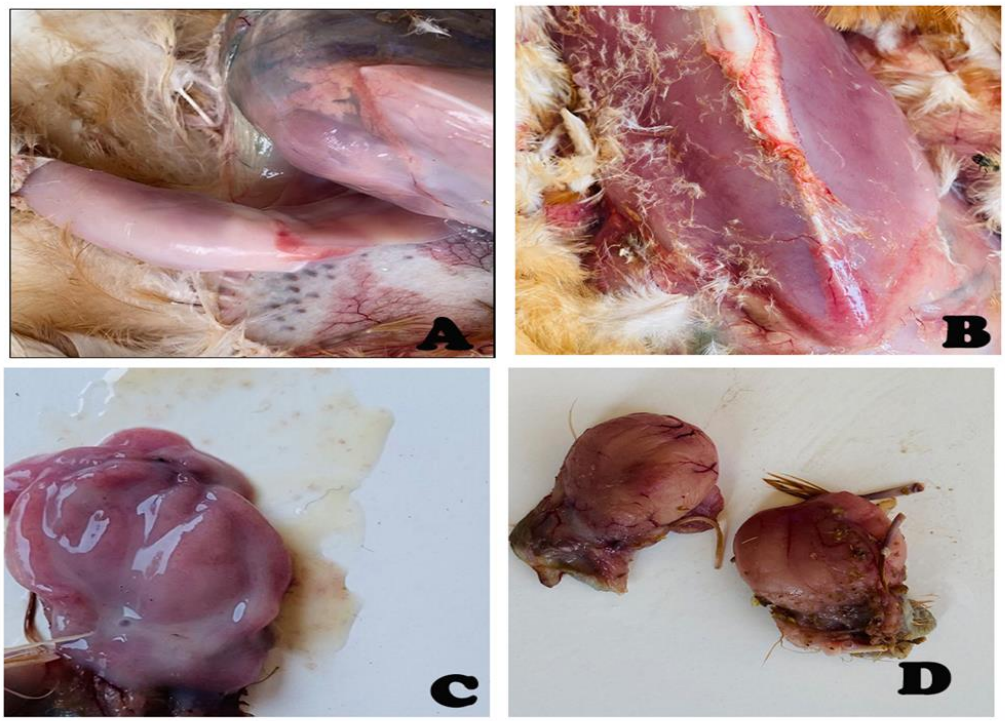

Figure 2. Gross Lesions of Infectious Bursal Disease. A: Petechial to Ecchymotic Hemorrhage on the Pectoral and Thigh Muscle, B: Haemorrhages in the Breast Muscles, C: Caseous Exduate of Bursa of Fabricius, D: Gross Haemorrhagic and Swelling Affected Bursa.

Case Management

The disease was tentatively diagnosed as Infectious bursal disease after physical and post-mortem examinations. As a result, the treatment was targeted at reducing secondary bacterial problems, reducing environmental stress, and increasing immunity. To reduce secondary bacterial complications, enrofloxacin (ashienro 10%) oral suspension 1 ml per liter of drinking water was given to diseased chickens for 5 consecutive days, and to improves immunity to combat infectious diseases it was given Aminogrow ws 1 kg per 400 litres of drinking water for 3 - 5 days. The owner was further advised to isolate the sick and suspected birds from the flock, maintain proper ventilation, reduce overcrowding of birds and maintain strict biosecurity, strict hygienic measures including control of personal and material movement and application of All-in/All-out procedures.

RESULT AND DISCUSSION

Based on case history, clinical symptoms, gross lesions of postmortem findings, the case was tentatively diagnosed as Infectious bursal disease. In this instance, clinical symptoms are uncommon in chickens under two weeks of age and in birds beyond six weeks. Excretion of viruses might start as soon as 24 hours after infection. Typically, mortality will peak and then decline over a period of five to seven days. Acute depression, trembling, white watery

diarrhoea, ruffled feathers, severe prostration, vent plucking, and vent feathers contaminated with urates are some of the accompanying symptoms that have been reported globally. dehydration, excessive water intake, and anorexia. These symptoms are consistent with the symptoms mentioned by (Wagari 2021). Early on, a swollen (oedematous) bursa may double in size and weight by the fourth day. The bursa initially exhibits a cheesy mass inside its lumen, followed by minor haemorrhages on its surface as well as haemorrhages in the breast and thigh muscles. This aligns with the (Vegad 2007).

Infectious bursal disease has no known cure, just like nearly all avian viruses. Restricted biosecurity and immunisation with the right vaccine at the right age are the primary ways to control the disease. Maternally derived antibody (MDA) interference is a critical issue in selecting a successful live IBDV immunisation schedule, even if live vaccines are given to achieve active immunity. When chickens are vaccinated in an environment with elevated MDA levels, the vaccine virus neutralises and no protection is produced. (Kassa, Sori et al. 2019).

CONCLUSIONS AND RECOMMENDATIONS

To guarantee protection in the flock, an early and suitable vaccination regimen against Infectious Bursal Disease (IBD) must be put in place. To help stop the disease from spreading, biosecurity measures like quarantining new birds, cleaning equipment, and limiting access to the farm should be strengthened.

Regular health monitoring and environmental checks should be conducted to detect early signs of illness. Reducing overcrowding and ensuring adequate space for the birds will help minimize stress and facilitate better air circulation, which is crucial for their health.

Sick and suspected birds should be immediately isolated to prevent further contamination. Strict hygiene practices, including regular cleaning and disinfection of the poultry house, feed, and water containers, must be maintained.

Providing training for farm workers on disease prevention, vaccination, and biosecurity is critical to ensuring proper farm management. Lastly, maintaining collaboration with local veterinary authorities for disease surveillance and timely intervention will be key to managing and controlling poultry diseases.

Declarations

Availability of Data and Materials

Upon reasonable request, the corresponding author will provide the datasets used in the current study.

Conflict of Interests

The authors have no conflict of interest.

Funding

There was no specific grant awarded to this case study by any public, private, or nonprofit funding organization.

ACKNOWLEDGMENT

The authors express their gratitude to the esteemed farm members for their hospitable demeanour throughout the investigation

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