

Short Communication

Prevalence of common diseases of broiler and layer at Gazipur district in Bangladesh

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Abstract: The present study was conducted to determine the prevalence of broiler and layer diseases at Gazipur sadar upazilla veterinary hospital in Bangladesh. A total of 296 either dead or sick birds were considered for the present study. Diagnosis of different diseases was made on the basis of history, owner's complains, age of birds, presenting signs, clinical and necropsy examination findings. The prevalence of diseases was recorded in broiler (n=189) 63.9% and layer (n=107) 36.1%. In broiler the prevalence of Colibacillosis (33.4%) was higher followed by Omphalitis (23.8%), Infectious Bursal Disease-IBD (15.3%), Newcastle disease-ND (9.0%), mixed infection (7.4%), Gout (5.3%) and Coccidiosis (5.8%). In case of layer highest prevalence was recorded in Salmonellosis (19.6%). while other diseases were Colibacillosis (15.9%), Mycoplasmosis (12.1%), ND (10.3%), IBD (8.4), Mareks (9.3%), mixed infection (8.4%), Fowl Cholera (4.7%) and Mycotoxicosis (4.7%). The present findings will help poultry researchers and practitioner to know the present status of infectious diseases of commercial chickens in the study area and also help to establish flock based control strategy.

Keywords: prevalence; broiler & layer diseases; necropsy

1. Introduction

Bangladesh is an agricultural county. Livestock is an important sub-sector of Bangladesh's agriculture. There are about 270 million poultry populations in Bangladesh (BBS, 2010). According to WHO-FAO joint survey, meat consumption per head in Bangladesh is 15.23 kg per year and poultry contributes 35.25% of total meat supply (Akber *et al.*, 2013). 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). It is considered as the farmers' first investment in the livestock ladder as a way of income generation. The poultry meat alone contributes a substantial 37% of the total meat production in Bangladesh (Begum *et al.*, 2011). One of the major constraints of the poultry farming is the outbreaks of several devastating diseases causing economic loss and discouraging poultry rearing. The incidence of diseases varies depending on the Geo- climatic condition, season, breed and age of the bird. Again, the incidence of particular disease in an area sometimes may be negligible and at other time it may cause havoc (Hassan *et al.*, 2016). Bangladesh is a tropical country where colibacillosis, salmonellosis, Newcastle disease (ND), infectious bursal disease (IBD) and coccidiosis are more frequently found in poultry. These are highly contagious diseases affecting the early age of chickens and cause mortality in chickens (Lukert and Saif, 1997). To establish an effective prevention and control strategies of a disease, the epidemiological knowledge, pathogenesis and pathology of particular disease is prerequisite. Among different

diagnostic procedures necropsy remains in key point for diagnosing poultry disease at field level. Gazipur district is an important area for poultry industries in Bangladesh. Because of the growing importance of poultry in economics, it has become important to establish rapid and accurate diagnosis. Poultry diseases may occur singly or in combinations, which lessen the optimal production of flocks. Moreover, early diagnosis is necessary to reduce the rapid spreading of the disease. Considering the above mentioned facts, the present study was carried out to investigate the prevalence of common broiler and layer diseases in Gazipur sadar Upazilla veterinary hospital under Gazipur district in Bangladesh.

2. Materials and Methods

The study was carried out Upazilla Veterinary Hospital Gazipur sadar, Gazipur and the surrounding areas of that hospital during October 2016 to January 2017. A total 296 apparently healthy, live, sick and dead birds of different ages were examined for diagnosis of diseases. The Live birds were sacrifice according to standard animal care guideline by giving minimum pain.

2.1. Diagnosis of diseases

Diagnosis of poultry diseases was made based on the history, clinical data, gross pathological changes and post mortem examination. Although poultry diseases were multi-factorials but major clinical and post mortem lesions was considered as a base line for diagnosis. The birds were examined and recorded the post mortem findings as per the method described by Swayne *et al.* (2013).

3. Results and Discussion

The present study was conducted to detect the prevalence of common diseases in broiler and layer at Gazipur Sadar Upazilla in Gazipur, Bangladesh. A total of 296 birds were examined among them the prevalence of broiler disease was (n=189/296) 63.9 %, where as Layer diseases was (n=107/296) 36.1% (Table 1).

In broiler the prevalence of Colibacillosis (33.4%) was higher; similar findings was reported by (Ahmed *et al.*, 2009) followed by the Omphalitis (23.8%), Infectious Bursal Diseases (IBD) (15.3%), Newcastle Disease (ND) (9.0%), Mixed infection (7.4%), Gout (5.3%) and Coccidiosis (5.8%) (Table 2). Ahmed *et al.*, 2009 who shown that the occurrence of disease in broiler were higher in Colibacillosis 104 (52.26%) followed by Omphalitis 23 (11.56%), Gumboro 22 (11.06%) and Mixed infection of Gumboro & Coccidiosis 03 (1.51%). Hassan *et al.* (2016) found bacterial diseases 28.99% (salmonellosis 21.30% and colibacillosis 7.69%), and viral diseases 53.24% (IBD 28.99%, Newcastle disease 8.87%) Mycoplasmal disease (Mycoplasmosis 7.1%) and protozoal disease (Coccidiosis 6.5%) encountered in broiler.

Whereas, Abbas *et al.* (2015) reported overall, incidence of Newcastle disease (ND) was highest (avg. 7.85%) in broiler, followed by *Escherichia coli* infection (avg. 5.52%), Infectious Bursal Disease (IBD; avg. 2.84%), Coccidiosis (avg. 4.59%). Badruzzaman *et al.* (2015) disagree with the present findings, Who reported the prevalence of IBD is higher (22%) followed by Colibacillosis (14.03%), Newcastle disease (ND) (13.84%), Omphalitis (5.31%), Coccidiosis (7.87%), some mixed infections like Salmonellosis plus *E. coli* (1.14%), IBD plus Coccidiosis (0.71%), ND plus Colibacillosis (0.71%).

In case of layer highest prevalence was recorded in Salmonellosis (19.6%). The finding of the present study is supported by several previous studies (Hassan *et al.*, 2016; Hossain *et al.*, 2015 and Das *et al.*, 2005). Other diseases of layer were Colibacillosis (15.9%), Mycoplasmosis (12.1%), ND (10.3%), IBD (8.4), Mareks (9.3%), mixed infection (8.4%), Fowl cholera (4.7%) and Mycotoxicosis (4.7%) (Table 2). Hassan *et al.* (2016) reported Salmonellosis 38.56%, Colibacillosis 6.7%, Fowl Cholera 4.79%; viral diseases Newcastle disease 16.61%, Mycoplasmosis 14.70% were encountered in layer. Hossain *et al.* (2015) found that the prevalence of Salmonellosis (22.79%) is higher followed by Fowl cholera (15.44%), Colibacillosis (10.29%), IBD (8.82%), ND (8.08%). Das *et al.* (2005) conducted a retrospective analysis in various poultry farms of greater Mymensingh district reported Salmonellosis-23.2%, Colibacillosis-13.3%, Fowl cholera-2.4%, Newcastle disease-19.5%, Infectious bursal disease-7%, Coccidiosis-5.4% diseases encountered in layer. On the other hand, Islam *et al.* (2014) reported higher prevalence in Infectious bursal disease (IBD) (16.9%) followed by Newcastle disease (ND) (14.1%), Colibacillosis (14.1%), Salmonellosis (14.6%), CRD/mycoplasmosis (7.6%), mixed infection such as (IBD+coccidia) (3.6%), (IBD+ND+coccidia) (0.6%), (IBD+ND) (1.5%). Saleque MA (2003) found Colibacillosis-7.4%, Salmonellosis-25.3%, Fowl cholera-7.0%, Mycoplasmosis-17.7%, Newcastle disease-8.8%, Infectious bursal disease-12.4%, Coccidiosis-7.2%, and Omphalitis-1.5% were encountered in commercial chickens. Haque *et al.* (2015) reported prevalence of mycoplasmosis was 27% in layer. There is a variation among the previous report and the present research findings; this variation on findings may due to variation in farm managements, sample size, diagnostic procedure, geographic location, exposure of causal

agents. The results of the present study represent that, bacterial diseases encountered quite easily as compared to viral diseases. In our country early age vaccination was followed for commercial broiler and layer birds so viral diseases were protected. On the other hand bacterial contamination break out frequently in broiler and layer farms due to low biosecurity measures and also availability of bacteria, poor hygienic management, improper epidemiological knowledge, diagnosis and treatment.

Table 1. Overall Prevalence of Broiler and layer diseases.

Chickens	No. of infected	Prevalence (%)
Broiler	189	63.9
Layer	107	36.1

Table 2. Prevalence of common Broiler and layer diseases.

Type of diseases	Name of the disease	Broiler	Layer
			Prevalence (%)
Bacterial Diseases (51.0%)	Omphalitis	45(23.8)	-
	Colibacillosis	63(33.4)	17 (15.9)
	Salmonellosis	-	21 (19.6)
	Fowl cholera	-	05 (4.7)
Mycoplasmal/CRD (4.4%)	Mycoplasmosis	-	13 (12.1)
Viral diseases (25.7%)	IBD	29(15.3)	09 (8.4)
	ND	17(9.0)	11 (10.3)
	Marek's	-	10 (9.3)
Other diseases (18.9%)	Gout	10(5.3)	-
	Coccidiosis	11(5.8)	07(6.5)
	Mycotoxicosis	-	05 (4.7)
	Mixed infection	14(7.4)	09 (8.4)
	Total	189 (63.9)	107(36.1)

4. Conclusions

According to the findings of the present study, most prevalent diseases of commercial chickens broiler and layer includes colibacillosis, omphalitis, IBD in broiler and Salmonellosis, Colibacillosis, Mycoplasmosis, ND in layer. The results of the current study provide an overall scenario of disease prevalence in commercial chickens (broiler and layer) at Gazipur district of Bangladesh. The findings may assist researchers or poultry consultants to design and implement research on specific disease and to take efficient control strategies against the common diseases.

Conflict of interest

None to declare.

References

- Abbas G, SH Khan, M Hassan, S Mahmood, S Naz and SS Gilani, 2015. Incidence of poultry diseases in different seasons in Khushab district, Pakistan. *J. Adv. Vet. Anim. Res.*, 2: 141-145.
- Ahmed MS, A Sarker and MM Rahman, 2009. Prevalence of infectious diseases of broiler chickens in gazipur district. *Bangl. J. Vet. Med.*, 7: 326 – 331.
- Akbar MA, MR Amin, MA Ali, MSA Bhuiyan, AKMA Kabir *et al.*, 2013. Animal husbandry- a business education for today and tomorrow 3rd annual conference and seminar 2013. Bangladesh Society for Animal Production Education and Research (BSAPER), Bangladesh.
- Badruzzaman ATM, M Noor, MAL Mamun, A Husna, KM Islam, KJ Alam and MM Rahman, 2015. Prevalence of diseases in commercial chickens at Sylhet Division of Bangladesh. *Int. Clin. Pathol. J.* 1: 00023.
- BBS, 2000. Statistical Pocket Book of Bangladesh. Bangladesh Bureau of Statistics. Ministry of Planning, Govt. of People's Republic of Bangladesh.
- Begum IA, MJ Alam, J Buysse, A Frija and GV Huylenbroeck, 2011. A comparative efficiency analysis of poultry farming systems in Bangladesh: A Data Envelopment Analysis approach. *Applied Economics*, 44: 3737-3747.

- Das PM, DMM Rajib, M Noor, and MR Islam, 2005. Antibody response to Newcastle disease vaccines in commercial layer chickens. *The Bangladesh Veterinarian*, 23: 1-8.
- Haque E, G Uddin and S Akter, 2015. Prevalence of Mycoplasmosis of Chickens at Kotwali Thana in Chittagong, Bangladesh. *J. Fisheries Livest. Prod.*, 3:151.
- Hassan MK, MH Kabir, M Abdullah-Al-Hasan, S Sultana, MSI Khokon and SML Kabir, 2016. Prevalence of poultry diseases in Gazipur district of Bangladesh. *Asian J. Med. Biol. Res.*, 2: 107-112.
- Hossain M, N Hoda, MJ Hossen, MM Hasan, SME Rahman and SML Kabir, 2015. Assessment of bacterial load of poultry meat used at dining hall of Bangladesh Agricultural University campus. *Asian J. Med. Biol. Res.*, 1: 9-16.
- Islam SS, S Islam, ZF Siddique, RH Shawon, SM Hanif and MA Rahman, 2014. Diseases of Birds and their responses to treatment in different regions of Bangladesh. *Int. J. Nat. Soc. Sci.*, 1: 31–36.
- Lukert PD and YM Saif, 1997. Infectious Bursal Disease In: *Diseases of Poultry*, YM Saif, Editor, 10th Edition. Chapter 29, Blackwell Publishing Asia, 550 Swanston Street, Carlton, Victoria 3053, Australia, pp. 721-738.
- Paul DC, MF Haque, MZ Abedin and MS Akter, 1990. Participation of women in poultry husbandry in rural Bangladesh. Paper presented in the 10th AFSRE symposium held at Mat Chining University, USA.
- Swayne DE, JR Glisson, LR McDougald, L Nolan, DL Suarez and VL Nair, 2013. *Diseases of Poultry*. YM Saif, Ed., 13th edition, Blackwell Publishing Asia, 550 Swanston Street, Carlton, Victoria 3053, Australia.