



RESEARCH ARTICLE

Status of infectious bursal disease in broilers

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Özet

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Amaç: Bu çalışma, Bangladeş Nilphamari'de infeksiyöz bursal hastalığı (IBD)'nin sebep olduğu prevalans, mortalite, morbidite ve makroskopik patolojik değişikliklerin oranını belirlemek amacıyla yapıldı.

Gereç ve Yöntem: Nilphamari Bölgesinde IBD yönünden şüpheli 50 broyler çiftliği belirlendi. Çalışma 9 Mayıs - 17 Haziran 2010 tarihleri arasında yapıldı. Çalışmada rastlanan en önemli patolojik lezyonlar; bacak ve göğüs kaslarında kanamalar, böbreklerde şişkinlik, Bursa fabriciinin yangılı, ödematöz, hiperemik, kanamalı ve atrofik durumları idi.

Bulgular: Toplam prevalans, mortalite ve morbidite oranları sırası ile %8.42, %6.38 ve %1.37 olarak belirlendi. Dört haftalık broylerlerin IBD'ye oldukça (%44) duyarlı oldukları, 3 (%26) ve 5 (%24) haftalıkların ise daha az duyarlılık gösterdikleri tespit edildi. Yaşları iki haftaya kadar olanlarda klinik IBD'ye yönelik hiç bir bulguya rastlanmadı.

Öneri: Bu çalışmanın, IBD'nin Bangladeş'te Nilphamari Bölgesindeki mevcudiyetine ve seyrine araştırmacıların dikkatini çekeceği ve hastalığın bölgedeki formuna ışık tutacağı düşünülmektedir.

Abstract

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Aim: The present study was conducted to determine prevalence, mortality, morbidity and pathological changes of infectious bursal disease (IBD) in broilers in Nilphamari district of Bangladesh.

Materials and Methods: Fifty broiler farms of Nilphamari district were suspected for IBD. Study was carried out during the period of May 9 to June 17, 2010. The major macroscopic pathological 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.

Results: Total prevalence, mortality and morbidity rates were 8.42, 6.38% and 1.37%, respectively. Four weeks old broilers were highly susceptible to IBD (44%) followed by 3rd week (26%) and 5th week (24%) and no clinical case was found positive for IBD in first two weeks of age.

Conclusion: This study will stimulate our interest and throw new light on the level of disease episodes prevailing at present in the Nilphamari district of Bangladesh.

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► Introduction

Poultry industry in Bangladesh has made significant progress during the last two decades and still it is considered as a growing industry. However, the major problem in the development of poultry industry in Bangladesh is the diseases (Karim 2003, Uddin et al 2010), which causes high morbidity and mortality (Samad and Chakraborty 1993, Bhattacharjee et al 1996, Talha et al 2001) but recently outbreaks of infectious bursal disease (IBD) has been recognized as a major constraint in the development of broiler and layer industry in Bangladesh (Chowdhury et al 1996, Rahman et al 1996). Gumboro is one of the highly infectious diseases of poultry, especially broiler, causing 20 percent mortality per annum by destroying immune system despite vaccination in Bangladesh (Saleque et al 2003). The outbreaks of IBD occurred both in private and government poultry farms. The past years had seen an increase incidence and severity of clinical gumboro in Bangladesh and the problem was particularly high in the commercial egg industries than in broiler flocks. The IBD problem in Bangladesh begun in the north Bengal, but now it is more severe in all over the country, IBD outbreaks noted in both vaccinated and non vaccinated flocks of cockerels at Gazipur (Islam and Samad 2003).

The aim of this research was to determine the incidence and prevalence of IBD in Bangladesh, especially in Nilphamari region.

► Materials and Methods

The clinical and postmortem examinations were carried out for diagnosis of IBD at Upazilla Veterinary Hospital Nilphamari. Dead birds were brought to the hospital by the farmer for examined and diagnosis. Fifty cases of gumboro were diagnosed from May 9 to June 17, 2010. This study was restricted only to broiler farms. Previous and present history of farms was taken from each farmer with the help of a pre-structured questionnaire. 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, age etc.

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

All the suspected chickens of IBD were subjected to postmortem examinations for confirmation of infection.

• Postmortem examinations technique

To expose the internal organs, the bird was subjected to lie down 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 examination of the organs was done. The bursa of fabricious was located by opening the cloaca, laid on its distal side. The gross pathological lesions were noted on different parts of body, especially on bursa of fabricious for confirmation of IBD.

► Results

The gross pathological lesions were present on the following body parts. Carcass was dehydrated and darkened in colour. Hemorrhages 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. Hemorrhages' 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.

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

Variable	No of observations	Minimum	Maximum	Total
Total Birds	50	550	6000	115200
Age/days	50	15	45	1278
Total mortality	50	04	450	7344
Daily mortality	50	01	95	577
Morbidity	50	0	100	1580
Prevalence	50	15	550	9709

The total numbers of birds at Nilphamari district in 50 different poultry farms were 115200. The overall prevalence, mortality and morbidity were 8.42, 6.38 and 1.37%, respectively (Table 1, Figure 1). The most susceptible age for IBD was concluded to be 4th week, because the study conducted on 50 different poultry farms showed that 22 farms out of 50 were affected in 4th week of age while 13 and 12 farms were found affected both in 3rd and 5th weeks of age, with percentage of 44, 26 and 24%, 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. District Nilphamari has 6 Upazilla but this study was conducted into four Upazilla and 25 Union Councils. During this study, the prevalence of IBD was evaluated in 50 different broiler farms of Nilphamari district. Out of 50 broiler farms 5, 15,

18 and 12 broiler farms were examined in Kishoregonj, Nilphamari Sadar, Syedpur and Domar, respectively (Figure 2). The highest prevalence was found in Syedpur with 9.085%, while mortality was highest in Kishoregonj with 7.032% and morbidity was highest in Nilphamari Sadar with 1.846%.

Two software programs were used for analysis of data (1) MS Excel computer programme and (2) SPSS (Statistical Package for Social Sciences).

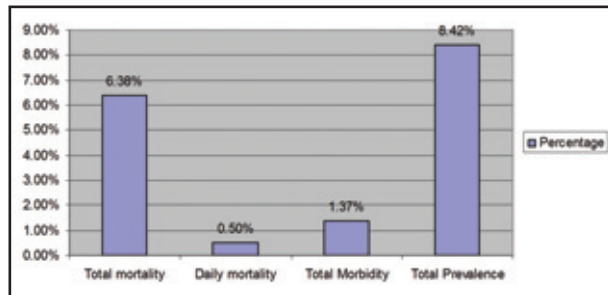


Figure 1. Percentage wise distribution of infectious bursal disease in district Nilphamari.

► Discussion

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 Nilphamari. 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.

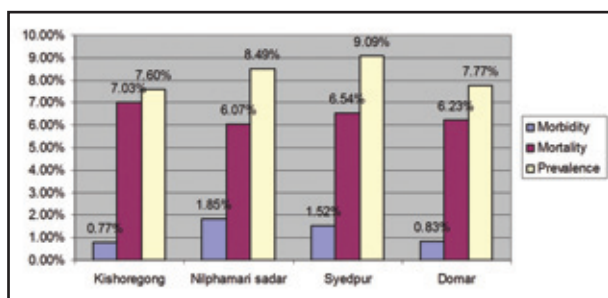


Figure 2. Percentage wise distribution of disease in four Upazillas of district Nilphamari.

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), Okoyo and Uzonkwu (2005) and Paul (2004) examined that at necropsy the gross pathological lesions were dehydration and changes in the bursa of fabricius, 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 fabricius.

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 up to 14 days and thus two farms out of total 50 were affected at 15 days of age. Savova and Liupkel (2002) and Chettle et al (1999) examined that sub-clinical form of IBD or immunosuppression in chickens took place in less than 3 weeks of age. We examined no sub-clinical form in two weeks old broilers.

The present study was conducted in district Nilphamari in 4 Upazilla. Fifty (50) different broiler farms infected with IBD was selected for research purpose. In this study, the highest prevalence was 9.085% in Syedpur Upazilla within the study period. This result was near to similar of Hossain et al (2009) who reported 10.05% in their study and considered IBD is the second most important poultry disease at Dinajpur, which is also the neighbour district of Nilphamari. Uddin et al (2010), Islam et al (2009), Islam et al (2003) and Bhattacharjee et al (1996) reported 24.96%, 21.9%, 24.26% and 10.99% cases of IBD respectively in their study. Variation between present and past study may be due to vaccination failure or no use of vaccine, geographical distributions, farming system and management practices. The highest mortality was observed 7.032% in Kishoregonj Upazilla. Islam and Samad (2003) reported 39.38% mortality in vaccinated and 29.20% in unvaccinated cockerel's farms due to IBD in their study. They suggest that this could be due to lack of maternal antibodies in the unvaccinated flocks and failure of vaccine.

► Conclusions

Although pattern of disease distribution, are missing from this study, however this study will stimulate our interest and throw new light on the level of disease episodes prevailing at present. Therefore, it is expected that the present work may be of great value to create awareness among the farmers and related quarters to direct preventive measures to make poultry farming success and sustainable.

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