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EPIDEMIOLOGY OF EIMERIOSIS IN BROILER AND LAYER FLOCKS IN AND AROUND LAHORE, PAKISTAN

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Abstract: The study was designed to record coccidiosis disease in broiler and layer flock in and around the Lahore District of Pakistan during the one year period out of 119 broiler flocks affected with different disease problem 51 broiler flocks were affected with this disease. The prevalence of disease was found to be 42.85 % in broiler flocks. The result revealed that out of 127 layer flocks 42 layer flocks were affected with coccidiosis. The prevalence of the disease in layer was 33.07% while in broiler it was highest (51.7%) during late summer followed by winter (45.9%) then summer (37.5%) whereas the lowest (34.48%) during spring season. The highest prevalence (65.78%) was noted in 3-4 weeks birds and the lowest (6.66%) during their earlier age (1-2 weeks). Prevalence of coccidiosis in layer was the highest during late summer (45.00%) followed by winter (35.50%), summer 25.71%) whereas the lowest (20%) was found during spring season. The highest (54.16%) prevalence was recorded in layers of 5-6 weeks and the lowest (7.14%) during their earlier age (1-2) weeks.
Keywords: Prevalence, coccidian, parasite, coccidiosis, poultry.

INTRODUCTION

occidiosis is caused by protozoa of the phylum Apicomplexa, family Eimeriidae. In poultry, most species belong to the genus *Eimeria* and infect various sites in the intestine. The infectious process is rapid (4-7 days) and is characterized by parasite replication in host cells with extensive damage to the intestinal mucosa. Poultry coccidia are strictly host-specific, and the different species parasitize specific parts of the intestine. Coccidia are distributed worldwide

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in poultry and wild birds (Aiello, 1998). The disease is characterized by high morbidity, anorexia, enteritis and bloody diarrhoea. Clinically, bloody faeces, ruffled feathers, anaemia, and somnolence are observed. The infection is realized by a faecal-oral route. After ingestion of sporulated (infective) oocysts, sporozoites are released that enter asexual and sexual cycles of development resulting in the emergence of thousands of new oocysts in the intestines. Oocysts are distributed by faeces. Soon, they sporulate and become infective for chickens. The intestinal lesions provoked by coccidia, are due to injury of the epithelial cells of the mucous coat where the parasites are developed and multiplied. The oocysts exist in the litter in premises and are distributed by clothes, shoes, dust, insects *etc.* The onset of morbidity and mortality is usually very soon after he first signs are seen (Anjum, 1997). The present study was aimed to estimate the prevalence of coccidiosis in broiler and layer farms in and around Lahore district, Pakistan

MATERIALS AND METHODS

In this experiment seasonal dynamic of coccidiosis in broiler and layer flocks was explored in and around Lahore. The study was conducted at poultry disease diagnostic laboratory o/o Deputy District Livestock Officer, Poultry Production Lahore. For this purpose, samples were collected from following sources.

1. Commercial broiler and layer farms
2. Birds received in laboratory for disease diagnosis.

Detailed history of the flock regarding No. of birds, age, capacity of the farms, management condition, vaccination schedule, feed and medicine used, mortality rate were recorded. Sick birds were examined clinically. Postmortem of sick / dead birds were conducted for the purpose of disease diagnosis and gross pathological lesions were recorded. The faecal material from intestinal area was examined for presence of oocysts of eimeria by direct smear method (Zajac and Conboy, 2006). The prevalence of Eimeriosis in broiler and layer flocks was recorded and information thus collected was used to draw inferences.

RESULTS AND DISCUSSION

The results of the present study have been presented in Tables I-IV. The faecal sample having at least 10 oocyst per field was considered to be positive for Eimeria infection. Average flock size in broiler and layer was 6000 and 4000 respectively. The result revealed that out of 119 broiler flocks affected with different disease problem 51 broiler flocks were affected with coccidiosis. The prevalence of disease was found to be 42.85 % in broiler flocks (Table I). The result revealed that out of 127 layer flocks 42 layer flocks were affected with coccidiosis. The prevalence of eimeriosis in layer was 33.07% (Table II). Prevalence of coccidiosis in broiler was the highest during late summer (51.7%) followed by winter (45.9%) then summer (37.5%) whereas the lowest (34.48.5%) during spring season (Table I). Prevalence of coccidiosis in broiler flocks was the highest during July (45.67%) and lowest during April (27.27%). Age wise prevalence of the disease in broiler flocks was found to be 6.66%, 65.78%, 58.33% and 20.00% during 1-2, 3-4, 5-6 and 7-8 week of age respectively. The highest prevalence was noted on birds of 3-4 weeks of age (65.78%) and the lowest (6.66%) was found during their earlier age (1-2 weeks) (Table III). Similar finding were reported by Yunus *et al.* (2008) who reported prevalence of coccidiosis was highest in broiler of 3 -4 weeks age. In our study the prevalence of coccidiosis in broiler flocks was higher (42.85%) than that reported by Anita Haug *et al*. (2008). They reported 30% prevalence of disease. Whereas Yunus *et al*. (2008) reported 19.6% broiler flocks were positive for coccidiosis. yet in reports on infection prevalence in broiler world wide the prevalence vary from less than 10% to more than 90% (Oikawa *et al*., 1979). Graat *et al.* (1998) found coccidial infection to occur more often in autumn and winter in the Netherland Similar findings reported by Ayaz *et al*. (2003). They reported overall prevalence of coccidiosis in broiler was found to be 37.95%. In the present study, prevalence of coccidiosis in layer was the highest during late summer (45.00%) followed by winter (35.48%), summer 25.71%) whereas the lowest (19.05%) during spring season (Table II). Age wise prevalence of coccidiosis in layer was found to be 7.14%, 42.50%, 54.16%, 36.36%, 19.05%, 16.6%, 1-2, 3-4,5-6,7-8,17-20 and above 20 weeks respectively (Table IV). The highest prevalence was recorded in layers of 5-6 weeks of age (54.16%) and the lowest (7.14%) during their earlier age (1-2) weeks.

Table I: Season wise prevalence of coccidiosis in Broiler flocks in and around Lahore

Month	Birds/flock	Positive case	Prevalence (%)
July-Sept. (Late summer)	29	15	51.7
Oct. Dec. (Winter)	37	17	45.9
Jan-March (Spring)	29	10	34.48%
April–June (Summer)	24	09	37.50%
Total	**119**	**51**	**42.85**

Table II: Season wise prevalence of coccidiosis in layer flocks, Lahore

Month	Birds/flock	Positive case	Prevalence (%)
July–Sep. (Summer)	40	18	45.0
Oct-Dec. (Winter)	31	11	35.5
Jan-March	21	04	19.05
April-June	35	09	25.71
Total	**127**	**42**	**33.07**

Table III: Age wise prevalence of coccidiosis in Broiler flocks in and around Lahore

Age (weeks)	birds/flock	Positive case	Prevalence (%)
1-2	30	2	6.66
3-4	38	5	65.78
5-6	36	21	58.33
7-8	10	3	30.00

In our study the prevalence of coccidiosis (33.07%) in layer was higher than that recoded by Yunus *et al*. (2008) who reported prevalence of coccidiosis in layer flock was 27% and prevalence of coccidiosis was highest at 4 weeks of birds age of modern management practices on small farms. This may be due to lack of knowledge regarding poultry husbandry, less available inputs, or in some case less supervision in a rural subsistence farm. The reason for comparatively high rate of coccidiosis observed in our study appear to be high density of birds, unhygienic and low quality of litter used at the poultry farms and addition of coccidiostat in the feed. Furthermore the close brooding might have also favoured the high prevalence of coccidiosis during colder months. The main cause of coccidiosis was noted to be damp litter during hot and humid weather. In our study the highest prevalence of coccidiosis in broiler and layer flocks observed during 4-6 weeks of age could be attributed to the large size of birds excreting more faecal material which created dampness of litter. The finding of the present study are in agreement with those of Hamsley (1964) and Yunus *et al.* (2008). They reported high incidence of coccidiosis in birds between 4-6 weeks of age.

Table IV: Age-wise prevalence of coccidiosis in layer flock

Age (week)	Birds /flocks	Positive case	Prevalence (%)
1-2	14	1	7.14
3-4	40	17	42.50
5-6	24	13	54.16
7-8	11	4	36.36
17-20	20	4	20.00
>20	18	3	16.66

Recommendations

- overcrowding and dampness of poultry houses must be avoided as coccidian flourished rapidly on damp litter
- Provide good hygienic and management conditions in farms.
- Regular use of coccidiostats is the need of the day.
- Birds should be provided well balanced nutritive food.
- Entry of visitors in the poultry farms should be banned.

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