

EPIDEMIOLOGY OF INFECTIOUS BURSAL DISEASE IN BROILER AND LAYER FLOCKS IN AND AROUND LAHORE, PAKISTAN

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Abstract: Infectious bursal disease is one of the most important health hazards being faces by the Poultry industry of Pakistan. The study was designed to record the prevalence of bursal disease in broiler and layer flock in and around Lahore District of Pakistan during the one year period. A total of 365 broiler flocks, 64 broiler flocks were affected with Infectious bursal Disease. The prevalence of disease was found to be 17.53% in broiler flocks. Out of 246 layer flocks 32 layer flocks were affected Infectious bursal Disease. The % prevalence of disease was found to be 13.00 % in layer flocks the disease was recorded throughout the year; however, the occurrence was more in winter season followed by rainy, summer and spring seasons. The susceptibility of the birds was the highest during the age of 3 to 4 weeks in both broilers (18.8%) and layers (20%) after which decrease was noticed. During present study the necropsy findings indicated hemorrhages on bursa (20.05%), thigh (18.85%) breast muscles (11%), bursal hypertrophy (61%), nephritis (89%) and necrotic liver (4.1%).

Key words: Prevalence, infectious bursal disease, organ pathology, poultry,

INTRODUCTION

Poultry industry has made remarkable progress in Pakistan during the last few decades from a back yard venture to a considerable sophisticated commercial industry. However, high incidence of poultry diseases has been one of the most important factors confronting the

expansion of this enterprise (Qureshi, 1981). Inadequate measures adopted by the stake holders for the control of diseases in addition to certain management problem have rendered the poultry farming risky business. Infectious bursal disease (IBD) is a highly contagious viral disease of the growing chicken and is characterized by sudden onset, short course, extensive destruction of lymphocytes in the bursa of fabricius, severe depression, trembling, in coordination, prostration, whitish watery or mucoid diarrhea death or recovery (Lukert and Saif, 1991, Anjum, 1997). It is caused by a virus that is a member of the genus *Avibirna* and family Birnaviridae. Although turkeys, ducks, guinea fowl and ostriches may be infected, clinical disease occurs solely in chickens. Only young birds are clinically affected. Severe acute disease of 3–6-week-old birds is associated with high mortality, but a less acute or subclinical disease is common in 0–3-week-old birds. This can cause secondary problems due to the effect of the virus on the bursa of Fabricius. IBD virus (IBDV) causes lymphoid depletion of the bursa, and if this occurs in the first 2 weeks of life, significant depression of the humoral antibody response may result. Clinical disease due to infection with the IBDV, also known as Gumboro disease, can usually be diagnosed by a combination of characteristic signs and post-mortem lesions. Laboratory confirmation of disease, or detection of subclinical infection, can be carried out by demonstration of a humoral immune response in unvaccinated chickens or by detecting the presence of viral antigen or viral genome in tissues (OIE Terrestrial Manual, 2008).

The disease is most prevalent in all major poultry producing areas of the world (Winter field, 1969). The incubation period of IBD is very short (Lukert and Saif, 1991) which is also evident from the fact that once disease emerged in a flock, it effects majority within 24 to 48 hours. Resistance of the causative birna virus to various environmental factors might be one of the reason of short incubation period (Benton *et al.*, 1967). The present study reports the current status of infectious bursal disease in broiler and layer flocks in district Lahore, Pakistan.

MATERIALS AND METHODS

The study was conducted at Poultry Disease Diagnostic Laboratory O/O the Deputy District Officer Livestock Poultry Production, 16 Cooper

Road Lahore. For this purpose, samples were collected from following sources.

1. Commercial broiler and Layer farms.
2. Birds received in lab for disease diagnosis.

Detailed history of the flock regarding No. of birds, age, capacity of farm, management, vaccination schedule, feed & medicine used was obtained from affected flocks. Mortality and morbidity rate were also recorded. Postmortem of the sick / dead birds were conducted and gross pathological lesions were recorded. The data was statistically analyzed to calculate the percentage prevalence of the disease.

RESULTS AND DISCUSSION

The results of the present study showing prevalence of IBD in broiler and layer flocks are presented in Table I,II respectively. The results revealed that out of 353 broiler flocks, 63 broiler flocks were affected with infectious bursal disease. The prevalence of this disease was found to be 17.84% in broiler flocks (Table I) and 13.45% in Layer flocks (Table II). The highest prevalence 17.84% was found in broiler as compare to layer (13.45%). Though the disease was recorded throughout the year, however the occurrence was more in winter season followed by rainy, summer and spring seasons. Similar findings have been reported by (Grieve and Khan 1991). They reported high occurrence of disease during winter months compared to summer months. It may be due to adoption of inadequate biosecurity measures. including the in-adequate and improve disinfection of poultry sheds due to harsh cold conditions during winter season and keeping of shed air tight so as to maintain temperature as most of the farms are not environmentally controlled. This could result in aerosol generation of IBDV due to close contact there by leading to maintenance of large amount of the virus at the farm region. In our study, average mortality rate was observed to be 4.98% with average morbidity 20.22% in broilers and 4.72% mortality with average morbidity 17.34%. The results of the study indicating 4.98 % mortality in broilers and 4.72% mortality in layers not agree with those of Braunws and Wit (1990) who reported 9.26% mortality

in poultry flocks due to Gumboro disease. Chettele *et al.* (1989) have stated that mortality due to IBD infection may vary with IBD virus strain.

During present study, it was observed that susceptibility was the highest during the age of 3-4 weeks in both broilers (18.8%) and layers (20%) after which susceptibility decreases. After 5 weeks onward there was a reduction in the incidence of the disease similar findings were reporting by Cosgrove (1962), Singh 1985 and Yunus *et al.* (2008). They reported that period of the greatest susceptibility to IBD between 3 and 6 weeks of age in chicken.

The occurrence of the disease in older birds may be correlated well with maternal antibody titers and vaccination status of birds. Sufficient maternal antibodies may protect birds from disease for first two weeks. If birds receive appropriate vaccination during this period, chances of outbreak during growing period would be reduced. However, improper vaccination would make birds susceptible to IBD at a later stage.

During present study the necropsy findings indicated hemorrhages on bursa (20.05%), thigh (18.85%) breast muscles (11%), bursal hypertrophy (61%), nephritis (89%) and necrotic liver (4.1%). Similar necropsy findings have been reported by Okeys and Uzoulwn (1985).

Table I: Prevalence of Infectious bursal disease in Broiler flocks in and around Lahore

Seasons	No. of Broiler flock	Positive case	%age Prevalence
Summer (May-July)	89	16	17.97
Autumn (Aug.- Oct.)	90	17	18.88
Winter (Nov.-Jan.)	98	20	20.40
Spring (Feb.-April)	88	11	12.50
Total	365	64	17.53

Table II: Prevalence of Infectious bursal disease in Layer flocks in and around Lahore.

Seasons	No. of layer flock	Positive case	Prevalence (%)
Summer (May-July)	58	8	13.79
Autumn (Aug.- Oct.)	59	6	10.16
Winter (Nov.-Jan.)	67	13	19.40
Spring (Feb.-April)	62	5	8.06
Total	246	32	13.00

Thus, it can be concluded from this study that infectious bursal disease is prevalent throughout the year both in unvaccinated as well as vaccinated flocks resulting in huge economic losses to the farmers. Factors like improper vaccination, poor biosecurity measures and existence of virulent strains of IBD virus could be the reasons for disease in the vaccinated flocks.

Recommendations

There is a need to educate farmer to adopt strict biosecurity measures and vaccinate their poultry flocks regularly and properly against this disease to minimize the losses. Further, regular surveillance and characterization of field strains would help in chalking out and re-evaluating control strategies from time to time.

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