



PREVALENCE OF INFECTIOUS BURSAL DISEASE IN BROILER IN DISTRICT PESHAWAR

Raj Wali Khan, Farhan Anwar Khan, Kamran Farid, Izhar Khan and Muhammad Tariq

Veterinary Research Institute, N.W.F.P, Peshawar

E-Mail: farhananwar32@hotmail.com

ABSTRACT

Fifty broiler farms of district Peshawar suspected for infectious bursal disease (IBD) were studied during the period of 25th September to 20th October 2007. On the basis of history and detailed postmortem pathological lesions, the prevalence of IBD in district Peshawar was 7.75% and was highest in town 3 of Peshawar district (8.085%). The mortality and morbidity rates were found to be 6.38% and 1.35%, respectively. In district Peshawar the highest mortality rate was recorded in town 1 of district Peshawar with 7.037% and morbidity was highest in town 2 with 1.847%. The major macroscopic lesions observed in this study were hemorrhages on thigh and breast muscles, kidneys were found swollen and principal lesions were in the bursa of fabricious which appeared inflamed, edematous, hyperemic and finally hemorrhagic and atrophied. Four weeks old broilers were highly susceptible to IBD (38%) followed by 3rd week (28%) and 5th week (28%) and no clinical case was found positive for IBD in first two weeks of age.

Keywords: chicken, broiler, bursal disease, peshawar.

INTRODUCTION

Infectious bursal disease (IBD) was first described as a specific new disease by Cosgrove in 1962 in the town of Gumboro, Delaware, USA. Variant IBD virus (IBDV) strains were first reported in the USA in 1986/87. Hyper or very virulent IBDV strains were first reported in Belgium and Netherlands in 1987. Currently IBDV has a worldwide distribution, occurring in all major poultry producing areas (Dr Sjaak Wit and William Baxendale, 2004). Chicken is the only host known to develop clinical disease and distinct lesions following exposure to IBDV. The most likely route of infection is oral ingestion of contaminated feces or other contaminated organic material.

Gumboro, AIDS like disease, is one of the highly infectious diseases of poultry, especially broiler, causing 20 percent mortality per annum by destroying immune system despite vaccination in Pakistan. The outbreaks of infectious bursal disease occurred both in private and government poultry farms. The past year had seen an increase incidence and severity of clinical gumboro in Pakistan and the problem was particularly high in the commercial egg industries than in broiler flocks. The IBD problem in Pakistan begun in the north, in Islamabad region, but now it is more severe in the Karachi, IBD outbreaks noted in both vaccinated and non vaccinated flocks at Karachi (Bhatti, 1994). Despite the fact that no systemic work has been done on the incidence and prevalence of infectious bursal disease, IBD did not receive adequate attention in Pakistan in general and in N.W.F.P in particular.

MATERIALS AND METHODS

The clinical and postmortem examinations were carried out for diagnosis of infectious bursal disease at Veterinary Research Institute (Poultry Postmortem Room) Peshawar. Died birds brought by the farmer for diagnosis were examined. Fifty cases of gumboro were diagnosed

between 25th September and 15th November, 2007. The study was restricted only to broiler farms.

Clinical examination

a. History

Previous and present history of farms was taken from each farmer. The following data was collected from the farmers:

Name of farmer, name of area, total number of birds in farm, daily mortality and total mortality.

b. General examination

The preliminary general examination was carried out to observe any obvious abnormality, general condition of the chicken, condition of vent, feathers and diarrhea.

Postmortem examination

It was conducted with the help of rubber gloves, a pair of shears, scissor, knife, scalpel and forceps.

Technique

To expose the internal organs, the bird was laid on its back and each leg, in turn drawn outward away from the body while the skin was incised between the leg and abdomen on each side. Both legs were then grasped firmly in the area of the femur and bent forward, downward, and outward, until the heads of both femurs were broken free of the acetabular attachment so that both legs lied flat on the table. The skin was cut between the two previous incisions at a point midway between keel and vent. The cut edge was then forcibly reflected forward, cutting was necessary, until the entire ventral aspect of the body including the neck, was exposed. For exposing of the viscera, knife was used to cut through the abdominal wall transversely midway between the keel and vent, then through the breast muscle on each side. Positioning shears were used to cut first the rib cage, the coracoid and clavicle on both sides. With some care this was done



without severing the large blood vessels. Thorough examination of the organs was done. The bursa of fabricious was located by opening the cloaca, laid on its distal side.

RESULTS

The suspected chickens of infectious bursal disease (IBD) were subjected to postmortem examinations; the gross lesions were noted on different parts of body, especially on bursa of fabricious for confirmation of IBD.

The gross pathological lesions were present on the following body parts. Carcass was dehydrated and darkened in colour. Haemorrhages were present on the pectoral, leg and thigh muscles, kidneys were swollen. The principal lesions were found in the bursa of fabricious, it was swollen (inflamed); appeared edematous and hyperemic and has a gelatinous yellowish transudate. Heamorrhages and areas of necrosis were present in more severe cases. In prolonged cases the bursa of fabricious were atrophied as compared to hemorrhagic and normal bursa of fabricious.

According to the research work conducted in district Peshawar, the total no of birds in 50 different

poultry farms were 114,300. The total prevalence, mortality and morbidity of IBD were 7.75%, 6.38% and 1.35 %, respectively (Table-1, Figures 1 and 2).

The most susceptible age for IBD was concluded to be 4th week, because the study conducted on 50 different poultry farms showed that 19 farms out 50 were affected in 4th week of age while 14 farms were found affected both in 3rd and 5th weeks of age, with percentage of 38%, 28% and 28%, respectively. While no case was found in first 2 weeks of age, and in 6th week of age only 2 farms were affected and just one flock affected in 7th week of age (Figure-3).

District Peshawar is divided into four towns (tehsils) and 92 Union Councils. During this research work, the prevalence of IBD was evaluated in 50 different poultry farms of district Peshawar. Out of total 50 broiler farms 5, 15, 17 and 13 broiler farms were examined in Town 1, 2, 3 and 4, respectively (Figure-4).

The highest prevalence was found in town 3 with 8.085%, while mortality was highest in town 1 with 7.037% and morbidity was highest in town 2 with 1.847 %.

Table-1. Total birds wise distribution of infectious bursal disease in district Peshawar.

Variable	No. of observations	Minimum	Maximum	Mean	Total
Total birds	50	550	6000	2286.00	114300
Age/days	50	15	45	25	1278
Total mortality	50	04	450	145.960	7298
Daily mortality	50	01	95	11.540	577
Morbidity	50	0	100	30.92	1546
Prevalence	50	15	550	177.08	8854

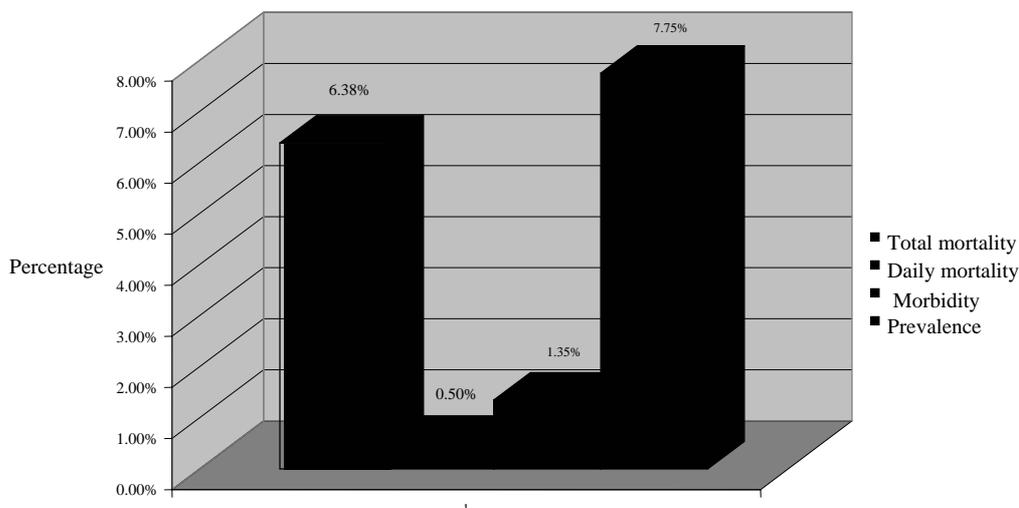


Figure-1. Percentage wise distribution of infectious bursal disease in district Peshawar.

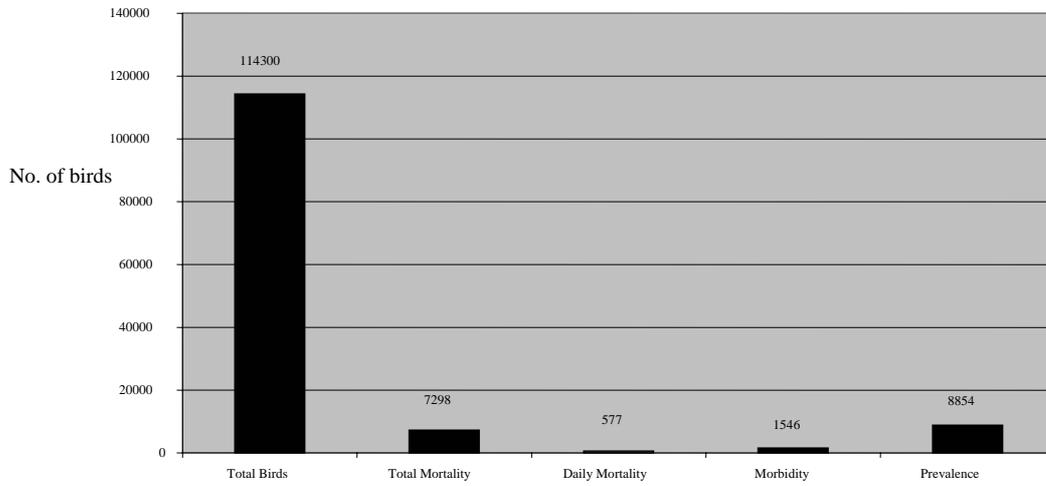


Figure-2. Total birds wise distribution of infectious bursal disease in district Peshawar.

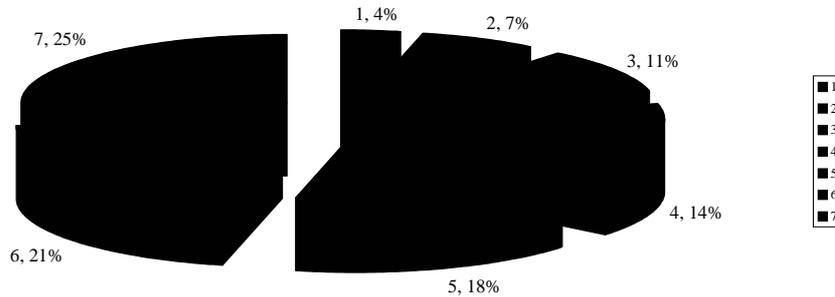


Figure-3. Age wise distribution of infectious bursal disease in district Peshawar.

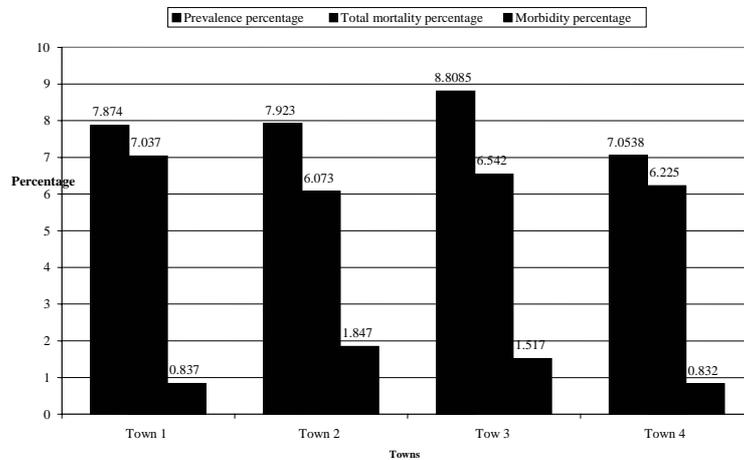


Figure-4. Percentage wise distribution of disease in four towns of district Peshawar.



DISCUSSIONS

The present study was conducted for the provision of reliable information regarding the actual status of prevalence, mortality, morbidity and pathological changes of infectious bursal disease (IBD) in broilers in district Peshawar. The diagnostic competence depends upon various factors such as, laboratory methods of diagnosis and their accuracy, budget requirement to support diagnostic facilities and their availability, professional approach of laboratory staff to problems, and procedures adopted to achieve an accurate diagnosis.

In this study diagnosis of IBD was made on the basis of farm history and gross pathological lesions as had been diagnosed by Sharoon, (2002). Laboratory procedures may be used to substantiate the diagnosis.

Rajaonarison *et al.*, (2006); Nickolov, (2005); Okoyo and Dzonkwu, (2005); Paul, (2004) and Richard and Miles, (2004) examined that at necropsy the gross pathological lesions were dehydration and changes in the bursa of fabricious, skeletal, muscles, liver and kidneys. All affected birds had bursal changes characterized by swelling, changes in shape (oblong), colour (pink, yellow, red, black) and the formation of a gelatinous film around the bursa. Within a few days the bursa shrinks to half its normal size or smaller. In this study the gross pathological lesions observed on necropsy examination were dehydrated and darkened carcass, hemorrhages were present on pectoral, leg and thigh muscles. The kidneys were swollen. The principal lesion found on the bursa of fabricious.

Rajaonarison *et al.*, (2006) reported that IBD affected birds were 3 to 5 weeks old, the mortality rate ranged from 5.70-27.4%. In the present study the affected birds were 4 weeks old conclusively.

Wyeth *et al.*, (2003) carried out studies on IBDV in great britain and examined that IBDV can infect some chicks as young as 15 days old. In recent study no chick was found affected upto 14 days and thus two farms out of total 50 were affected at 15 days of age.

Richard and Miles, (2004); Butcher, (2003); Savova and Liupkel, (2002) and Chettle *et al.*, (1999) examined that sub-clinical form of IBD or immunosuppression in chickens took placed in less than 3 weeks of age. We examined no sub-clinical form in two weeks old broilers.

Sanchez *et al.*, (2005) determined the outbreak of acute clinical IBD in broiler chicken farms in Denmark. The analysis was performed using data from all broiler farms located in the jutland peninsula and the island of funen (168 municipalities). The moran's Index 1, K-functions and scan statistics were used to describe the dynamics of the epidemic and a total 43 farms were used for research purpose infected with IBD. The present study was conducted in district Peshawar in 4 towns (Tehsils). Fifty (50) different broiler farms infected with IBD was selected for research purpose. Two software programs were used for analysis of data (1) Mstatc C computer programme and (2) SPSS (Statistical Package for Social Sciences).

REFERENCES

- Akhtar S., S. Zahid and A. Hussain. 2006. Relative susceptibility of six broiler chicken strain to infectious bursal disease (Gumboro disease) during an epidemic. Pakistan. Vet. J. 12: 18-20.
- Bhatti B.M. 1994. AIDS-Like disease Killing poultry population (Gumboro disease). Director, Poultry Research Institute, Islamabad, Personal Communication.
- Butcher. 2003. Pathogenesis of IBD in commercial broiler flocks. IFAS, Florida, 32611.
- Chaudhry H.N. 2007. Study on Pakistan Gumboro virus and its protection by vaccination with S-706 vaccine. Poultry specialist, Lahore, Personal Communication.
- Chaudhry S.M. 1984. Introduction to Statistical Theory. Part 1, pp. 20-26.
- Chettle N., J.C. Stuart and P.J. Wyeth. 1999. Outbreak of virulent infectious bursal disease in East Anglia. Vet. Rec. 125: 271-272.
- Dr J J (Sjaak) de Wit and William Baxendale. 2004. The infectious bursal disease. Website www.gumboro.com.© Intervet 2004.
- Gary D. Butcher, Richard D and Miles. 2003. Poultry Nutritionist, Cooperative Extension Service, Institute of Food and Agricultural Sciences, University of Florida, Gainesville-32612.
- Ignjatovic J. Sapats, S. Reece, R. Gould, A. Gould, G. Selleck, P. Lowther, S. Boyle, D and Westbury, H. 2004. Virus strains from a flock exhibiting unusually high mortality due to infectious bursal disease. Aust Vet. J. 82(12): 763-768.
- Okoyo J.O. and Uzoukwu M. 2005. An outbreak of infectious bursal disease among chickens between 16 and 20 weeks old. Avian Dis. 25(4):1034-1038.
- Paul McMullin. 2004. Infectious Bursal Disease- A Pocket guide to poultry health and disease. 34(1): 200-212.
- Rajaonarison J.J. Rakotonindrina, S M. Rakotondramary, E.K. and Razafimanjary. S. 2006. Gumboro disease (infectious bursitis) in Madagascar. Rev Elev Med Vet Pays Trop. 47(1): 15-17.
- Richard and Miles. 2004. Department of Dairy and Poultry Science, Cooperative Extension Service, IFAS, University of Florida, Gainesville-32616.
- Sanchez J. Stryhn, H. Flensburg, M. Ersbøll, A.K. and Dohoo, I. 2005. Analysis of the 1999 outbreak of acute clinical infectious bursal disease in broiler flocks in Denmark. Prev Vet Med. 71(3-4): 209-23.



www.arpnjournals.com

Savova M. and V. Liupke. 2002. Asymptomatic course of Infectious bursitis in chicks. *Vet Med Nauki*. 21(10): 95-101.

Sharon Whitmarsh. 2002. Infectious bursal disease. URL: www.msstate.edu/dept/poultry/disviral.htm.

Thrusfield Michael. 1986. *Veterinary Epidemiology; Prevalence*. pp. 31-40.

Woodger J. 2000. Dual approach to beat acute strain of Gumboro disease. *World Poultry*. April 26-27.

Wyeth P.J., N.J. Chettle and A.R. Mohepat. 2003. Infectious bursal disease in Great Britain. *Vet. Rec.* 130: 30-32.