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A RETROSPECTIVE ANALYSIS OF CHICKEN DISEASES DIAGNOSED AT THE BRAC POULTRY DISEASE DIAGNOSTIC CENTRE OF GAZIPUR

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ABSTRACT

The pattern of occurrence of poultry diseases in commercial poultry farms was studied on post-mortem and other laboratory examinations of 3057 cases either dead or live chickens submitted for diagnosis of diseases at the BRAC Poultry Disease Diagnostic Centre, Gazipur during the two years period from January 2000 to December 2001. Of the 3057 birds obtained, of which diagnosis was confirmed in 79.9% cases and 20.1% remain undiagnosed due to lack of facilities. Highest case of diseases was recorded in breeder (37.2%) followed by broiler (34.9%), and lowest in layer (27.9%) birds. The diagnosed diseases of layers included Colibacillosis (7.4%), Salmonellosis (25.3%), Fowl cholera (7.0%), Mycoplasmosis (17.7%), Newcastle disease (8.8%), Gumboro disease (12.4%), Coccidiosis (7.2%), GI nematodes (4.6%), GI cestodes (0.6%), Egg peritonitis (3.4%), Gangrenous dermatitis (0.8%), Ascites (0.7%), Aspergillosis (2.6%) and Omphalitis (1.5%). The broilers (34.9%) and breeders (37.2%) were more or less equally susceptible to various diseases with exception of reproductive diseases. It may be concluded from this study that all age groups and types of chickens are susceptible to various diseases but laying period is most vulnerable, and most mortality of chickens are caused by Salmonellosis, Colibacillosis, Fowl cholera, Gumboro disease, Newcastle disease and Mycoplasmosis which demand immediate attention for prevention and control in commercial poultry farms.

Key words: Retrospective analysis, diseases, layers, broilers, breeders

INTRODUCTION

The expansion of the poultry industry during the last two decades makes it the fastest growing and one of the most important industries in agriculture world. The increased demand of poultry meat and egg consumption worldwide has led to intensive farming which has, in turn, led to increased potential for diseases. However, commercial poultry farming in Bangladesh is just a decade old. Since 1990, there had been a spectacular growth in the poultry population has grown with an annual record growth of 20%. It is expected that a huge additional investment of over Taka six thousand crore and of one in 9.3 persons will be involved in the poultry industry directly or indirectly in the next five years. Despite all these expectations, average annual per capita consumption of chicken meat and eggs per person still lags considerably behind that of developed regions of the world. It is noticed that over dependence on costly day-old chicks from hybrid strains, balanced feed, inadequate disease prediction and control capabilities have caused closure of thousands of commercial poultry farms in this country. Thus, despite having favourable agro-climatic conditions, huge demand of live poultry and eggs, poultry industry is in a state of shock from recent surge of various infectious and non-infectious diseases. Therefore, for a better understanding of the disease problems being faced by the commercial poultry farms and to make an effective disease control programme, chicken diseases diagnosed at the BRAC Poultry Disease Diagnostic Centre, Gazipur were subjected to a retrospective analysis.

MATERIALS AND METHODS

The two years (January 2000 to December 2001) poultry disease diagnostic records on 3057 chickens maintained at the BRAC Poultry Disease Diagnostic Centre (PDDC) of Gazipur were subjected to a retrospective analysis, which covered 853 layers, 1068 broilers and 1136 breeder cases of chickens. The age and types of chickens and results on the diagnosis of disease with their methods used were abstracted from the registered book maintained at the BRAC PDDC. A routine post-mortem and bacteriological examination was carried out on the dead birds which were presented at the BRAC PDDC from the major poultry raising belts in and around Dhaka and Gazipur districts of Bangladesh. Various diseases were diagnosed based on post-mortem lesions, cultural examination for microbes (Edwards and Ewing, 1972), microscopic examination of intestinal contents for parasites, serology and other laboratory investigations.

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The disease profile was calculated on the basis of age like up to 8 weeks (brooding and growing period), 9 to 20 weeks (pullet period), and > 20 weeks (laying period), and types (broiler, layer and breeder) of birds.

RESULTS AND DISCUSSION

Total chickens available for diagnosis of diseases at the BRAC Poultry Disease Diagnostic Centre (PDDC) in Gazipur during the two years period from January 2000 to December 2001 were 3057, of which diagnoses were made in 2442 (79.9%) cases and 615 (20.1%) remain undiagnosed due to limited facilities (Table. 1). Of the 3057 chickens brought for diagnosis at the BRAC PDDC, 853 (27.9%) were layer, 1068 (34.9%) were broiler and 1136 (37.2%) were breeder chickens (Table 1). Of the 853 (27.9%) layer chickens diagnosed, 288 (33.8%) were grower, 142 (16.6%) were pullets and 423 (49.6%) were of laying periods. Among the layers, highest case of diseases was recorded in laying period (49.6%), followed by grower (33.8%) and lowest in pullet (16.6%) birds (Table 1), This findings contradict with the earlier report of Talha *et al.* (2001) who recorded highest mortality (71.92%) of chickens in growers (0 to 8 weeks of age) followed by 21.01% in layers (>20 weeks of age) and 7.09% in pullets (>8 to 20 weeks of age). It is highly likely that persistent and high ambient temperature and managemental errors have caused high mortality in layers recorded from the present study. Disease-wise analyses evidenced that 15 diseases have been recognized to be associated as the causes of mortality in layer, broiler and breeder chickens. The major cause of mortality was salmonellosis, which contributed to 24.4% of the total deaths. The most vulnerable age group of layer chickens was laying period (49.6%) followed by growing (33.8%) and pullet period (16.6%) which are not in conformity with the earlier reports of Bhattacharjee *et al.* (1996) and Kumar *et al.* (1998) who recorded Gumboro disease (21.79%) in 0 to 4 weeks of age and colibacillosis (33.56%) in 0 to 6 weeks of age, are the main causes of death of chickens. Highest cases of salmonellosis was recorded in this study in layer (25.3%) followed by 24.2% in broiler and 23.8% in breeder birds.

Table 1. Occurrence of diseases in chickens correlated with age

S/N	Diseases/ Disorders	Layer chickens, No. (%)				Broiler	Breeder	Total
		Growers (up to 8 wks)	Pullets (9 to 20 wks)	Layers (>20 wks)	Total	No. (%)	No. (%)	No. (%)
1.	Colibacillosis	036 (12.5)	10 (07.0)	017 (04.0)	063 (07.4)	209 (26.6)	011 (01.4)	283 (11.6)
2.	Salmonellosis	060 (20.8)	46 (32.4)	110 (26.0)	216 (25.3)	190 (24.2)	191 (23.8)	597 (24.4)
3.	Fowl cholera	0	02 (01.4)	058 (13.7)	060 (07.0)	0	033 (04.1)	093 (03.8)
4.	Mycoplasmosis	010 (03.5)	11 (07.7)	130 (30.7)	151 (17.7)	0	297 (36.9)	448 (18.3)
5.	Newcastle dis.	010 (03.5)	13 (09.2)	052 (12.3)	075 (08.8)	007 (00.9)	111 (13.8)	193 (07.9)
6.	Gumboro dis.	102 (35.4)	04 (02.8)	0	106 (12.4)	356 (45.3)	066 (08.2)	528 (21.6)
7.	Coccidiosis	028 (09.7)	27 (19.0)	006 (01.4)	061 (07.2)	015 (01.9)	050 (06.2)	126 (05.2)
8.	GI nematodes	0	16 (11.3)	023 (05.4)	039 (04.6)	0	0	039 (01.6)
9.	GI cestodes	0	01 (00.7)	004 (00.9)	005 (00.6)	0	0	005 (00.2)
10.	Egg peritonitis	0	06 (04.2)	023 (05.4)	029 (03.4)	0	0	029 (01.2)
11.	Gang. dermatitis	001 (00.3)	06 (04.2)	0	007 (00.8)	0	0	007 (00.3)
12.	Ascites	006 (02.1)	0	0	006 (00.7)	0	0	006 (00.2)
13.	Aspergillosis	022 (07.6)	0	0	022 (02.6)	009 (01.1)	039 (04.9)	070 (02.9)
14.	Omphalitis	013 (04.5)	0	0	013 (01.5)	0	0	013 (00.5)
15.	REO infection	0	0	0	0	0	005 (00.6)	005 (00.2)
Total diagnosed		288 (33.8)	142 (16.6)	423 (49.6)	853 (27.9)	786 (25.7)	803 (26.3)	2442(79.9)
Total undiagnosed		-	-	-	0	282 (09.2)	333 (10.9)	615 (20.1)
Overall		-	-	-	853 (27.9)	1068 (34.9)	1136 (37.2)	3057 (100)

Gang. = Gangrenous, GI = Gastrointestinal, dis = disease.

Infectious bursal disease (IBD) also known as Gumboro disease was recorded to cause 45.3% death in broiler chickens followed by 12.4% in layer and 8.2% in breeder birds. Among the layer chickens, heavier losses recorded in growing period (35.4%). This findings support the earlier reports of Anjaneyulu *et al.* (1998), Bhattacharjee *et al.* (1996), Talha *et al.* (2001) and Sil *et al.* (2002) who recorded 9.1%, 12.93%, 19.16% and 28.57% mortality of chickens due to IBD respectively. The disease was characterized by thigh muscle haemorrhage, swollen and edematous bursa, high morbidity and mortality in chickens as described by Calnek *et al.* (1997). Layer chickens up to 8 weeks of age were mostly susceptible to IBD. It is probable that IBD which is considered to be Autoimmune Deficiency Syndrome (AIDS) in poultry adversely affects the immune system, inflicts serious losses due to poor vaccination, filthy environmental condition and concurrent infections with *E. coli*, coccidiosis and other bacterial infections (Singh *et al.*, 1994). Therefore, care must be exercised to handle vaccine in order to maintain cold chain to preserve the efficacy. Prevention of concurrent infections like *E. coli* and coccidiosis and maintenance of standard hygiene will be of great help in reducing losses due to IBD in chicken. Mycoplasmosis was accounted for 36.9% of the total deaths in breeder flocks followed by 17.7% in layer birds whereas broilers were found to be free from mycoplasmosis which contradict with the earlier report of Bhattacharjee *et al.* (1996) who recorded 2.64% mortality due to mycoplasmosis. Table 1 depicts that coccidiosis was reported to be the cause of 9.7 % deaths during 0 to 8 weeks of age and that trend continued up to 20 weeks of age and eventually reduced to 1.4 % when birds attained 21 weeks. The cases of coccidiosis were higher in layer (7.2%) followed by breeder (6.2%) and lowest in broiler (1.9%) birds which are in agreement with the earlier reports of Bhattacharjee *et al.* (1996), Talha *et al.* (2001) and Sil *et al.* (2002) who recorded 9.4%, 5.51% and 0.8% mortality in chickens. Although *E. tenella* was the most prevalent causative organism, however, "salt and peeper" appearance of the intestine and mucosal scrapings revealed *E. necatrix*. Filthy environmental conditions, wet litter favoured sporulation. Traditional sulfur based coccidiostats were found ineffective in most of the outbreaks. Incorporation of feed grade amprolium (20%) in the diet was found to be highly efficacious in preventing recurrence of coccidiosis in the life time of the flock. Assurance of a healthy environment and the reduction of moisture in the litter still remain key factors to reckon with to prevent coccidiosis. Although there was almost no indication of occurrence of fowl cholera during growing period (0 to 8 weeks) and pullet period (9-20 weeks), it ranked third important disease (13.7 %) to kill layers aged above 20 weeks (laying period). This observation was six times higher than those of Bhattacharjee *et al.* (1996) who reported 2.77% death due to fowl cholera during laying stage (>20 to 45 weeks of age). Fowl cholera was recorded in breeder (4.1%) but not in broiler chickens. Among the egg laying birds, egg peritonitis was accounted for 5.4 % deaths which was found to be 2.5% lesser than those of the earlier report by Bhattacharjee *et al.* (1996) who recorded 16.44% deaths due to egg peritonitis in the laying period (>20 to 45 weeks of age).

Although, information on the age distribution, geographical locations, flock histories, management practices are missing from this survey, 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 a success. Future works should involve a thorough surveillance using computerized programme and statistical packages.

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