

Prevalence of Various Poultry Diseases in Different Seasons in District Rawalpindi, Pakistan

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Abstract

Pakistan Poultry is facing multi challenges in the field of health and biosecurity. So, the study was conducted to find out the disease prevalence in poultry in district Rawalpindi. The current study was limited in the district. Diseases were diagnosis in poultry clinical signs in birds, overall health history, post-mortem examination, lab sample, and culture. The overall prevalence of Newcastle disease (ND) was found as the maximum (7.90%) in the broiler, followed by Fowl typhoid (6.63%), *Mycoplasma* (5.73%), *Escherichia coli* infection (5.57%), Coccidiosis (4.64%), Mycotoxycosis (4.61%), Infectious Bursal Disease (2.89%), Infectious coryza (2.55%), Hydropericardium syndrome (1.72%) and Infectious bronchitis (1.64%). It is documented that from April to June it looked to be relatively safer for the broilers as the low occurrence of infection was recorded. In the layers, occurrence of Newcastle disease was remain the maximum (7.97%), followed by Fowl typhoid (6.02%), Mycotoxycosis (5.57%), Coccidiosis (4.80%), IBD (3.22%), Mycoplasmosis (3.05%), Infectious coryza (2.57%), Fowl cholera (1.57%), IB (0.95%), *E. coli* infection (0.78%), and HPS (0.51%). It is documented that for layers birds, from January to March looked to be safer. The assumption, varied diseases are widespread in both layers and broilers. Thus, scheduled vaccination, brooding management, preventive measures, and biosecurity are highly recommended.

Keywords: Bacterial Infections; Poultry Diseases; Viral Infections; Rawalpindi

Abbreviations

FCR: Feed Conservation Ratio; MG: *Mycoplasma gallisepticum*; ELISA: Enzyme-Linked Immunosorbent Assay; MS: *Mycoplasma synoviae*; IBD: Infectious Bursal Disease; ND: Newcastle Disease; HPS: Hydropericardium Syndrome; IB: Infectious Bronchitis

Introduction

Pakistan poultry plays a dynamic role in the Gross domestic product GDP of the country it is the second largest industry of Pakistan after the textile industry [1]. The increasing demand and its products the value of chicken is additionally emphasized by its production

ability [2,3]. It is the main source of protein and household nutrition and income in developing countries [4,5]. There having different birds capacity farms having less the thousands of birds and more than a hundred thousand capacity birds farm [6]. Almost average farm of ten thousand to thirty thousand birds capacity for both broilers and layers. These farms are usually lacking up-to-date facilities. Some infectious diseases are the high risk of the poultry and all surrounding farms especially small scale poultry and as a result of the huge economical loss of farmer as well as to GDP of the country [7-10].

The major poultry disease includes Enteritis, Infectious bronchitis (IB), Newcastle disease (ND), *Escherichia coli* infection, Hydropericardium syndrome (HPS), Fowl pox, Coccidiosis, Infectious coryza, Salmonellosis and Avian Influenza (AI) [4,5,11-15]. A study was documented in 2005 that exposed the current status of the diseases widespread in local and Fayoumi breeds of rural poultry in the Sheikhpura district [7]. The disease prevalence is different in breed and sex of birds. General occurrence of numerous diseases was documented as 15.66% Fowl pox, 5% *E. coli*, 2.66% IB, 40.33% ND, 7% Chronic respiratory disease (CRD), 6.33% Salmonellosis, 8.33% Infectious coryza, 4% HPS, and 10.66% Coccidiosis. A new study was documented in 2008 that revealed that several infectious agents like AI along with *E. coli*, Newcastle and *Salmonella* these disease are the highly infectious and main responsible in the flock for chronic respiratory problems [16]. The diseases widespread in the rural areas are mostly occurred due to poor vaccination, poor feeding, housing management, and wild and migratory birds [16-18]. The widespread occurrence of infectious as well as contagious diseases indicated poor vaccination practices, poor management on farms and non-adherence to biosecurity measures [19].

Season, an extremely significant ecological feature, potency has deep effects on the incidence of diseases in poultry. Almost the poultry diseases are directly associated with age and season [20,21]. However, but unfortunately in Pakistan, it was not documented the prevalence thought out the year in all seasons.

Objective of the Study

The main objective of this study to record the disease prevalence in all the seasons in the whole year, for which take the preventive steps to prevent the economic loss of farmers and in the poultry and GDP of the country.

Materials and Methods

The research data was depending upon postmortem examination and research laboratory diagnosis of poultry infection from June 2018 to May 2019 in Rawalpindi district. The sample were collected from across the district Rawalpindi poultry farms. The diagnosis depended mainly upon postmortem examination, flock history, clinical signs in birds. For the bacterial and viral diseases, differentiated sample sent to the laboratory for serology.

Results and Discussion

Data is recorded from across the district broiler poultry farms and presented in table 1. Overall, the prevalence of Newcastle disease was found as the maximum in broiler from rest of all diseases in broiler presented in the below table 1.

Diseases	Quarters				Average
	Jan-March	April-June	July-Sep	Oct-Dec	
ND	9.21	7.61	7.92	6.63	7.90
Fowl typhoid	7.95	5.48	5.71	7.24	6.63
Mycoplasmosis	7.11	7.83	2.71	5.11	5.73
<i>E. coli</i>	3.11	3.02	8.59	7.41	5.57
Coccidiosis	4.21	4.31	6.50	3.40	4.64
Mycotoxicosis	6.21	3.82	3.41	4.85	4.59
IBD	2.04	2.19	3.04	4.12	2.89
Infectious coryza	1.61	1.89	4.85	1.71	2.55
HPS	2.11	2.0	0.87	0.82	1.72
IB	1.22	0.94	2.43	1.83	1.64
Total	44.69	39.99	45.94	43.02	
Average	5.51	4.01	4.60	5.95	

Table 1: Seasonal Prevalence (%) of diseases in broilers on a quarterly basis in district Rawalpindi, Pakistan.
ND: Newcastle Disease; IBD: Infectious Bursal Disease; HPS: Hydropericardium Syndrome; IB: Infectious Bronchitis.

Almost it was recorded from the data that (April-June) is much safe for the brooding and growing of the broiler birds from any respiratory and other diseases. Other poultry diseases were not similarly dispersed in all the months of the year. Fowl typhoid and Mycotoxigenesis happened from January to March and *E. coli* and Coccidiosis were frequently documented from July to September. *Mycoplasma* is playing a key role in the loss of egg production, poor FCR, mortality and other economic losses in the world poultry industry [22]. It is documented, due to vertical transmission disease almost all ages of birds are vulnerable to this infection but young birds are more prone to the infection than adults [17,23]. The prevalence of Mycoplasmosis was documented maximum in the study of Ahmad, *et al.* [14] as associated to the current study. Current results showed an advanced occurrence of MG in the wintertime as associated with the summer months in broilers [17,24].

Data is recorded from across the district layer poultry farms and presented in table 2.

Diseases	Quarters				Average
	Jan-March	April-June	July-Sep	Oct-Dec	
ND	8.35	8.89	7.2	7.38	7.97
Fowl typhoid	5.02	6.02	8.85	8.03	6.02
Mycotoxigenesis	3.22	3.2	8.79	6.98	5.57
Coccidiosis	2.23	3.28	6.93	6.61	4.80
IBD	2.74	5.63	2.13	2.22	3.22
Mycoplasmosis	3.16	2.44	3.42	3.03	3.05
Infectious coryza	3.3	2.9	1.9	2.3	2.57
Fowl cholera	1.89	1.2	0.63	2.47	1.57
IB	0.89	1.02	0.82	0.91	0.95
<i>E. coli</i>	1.32	1.12	0.11	0.41	0.78
HPS	0.35	0.22	0.78	0.56	0.51
Total	32.28	35.65	41.27	40.71	
Average	2.96	3.25	3.76	3.71	

Table 2: Seasonal prevalence (%) of diseases in the commercial layer on a quarterly basis in district Rawalpindi, Pakistan.

ND: Newcastle Disease; IBD: Infectious Bursal Disease; HPS: Hydropericardium Syndrome; IB: Infectious bronchitis.

Prevalence of Newcastle disease in layers was the maximum across the district poultry farms from all the rest of documented disease as showed in table 2. Months among January to March seemed to be safer for layers (32.28%). It was recorded that the vaccination protocol can't protect birds from the disease attacked. It may be due to inappropriate vaccine, wrong storage temperature, and expired vaccine or in inappropriate administration of the vaccine [25].

Salmonella is highly related to bird's age, breed and poultry species of birds. The highest prevalence was documented in the rainy season (July-September). It was documented in summer when the weather was wet and moisture [26].

Due to vertical transmission disease almost young birds having less the 2 weeks were infected with *Salmonella*. After the proper vaccination program prevalence of salmonella decreased rapidly [27].

During the rainy season of monsoon, mycotoxigenesis was documented high [20]. Climatic conditions in the country range from tropical to semi-tropical and temperate; the global trade in feedstuffs, which means feedstuffs are derived from crops both grown locally and imported and hence subjected to different conditions during growing, storage and transport [28-36].

Conclusion

It is concluded that there is required strong biosecurity and proper vaccination protocol to protect birds from any diseases. There should be restrictions of housing and environmental management in locally or without any proper management to avoid any disease risk.

Conflict of Interests

The authors declare that there is no conflict of interest regarding the publication of this paper.

Author Contributions

All authors contributed equally to this study.

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