

THE PATHOLOGY OF INFECTIOUS BURSAL DISEASE IN CROSSBREDS OF HARCO COCKS AND INDIGENOUS NIGERIAN HENS.

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An outbreak of infectious bursal disease (IBD) occurred in a flock of 11-week old crossbreeds of Harco cocks and indigenous Nigerian hens (referred to as exotic and locals respectively in the text). Clinical signs observed include depression, anorexia, ruffled feathers and diarrhoea. Haemorrhages were present in the bursa of Fabricius, muscles and proventriculus-gizzard junction, while the bursae and kidneys were enlarged. Oedema, lymphocytic depletion and presence of remnants of dead lymphocytes were observed in histopathological sections of the bursae and spleen. IBD viral antigen was detected by the agar gel precipitin test (AGPT) in suspensions of the bursae of dead birds. Sera obtained from survivors were also positive for IBD virus precipitins in the AGPT. These observations appear to be the first description of IBD in crossbreed chickens in Nigeria and confirm that they are susceptible to clinical IBD.

INTRODUCTION

Infectious bursal disease (IBD) which was first described in 1962 (1) was reported and confirmed in Nigeria in 1975 (2). Subsequent studies have shown that the dreaded disease of poultry results in varying mortalities of 50-100%. The disease has been known to affect very young chicks of 9 days old (3) and 16-20 weeks old birds (4,5). However, indigenous birds of less than 8 weeks are most predisposed to this disease (6). In Nigeria, however, the studies on IBD of chickens are mostly on exotic commercial chickens. Few studies have been done on the pathology of IBD in indigenous Nigerian chickens (7) despite the serologic evidences of IBDV infection in the birds as reported by various authors (6,8,9,10,11,12).

The exotics currently in use for commercial poultry production in Nigeria do not perform optimally under the prevailing tropical conditions as temperature, humidity and nutrition while the local chickens, which are well adapted, do not have the genetic endowment for high production performance as the exotics. Hence, the need for selective crossbreeding programme proposed for the development of the indigenous chicken population which is about 124million (9,13,14,15).

There has been no report on the status of IBD in crossbred chickens in Nigeria. In this paper, the pathology of a confirmed outbreak of IBD in a flock of crossbred chickens is presented.

MATERIALS AND METHODS

Flock History

The affected birds were 11-weeks old crossbreeds of Harco cocks and indigenous Nigerian hens. They were hatched and reared locally under a semi-intensive management system and were not

vaccinated against IBD.

Clinical Signs

The birds became sleepy with ruffled feathers. They were anorexic and had watery whitish faeces. Prostration was noticed before death and mortality was 16.7%.

Necropsy and Histopathological Changes

Dead birds were examined for gross pathological changes and the bursa of Fabricius, spleen and kidney were collected and fixed in 10% formalin for histopathology.

Virus Extraction

Unfixed bursae of dead birds were homogenized and 50% suspension prepared in phosphate buffered saline (PBS). These suspensions were tested for IBDV antigens using the agar gel precipitin test. (AGPT)

Serology

Blood collected by jugular venipuncture from the survivors was left lying sideways in universal bottles for about 4 hours to clot and allow for serum separation. Harvested sera were inactivated at 56°C for 30 minutes and tested for IBDV precipitin using AGPT.

Agar Gel Precipitin Test

The agar used was made of 1% purified agar, 8% NaCl and 0.01% sodium azide. The agar dishes were kept in a humid chamber at room temperature. For the detection of precipitin, the positive control was normal serum. In antigen identification, the positive control was a suspension of known infected bursa and the negative control was a normal bursal suspension.

RESULTS

Necropsy Findings

The bursae were swollen and highly haemorrhagic both on the serosal and mucosal surfaces. There were haemorrhages at the junction between the proventriculus and the gizzard. The spleen

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was mottled, while the kidneys were enlarged. The liver was yellowish and there were areas of ecchymotic haemorrhages on the pectoral and thigh muscles.

Histopathology

The bursa showed moderate interfollicular oedema and haemorrhage. The follicles were depleted of lymphocytes and contained remnants of dead lymphocytes (Fig. 1) There were similar lesions in the spleen (Fig 2.). Degeneration was seen in epithelial cells of the renal tubules and ducts, which also contained eosinophilic casts.

Virus Identification

The bursal suspensions examined for IBDV antigen in AGPT gave precipitin lines within 36 hours.

Serology

Eight of the ten serum samples assayed for IBDV precipitin gave positive result within 36 hours.



Fig. 1 Bursa showing moderate interfollicular oedema and hemorrhage with lymphoid depletion and necrosis.

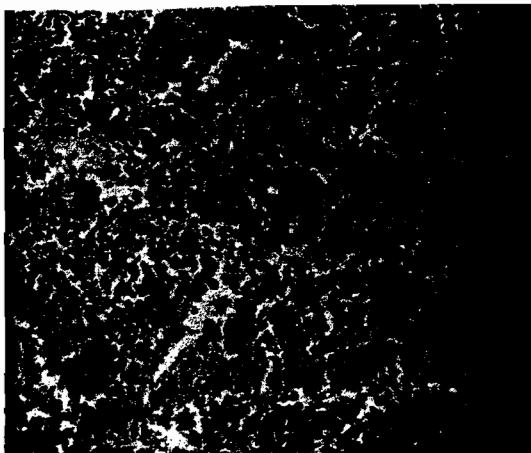


Fig 2. Spleen with marked lymphoid depletion and necrosis.

DISCUSSION

The Nigerian local chickens have been shown to be more resistant to diseases than the exotic ones (16,17) even though it has also been suggested that both locals and exotics are equally susceptible to IBD and could be infected by similar IBDV serotype (18). The necropsy findings and histopathology characterized in this case by classical haemorrhage and marked lymphoid depletion in the bursal follicles were more severe than those reported in the local chickens (7). These might be associated with the pathogenicity of the infecting IBDV strain, the virus dose and probably the contribution of the exotic component to the overall genetic make-up (in terms of resistance to diseases) of these crossbreeds. The mortality recorded is not too different from that observed with the Nigerian local chicken (7) but significantly lower than that of exotics (3,19).

Growth rate and organ weight studies of crossbreeds is advocated since earlier work (20) reported that higher resistance of the locals to diseases is due to earlier growth and higher organ weight of their bursae compared to that of the exotics. It has been noted also (7) that the earlier growth and higher organ weight of the bursa of the locals is likely to make them more susceptible to IBDV infection than the exotics because the bursa is the target organ of IBD. This implies that the bursae of the Harco/local crosses in this study were sufficiently large enough at 11 weeks to make them susceptible to IBDV infection.

The result of this study shows that the crossbreeds of Nigerian local hens and Harco cocks are susceptible to clinical IBD. It is very important that this should be noted if the popular campaign of enhancing the productivity of local chickens by crossing with the exotics is to succeed. Mass vaccination of such crossbreed stock should be encouraged.

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