



ISSN (E): 2277-7695
ISSN (P): 2349-8242
NAAS Rating: 5.23
TPI 2022; SP-11(11): 722-724
© 2022 TPI

www.thepharmajournal.com

Received: 18-08-2022

Accepted: 21-09-2022

Nayanjyoti Pathak
Department of Veterinary
Pathology, Lakhimpur College of
Veterinary Science (LCVSc), Assam
Agricultural University (AAU),
Joyhing, North Lakhimpur,
Assam, India

Biswajit Dutta
Department of Veterinary
Pathology, College of Veterinary
Science (CVSc), AAU,
Khanapara, Guwahati, Assam,
India

Purabi Deka
Department of Microbiology,
CVSc, AAU, Khanapara,
Guwahati, Assam, India

Sanjib Khargharia
Department of Pharmacology and
Toxicology, LCVSc, AAU,
Joyhing, North Lakhimpur,
Assam, India

Gautam Bordoloi
Department of Veterinary
Parasitology, LCVSc, AAU,
Joyhing, North Lakhimpur,
Assam, India

Mridu Pavan Baishya
Department of Surgery and
Radiology, LCVSc, AAU, Joyhing,
North Lakhimpur, Assam, India

Aditya Baruah
Department of Veterinary Public
Health, LCVSc, AAU, Joyhing,
North Lakhimpur, Assam, India

Prasanta Kr. Boro
Department of Veterinary
Medicine, LCVSc, AAU, Joyhing,
North Lakhimpur, Assam, India

Manoj Kumar Kalita
Department of ARGO, LCVSc,
AAU, Joyhing, North Lakhimpur,
Assam, India

Corresponding Author:
Nayanjyoti Pathak
Department of Veterinary
Pathology, Lakhimpur College of
Veterinary Science (LCVSc), Assam
Agricultural University (AAU),
Joyhing, North Lakhimpur,
Assam, India

Pathology of infectious bursal disease in Kamrupa variety of chicken

Nayanjyoti Pathak, Biswajit Dutta, Purabi Deka, Sanjib Khargharia, Gautam Bordoloi, Mridu Pavan Baishya, Aditya Baruah, Prasanta Kr. Boro and Manoj Kumar Kalita

Abstract

Infectious bursal disease is one of the most important immunosuppressive disease of fowl which is considered as the leading cause of economic losses in the poultry industry. Post-mortem examination of two numbers of 37 days old dual chicken variety Kamrupa bird was conducted in the Department of Veterinary Pathology, with clinical history of diarrhoea, anorexia, reluctance to move, drowsiness and death. Externally the carcasses showed soiled vent and dehydration. Internally haemorrhages were seen in the thigh muscle, bursa, spleen, mucosa of the proventriculus and its gland. The enlarged bursa and proventriculus also showed congestion. Microscopic examination of the bursa of Fabricius revealed focal eosinophilic necrotic areas along with interfollicular and intrafollicular haemorrhages and formation of cystic cavities.

Keywords: Infectious bursal disease, Kamrupa chicken, histopathology, Assam

Introduction

Poultry rearing is one of the most important sources of income in rural areas as well as in urban areas in the form of backyard rearing and intensive system of rearing, respectively. In all types of rearing system various setbacks faced by the farmers are mainly due to bacterial, viral and parasitic infections. As a result they are not getting their desired economic return. Among the various common viral diseases of poultry Infectious bursal disease (IBD) is one of the most important disease which is caused by infectious bursal disease virus (a non-enveloped double stranded RNA virus) belonging to family Birnaviridae (Jackwood *et al.*, 1984) [6]. For the poultry farmers, infectious bursal disease virus continues to be a major constraint in all the poultry producing areas of the world (Alkie and Rautenschlein, 2016) [1]. In IBD, bird shows impaired immune responses due to bursal depletion that occurs in the early life. Lymphoid tissues are mainly affected by the virus causing destruction of lymphoid cells within the bursa of Fabricius, spleen and caecal tonsils (Vegad and Katiyar, 2018) [12]. Therefore, the disease has great economic importance as it causes heavy mortality and severe prolonged immunosuppression in birds infected at an early age. Keeping in view the importance of the disease, a case report was prepared from naturally occurring IBD in Kamrupa fowl where clinical signs, gross and microscopic changes were recorded from two numbers of dead bird occurred in a farm of Lakhimpur district of Assam.

Material and Methods

Carcass of 2 numbers dual chicken variety Kamrupa aged 37 days were brought to the Department of Veterinary Pathology, Lakhimpur College of Veterinary Science, AAU, Joyhing, North Lakhimpur for post mortem examination with clinical history of anorexia, drowsiness, death etc. Necropsy was done immediately and all the visceral organs *viz.* lungs, heart, liver, kidney, spleen, intestine, proventriculus and bursa of Fabricius were thoroughly examined. Part of bursa where extensive haemorrhages were present was collected and preserved in 10% formalin solution. The tissue samples were processed routinely and this paraffin embedded tissues were cut at 5 μ thickness and stained with Haematoxylin and Eosin (Luna, 1968) [7].

Results and Discussions

The owner reported history of whitish diarrhoea, anorexia, reluctance to move, drowsiness and

death in the birds. Among the living birds in the flock also few showed similar types of clinical signs. These signs were in agreement with the earlier findings (Butcher and Miles, 2012; Rashid *et al.*, 2013; Bhutia *et al.*, 2017)^[3, 9, 2].

Post-mortem examination showed there were soiled vents and the carcasses were dehydrated. Haemorrhages were present in the thigh muscle, bursa and spleen (Fig 1). Vegad and Katiyar (2018)^[12] stated that in case of IBD haemorrhages of leg muscles are typical lesions. The bursa was enlarged, severely congested and swollen. On incision, haemorrhages in the bursal fold and presence of exudates could be seen (Fig 2). Similar type of lesions were also described by many workers (Dutta *et al.*, 2007; Sultana *et al.*, 2008; Bhutia *et al.*, 2017)^[4, 11, 2]. Spleen was enlarged and mottled. Petechial haemorrhages along with congestion was present on the mucosa of the proventriculus and its gland (Fig 3). The lesions observed in spleen and proventriculus were almost similar with the findings of Islam *et al.* (2004)^[5] and Dutta *et al.* (2007)^[4].

Histopathological observations from the bursa of Fabricius revealed focal eosinophilic necrotic areas in the bursal follicle (Fig 4). Interfollicular and intrafollicular haemorrhages were prominent. There was depletion of lymphocyte from the bursal follicles leading to formation of cystic cavities filled with necrotic debris, heterophils and haemorrhages (Fig 5). These lesions were in accordance with the observations of Lukert and Saif (1997)^[8], Samanta *et al.* (2008)^[10] and Bhutia *et al.* (2017)^[2].

On the basis of clinical signs, characteristics gross and microscopic lesions in the affected organs the case was diagnosed as Infectious bursal disease.



Fig 1: Haemorrhages in the spleen, thigh and bursa.



Fig 2: Haemorrhage in the bursa along with accumulation of exudates



Fig 3: Petechial haemorrhages along with congestion on the mucosa of the proventriculus and its gland.

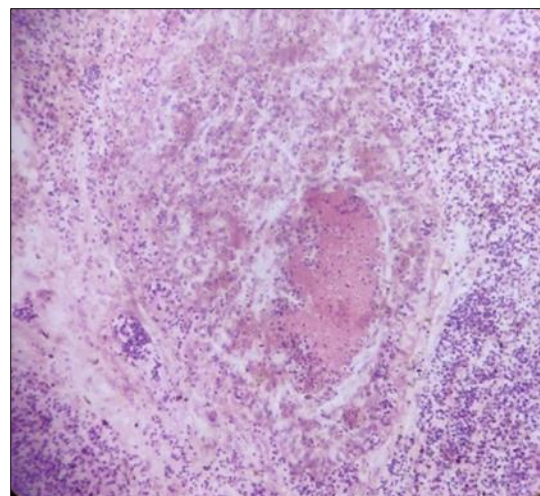


Fig 4: Bursa showing focal eosinophilic necrotic area in bursal follicle (H&E x400)

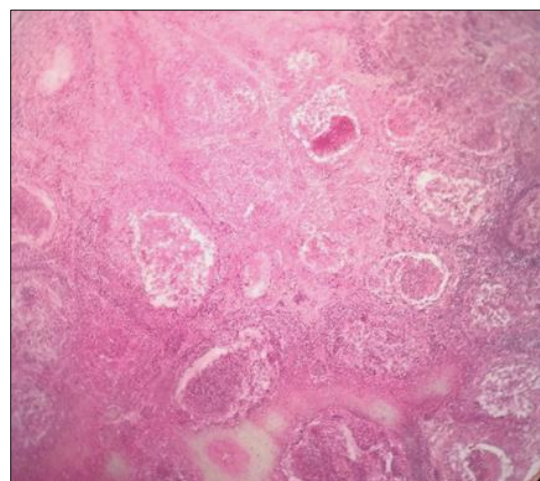


Fig 5: Bursal follicles showing intrafollicular haemorrhages and formation of cystic cavities (H&E x100)

Acknowledgement

Authors are thankful to the Associate Dean, Lakhimpur College of Veterinary Science, AAU for providing all the necessary facilities.

References

1. Alkie TN, Rautenschlein S. Infectious bursal disease virus in poultry: current status and future prospects. *Vet.*

- Med. Res. Rep. 2016;7:9-18.
2. Bhutia LD, Rajkhowa TK, Ravindran R, Arya RS, Roychoudhury P, Mandakini RK, *et al.* Infectious bursal disease (IBD) outbreak in poultry population of Mizoram, India. *Ind. J Vet. Pathol.* 2017;41(1):63-66.
 3. Butcher GD, Miles RD. Infectious Bursal Disease (Gumboro) in Commercial Broilers. Institute of Food and Agricultural Sciences, University of Florida, 2012. <http://edis.ifas.ufl.edu>.
 4. Dutta B, Santosh H, Saxena SC. Natural outbreaks of infectious bursal disease (IBD) in Vanaraja birds of Meghalaya. *Ind. J Vet. Pathol.* 2007;31(1):78-79.
 5. Islam MT, Samad MA. Clinico-pathological Studies on Natural and Experimental Infectious Bursal Disease in Broiler Chickens. *Bangl. J Vet. Med.* 2004;2:31-35.
 6. Jackwood DJ, Saif YM, Hughes JH. Nucleic acid and Structural Proteins of Infectious bursal disease virus isolates belonging to serotypes I and II. *Avian Dis.* 1984;28:990-1006.
 7. Luna LG. Manual of histologic staining methods of the armed forces institute of pathology. Edn 3, McGraw Hill, New York, 1968, 1-258.
 8. Lukert PD, Saif YM. Infectious bursal disease. In: *Diseases of Poultry*, Calnek BW, Barnes HJ, Beard, McDougald, LR, Saif YM. Edn 10, Iowa State University Press, Ames, Iowa, 1997, 721-738.
 9. Rashid MH, Xue C, Islam MT, Islam MR, She Z, Cao Y. Comparative epidemiological study of infectious bursal disease of commercial broiler birds in Bangladesh and China. *Pak. Vet. J.* 2013;33:160-164.
 10. Samanta A, Niyogi D, Ghosh HK, Ghosh CK, Mukhopadhyay SK. Histopathological changes in bursa of broiler birds inoculated with IBD intermediate plus vaccine virus and virulent field IBD virus. *Ind. J Vet. Pathol.* 2008;32:70-72.
 11. Sultana R, Hussain SY, Ilyas CS, Maqbool A, Anjum R, Zaidi FH. Epidemiology of Infectious Bursal Disease in Broiler and Layer Flocks in Lahore, Pakistan. *Punjab Univ. J Zool.* 2008;23:67-72.
 12. Vegad JL, Katiyar AK. Infectious bursal disease (Gumboro disease). In: *A textbook of veterinary special pathology*. Edn 1 (4th reprint), CBS Publishers & Distributors Pvt. Ltd., New Delhi, 2018, 129-133.