



Prevalence of poultry diseases at Kaligonj Upazilla, Jhenidah

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ABSTRACT

The study was undertaken to determine the prevalence of diseases in commercial chickens in Kaligonj upazilla, Jhenidah region of Bangladesh. A total of 755 poultry birds (layers, broilers and cockrels) either dead or live were brought for diagnosis of diseases at Kaligonj Upazilla Veterinary Hospital. The diseases were diagnosed on the basis of history, clinical signs and post-mortem findings. Among the infectious and non-infectious diseases of commercial chickens at Kaligonj upazilla the prevalence of Newcastle Disease (ND) was higher (25.83%) followed by Infectious Bursal Disease (IBD) (23.18%), Salmonellosis (11.52%), Mycoplasmosis (9.67%), Coccidiosis (8.34%), ND plus IBD (6.23%), Colibacillosis (4.37), IBD plus Coccidiosis (3.84%), Fowl pox (3.58%), Aspergillosis (1.99%), Nutritional deficiency (1.45%). Diseases prevalence was recorded as 45.03% among the age group of 21-35 days followed by 36-60 days age group (21.98%), 8-20 days age group (20.61%), 61days above age group (8.21%) and 0-7 days age group (3.57%). The distribution and proportionate occurrence of diseases in chicken of Kaligonj upazilla, Jhenidah indicated that the diseases frequently occurred in summer season (41.06%) followed by winter (32.05%) and rainy season (26.89%).

Introduction

Poultry industry in Bangladesh plays a vital role in the rural socio-economic system by contributing significantly on economic growth and simultaneously creating numerous employment opportunities. Chicken meat is also relatively cheap and affordable source of animal protein. According to WHO-FAO (2013) joint survey, meat consumption per head in Bangladesh is 15.23kg per year and poultry contributes 35.25% of total meat supply. Traditionally in Bangladesh, poultry rearing is one of the most important sources of income for rural women especially for landless and marginal farmers (Paul *et al.*, 1990). From last few years commercial poultry farming has been developing very rapidly but several factors reduce the growth rate of this sector and raise mortality of chickens. It is well known that poultry diseases are the major constraints for developing the poultry industry (Karim *et al.*, 2003). On an average 30% poultry birds die annually in Bangladesh due to outbreak of several diseases (Ahmed *et al.*, 1992; Ali *et al.*, 1994). Diseases in broiler significantly affect the productivity and health status and many of them also have public health importance (Haider *et al.*, 2009).

The prevalence of diseases in a particular area depends on several factors like geographical condition, management practices by the farmer,

immunization status of the farm, quality of the chicks, bio-security status of farm and hatcheries etc. Age of the chicken and weather of a particular area are also important factors which are related to the disease prevalence (Yunus *et al.*, 2009). Poultry industry is not so developed in this region compared to other poultry rich zones of Bangladesh like Kishoregonj, Narsindi, Gazipur, Comilla etc. However, it is developing very quickly in this region now-a-days based on demands. The results of the current study will provide an overall scenario of disease prevalence in commercial chickens at Kaligonj region of Bangladesh. The findings may assist researchers or poultry consultants to design and implement priority based research on specific disease and to take efficient control strategies against the diseases. Therefore, the present study was conducted at Kaligonj upazila with a view to determine the prevalence of diseases in commercial chickens and to determine the age related disease prevalence and seasonal influence on disease in commercial chickens at the study area.

Materials and methods

Study area and period

The study was conducted in commercial chickens at Kaligonj Upazilla, Jhenidah district of Bangladesh during the period from December 2020 to February 2021. A total of 755 either dead or sick commercial

chickens were brought to the selected laboratory from different poultry farms located at different areas of Kaligonj, Jhenidah to diagnose the existing diseases. The diagnosis of different diseases was done based on the clinical history of the flock, age of affected birds, clinical signs and symptoms, gross and microscopic examinations.

Diagnostic procedure

Newcastle disease was diagnosed by observing the clinical sign as gasping, coughing, sneezing, paralyzed wings and legs, depression, watery greenish diarrhea; and postmortem sign as hemorrhages of the proventricular mucosa and intestinal serosa are accompanied by multifocal, necrotic hemorrhagic areas on the mucosal surface of the intestine, especially at lymphoid foci such as cecal tonsils.

In case of infectious bursal disease the clinical sign as depression, watery diarrhea, ruffled feathers, and dehydration; and postmortem sign as cloacal bursa is swollen, edematous, yellowish, and occasionally hemorrhagic, especially in birds that died of the disease. Hemorrhage of the pectoral and leg muscles can also occur.

In case of colibacillosis the postmortem sign as greenish liver, cloudy, thickened air sac was found. Salmonellosis was diagnosed by observing the postmortem sign as enlarged and necrotic foci in liver and sometime greenish color was found.

In case of Mycoplasmosis the clinical sign was coughing, sneezing, nasal discharge, weakness; and postmortem sign as exudation found in nasal passage, trachea, thick and cloudy air sac.

Aspergillosis was diagnosed by observing the clinical sign as dyspnea and heavy breathing; and postmortem sign as multiple nodes (Bengali-Sagudana like) in the lungs was observed.

In case of fowl pox clinical sign was wart like nodules on the skin (combs, face and wattles).

Specific test kits were primarily used for the diagnosis of diseases. In some cases, diseases were confirmed by the isolation and identification of causal agents. The influences of season and age on the occurrence of diseases were also analyzed. Accordingly, data were analyzed into four age groups: 0-7 days, 8-20 days, 21-35 days, 36-60 and 61 to above days. On the basis of climatic conditions

the year was divided into three seasons namely summer, rainy and winter. Summer season was considered from March to June, rainy season from July to October and winter was considered from November to February.

Statistical Analysis

The obtained data were cleaned, loaded and stored on the Excel spreadsheet 2016. Then the data were tabulated, arranged and analyzed as a percent values.

Results

The overall prevalence of different infectious and non-infectious diseases in commercial chickens at Kaligonj upazilla was shown in Table 1. According to my results, prevalence of Newcastle disease (ND) is higher (25.83%) followed by Infectious bursal disease (IBD) (23.18%), Salmonellosis (11.52%), CRD/ Mycoplasmosis (9.67%), Coccidiosis (8.34%), ND plus IBD (6.23%), Colibacillosis (4.37%), IBD plus Coccidiosis (3.84%), Fowl Pox (3.58%), Aspergillosis (1.99%), Nutritional deficiency (1.45%).

Table 1: Overall prevalence of diseases in commercial chickens at Kaligonj upazilla of Bangladesh during the period from 6 different months of 2021

Name of the disease	No. of identified cases	Prevalence (%)
Newcastle Disease (ND)	195	25.83
Infectious Bursal Disease (IBD)	175	23.18
Colibacillosis	33	4.37
Salmonellosis	87	11.52
CRD/ Mycoplasmosis	73	9.67
Aspergillosis	15	1.99
Coccidiosis	63	8.34
Nutritional deficiency	11	1.45
Fowl Pox	27	3.58
ND+IBD	47	6.23
IBD+ Coccidia	29	3.84
Total	755	100.00

Prevalence of diseases according to the age group of chickens and seasonal prevalence of diseases were shown in Table 2 and Table 3 respectively. As shown in Table 2, disease prevalence was recorded as 45.03% among the age group of 21-35 days followed by 36-60 days age group (21.98%), 8-20

days age group (20.61%), 60 days above age group (8.21%) and 0-7 days age group (3.57%) of commercial chickens.

According to Table 3, the diseases frequently occurred in summer season (41.06%) followed by winter (32.05%) and rainy season (26.89%).

Table 2: Prevalence of diseases in different age groups of commercial chickens at Kaligong Upazilla of Bangladesh during the period from 6 different months of 2021

Name of the disease	Age (Days)									
	0 - 7		8 - 20		21-35		36-60		61 -Above	
	n	%	n	%	n	%	n	%	n	%
Newcastle Disease (ND)	-	-	3	0.40	117	15.50	57	7.55	18	2.38
Infectious Bursal Disease (IBD)	-	-	67	8.87	98	12.98	10	1.32	-	-
Colibacillosis	-	-	6	0.79	15	1.99	7	0.93	5	0.66
Salmonellosis	8	1.06	15	1.99	27	3.58	33	4.37	4	0.53
CRD/ Mycoplasma	4	0.53	7	0.93	20	2.65	25	3.31	17	2.25
Aspergillosis	13	1.72	2	0.26	-	-	-	-	-	-
Coccidiosis	-	-	10	1.32	30	3.97	14	1.85	9	1.99
Fowl pox	2	0.26	9	1.20	7	0.93	6	0.79	3	0.40
ND+IBD	-	-	20	2.65	18	2.38	9	1.20	-	-
IBD+ Coccidia	-	-	16	2.20	8	1.05	5	0.66	-	-
Total	27	3.57	155	20.61	340	45.03	166	21.98	56	8.21

Table 3: Seasonal prevalence of diseases in commercial chickens at Kaligong upazilla of Bangladesh during the period from 6 different months of 2021

Name of Disease	No. of cases	Summer		Rainy		Winter	
		n	(%)	n	(%)	n	(%)
Newcastle Disease (ND)	195	66	8.74	75	9.93	54	7.15
Infectious Bursal Disease (IBD)	175	71	9.40	43	5.70	61	8.08
Colibacillosis	33	15	1.99	6	0.79	12	1.59
Salmonellosis	87	35	4.64	20	2.65	32	4.24
CRD/ Mycoplasma	73	34	4.50	13	1.72	26	3.44
Aspergillosis	15	7	0.93	3	0.40	5	0.66
Coccidiosis	63	21	2.78	20	2.65	22	2.91
Nutritional deficiency	11	7	0.93	4	0.53	0	0
Fowl Pox	27	20	2.65	3	0.40	4	0.53
ND+IBD	47	21	2.78	15	1.99	11	1.46
IBD+ Coccidia	29	13	1.72	1	0.13	15	1.99
Total	755	310	41.06	203	26.89	242	32.05

Discussion

ND is one of the important viral diseases that cause severe economic losses in every year. In this study the prevalence of ND were 25.83%, whereas Badruzzaman *et al.*, (2015) found 13.84% at Sylhet region, which is slightly smaller than the present study. Mamun *et al.*, (2019) also revealed 14.34% of ND in Kishoregonj district in case of broiler, layer and sonali chickens. This differences with the present study due to the different study area and the study population as this study is conduct on only Broiler chickens. Also this may be due to not maintaining cool chain in vaccination of birds,

improper dose of vaccine and faulty management system, uneven level of maternal antibody etc.

The present study revealed 23.18% IBD in Kaligong region that was higher than the earlier findings of Bhattacharjee *et al.*, (1996), Islam *et al.*, (1997, 1998) and Talha *et al.*, (2001) where they reported as 10.99%, 16.0 and 19.16% respectively cases of IBD. The prevalence of colibacillosis was 4.37% which is more prone to Giasuddin *et al.*(2002) where they found 4.42% colibacillosis respectively. The present investigation 11.52% salmonellosis which was the higher from the finding of Ullah *et al.*,(2019), where they found 4.85% Salmonellosis. Prevalence of CRD in Kaligong, Jhenidah district

was 9.67% which is lower with the CRD prevalence of Talha et al., (2001) where they reported as 11.55%.

In the present study, 1.99% of cases of aspergillosis were reported in kaligonj upazilla, Jhenidah district, whereas Badruzzaman et al., (2015) found 7.20% at Sylhet region, which is higher than the present study. Aspergillosis is the major diseases problem in broiler farming in Mymensingh (Rahaman et al 2003) and it was reported by Talha et al., (2001) that in this region positive case was 4.20%. This variation may be due to the climatic condition of the kaligonj region. In the present study, Coccidiosis constituted 8.34% of the total cases which is more prone to Badruzzaman et al., (2015) where they found 7.87% Coccidiosis respectively. In this study the prevalence of nutritional deficiency was 1.45% whereas Niyamat et al.,(2019) found 3.69% nutritional deficiency which is higher from the present study.

Occurrence of diseases has a significant relationship with season. Abbas et al., (2015) In Pakistan the period during April to June appeared to be comparatively safer for the broilers as low incidence of disease was recorded at this period. It was found that prevalence of poultry diseases were significantly highest in summer season (41.06 %) followed by winter (32.05%) and rainy season (26.89%) (Table 3) but Rashid et al., (2013), Munshi et al.,(2008) and Nicole et al.,(2000) several previous report indicated that rainy season is the more prevalent for diseases.

Islam et al.,(2009) Although, disease prevalence in winter is always comparatively lower than other season, some times this season also show highest diseases prevalence. In summer season IBD(9.40%), CRD(4.50%), colibacillosis (1.99%), ND(8.74%), salmonellosis (4.64%), Aspergillosis (0.93%), Coccidiosis(2.78%), Fowl pox (2.65%); in rainy season IBD(5.70%), ND(9.93%), colibacillosis(0.79%), salmonellosis (2.65%), coccidiosis (2.65%) and in winter season IBD(8.08%), colibacillosis(1.59%), CRD(3.44%), ND(7.15%), salmonellosis (4.24%), aspergillosis(0.66%), coccidiosis (2.91%) are the subsequently most prevalent diseases among all (Table 3). The highest number of cases were recorded in the age group of 21-35 days 45.03% followed by 36-60 days age group (21.98%), 8-20 days age group (20.61%), 60 days above age group (8.21%) and 0-7 days age group (3.57%) of commercial chickens.

Age of the bird had a significant relationship on prevalence and mortality of the disease. Younger chicks are more susceptible to diseases, especially broiler chicks has of age 3-6 weeks were more susceptible to the disease. According to age group, from 0-7age group aspergillosis (1.72%), salmonellosis (1.06%), CRD (0.53%), Fowl pox (0.26%); from 8-20age group IBD (8.87%), colibacillosis (0.79%), salmonellosis (1.99%), coccidiosis (1.32%), aspergillosis (0.26%), ; from 21-35 age group IBD (12.98%), ND (15.50%), colibacillosis (1.99%), coccidiosis (3.97%); from 36-60age group colibacillosis (0.93%), ND (7.55%), CRD (3.31%), salmonellosis (4.37%), coccidiosis(1.85%) and from 61 to above days age group CRD (2.25%), salmonellosis (0.53%), colibacillosis (0.66%), ND (2.38%) are the subsequently most prevalent diseases among all (Table 2). In case of CRD birds of all age groups are susceptible to this disease and in this study it was found that adult are more frequently affected by this disease. In Pakistan it was found that young birds are more prone to MG infection than adults. ND is highly contagious viral disease of domestic poultry as well as other species of birds regardless of age and sex variation. Biswas et al., (2005) Fowl pox and IBD is higher in younger.

Conclusion

According to the study, most prevalent diseases of commercial chickens at Kaligonj upazilla of Bangladesh include Newcastle disease (ND), Infectious Bursal Disease (IBD), Colibacillosis, Salmonellosis, Chronic Respiratory Disease (CRD), Coccidiosis and Aspergillosis. It was also found that 21-35 days age group of chickens were more susceptible to diseases. Highest disease prevalence was recorded in summer season. The results of the current study provide an overall scenario of disease prevalence in commercial chickens at Kaligonj region of Bangladesh. The findings may assist researchers or poultry consultants to design and implement priority based research on specific disease and to take efficient control strategies against the diseases.

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