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Epidemiology of Ascariasis in Native Chicken at Joypurhat Area of Bangladesh

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Abstract: ***In Bangladesh, poultry are affected by different types of helminth parasites of which ascariasis in chicken is most common and has impact markedly on growth and production performances of chicken. The study was conducted to epidemiologicallyinvestigate the status of ascariasis in native chicken at Joypurhat district of Bangladesh during June 2017 to April 2018.A total of 120 native chicken (57 males and 63 females)were collected from different areas of Joypurhat district and examined by postmortem examination, among them 57 (47.5%) were infested with Ascaridiagalli. It was observed that age had a significant influence on the prevalence of ascariasis. The higher prevalence was observed in adult chicken (54.5%) than the young (41.5 %), females (52.4%) were found to be significantly more infected than male (42.1%) with Ascaridiagalli. Prevalence rate was significantly higher in summerseason (55%) followed by rainy (47.3%) and winter (40%) season.***

Keywords: Ascariasis, Native Chicken, Prevalence, Age, Season, Postmortem examination

1. Introduction

Poultry is animportant sector in Bangladesh which is increasing day by day.Chickens play an important role in the national economy of Bangladesh by producing good quality eggs and meats. The domestic chicken feeds on a wide variety of foodsubstances ranging from grains, fruits to insects which mayharbour infective stages of parasites thereby predisposing themtoparasitic infection particularly gastro-intestinal parasites [9]. Although, incommercial production system, parasitic infections have been reduced mostly due to improvedhousing, hygiene and management practices the prevalence ofgastrointestinal parasites is still very rampant [10].

The traditional or backyard poultry production system has a greatimportance as main supplier of eggs and meat, and as sourceof income, especially, to the rural women. The rearing of native chickens in conventional farming system faces various problems, among them parasitic infections play vital role. Nematodes are the most important group of helminth parasites of poultry. Ascariasis caused by *Ascaridiagalli* is a common parasitic problem of chicken both in rural and farm conditions in Bangladesh [2][3]. *A. galli* causes extensive economic losses in different ways such as loss of weight gain, meat production, egg production and death of birds [4]. These live in central portion of the smallintestine of domestic fowl and other birds. Young age, coccidiosis and feed deficient in vitamin Aand protein are the most important predisposing factors. Despite being economically importantparasite, little work has been carried out on epidemiology of *Ascaridiagalli.* So the present study was designed to investigate the epidemiology of *Ascaridiagalli* in native chicken in Bangladesh.

2. Materials and Methods

The investigation was carried out during the period from June 2017 to April 2018at different areas of Joypurhat district of Bangladesh. Onehundred and twenty native chickens were collected from different village market of Joypurhat district and examined by postmortem examination. During collection of chickens the age, sex and season (summer, rainy and winter) of the year were carefully recorded. The chickens were categorized into two groups: young and adult. Fourty (40) chickens were examined in each season from different villages of Joypurhat district.

The parasitic counts of gastrointestinal contents washing of viscera were made by the methods described by Norton [5].The gastrointestinal tracts were collected after slaughtering and opening of abdominal cavity of chicken.After collection of gastrointestinal tract, it was kept into glass tray containing tap water. The parasites were collected after opening the intestinal tract by forceps and teasing needle by observing with naked eye. The parasites were preserved either in 10% formalin or glycerine-alcohol for longer period for further identification. Some parasites were identified with the help of one or two drops of lactophenol under microscope.

The influences of age, sex and season on the prevalence of ascariasis were analyzed by chi-square (χ^2) test as described by Mostafa [11]. Odds ratio were calculated according to the formula given by Schlesselman [12].

3. Results and Discussion

3.1 Overall prevalence of *Ascaridiagalli* infection in native chicken

During study period, 120 native chickens were examined through postmortem examination and among 120 chickens, 57 (47.5%) were found infected with *Ascaridiagalli*(Table 1).The present finding is similar to the findings of Islam *et al*., [3], Samadand Rahman [8] and Haque [1] who reported 50%, 44.8% and 45% prevalence of *Ascaridiagalli* in chicken in Bangladesh respectively. The variation in the prevalence of ascariasis in chicken may be due to difference in place of investigation, changes in climatic condition and management practices of chickens.

Table 1: Overall prevalence of *Ascaridiagalli* infection in native chicken

Total number of chicken examined	Number of positive case	Prevalence (%)
120	57	47.5

3.2 Seasonal prevalence of ascariasis in native chicken

From the study it was observed that seasonal fluctuation of the year had significant (P<0.05) effect on the prevalence of ascariasis (Table 2**).** The seasonal prevalence of *Ascaridiagalli* infection in native chicken was recorded higher in the summerseason (55%), followed by the rainy season (47.5 %) and winter (40%) season respectively. The present finding is near about similar to the findings of Ovies (1976) who carried out an experiment on seasonal dynamics of *Ascaridiagalli* infection in broiler chicks in Cuba and recorded that highest infection of (86%) *Ascaridiagalli* in May and lowest (2%) in December but Samad and Rahman[8] reported 44.8% infection with *Ascaridiagalli* in domestic fowls in Bangladesh and the highest prevalence during winter and the lowest in summer.

Table 2: Seasonal prevalence of ascariasis in native chicken

Name of season	No. of chicken examined	No. of positive case	Prevalence (%)	Odd ratio	Chi-square value
Summer	40	22	55	SvsR=1.35	2.68
Rainy	40	19	47.5	RvsW=1.36	
Winter	40	16	40	SvsW=1.83	

3.3 Age-related prevalence of ascariasis in native chicken

In the present study, it was observed that the infection rate of Ascariasis was higher in adult chicken (54.5%) than young chicken (41.5%) (Table 3).The calculated odd ratio (1.69) implied that the adult native chickens were 1.69 times more affected than the young chicken.The present finding supports the findings of Hasan (2014) who recorded that a significantly higher (P<0.05) prevalence of *A. galli*(71%) was recorded in adult (≥ 7 months to 1 year) than that of (25.3%) young (≤6 months of age). *Ascaridiagalli* prevails throughout the year and varies from 30% to nearly 80% with a higher rate of infection in adults than in youngs [7].

Table 3: Age-related prevalence of ascariasis in native chicken

Age Group	No. of chicken examined	No. of positive case	Prevalence (%)	Odd ratio	Chi-square value
Young	65	27	41.5	AvsY =1.69	1.76
Adult	55	30	54.5		

3.4 Sex-related prevalence of ascariasis in native chicken

The present study showed that the prevalence of *Ascaridiagalli*in male and female native chickenswere 42.1% and 52.4% respectively. The calculated odd ratio (1.51) implied that the female chickenswere 1.51 timesmore susceptible than the males (Table 4).The calculated odd ratio (1.51) implied that the female chickenswere 1.51 times more susceptible than the males. This result is not an agreement with the report of Hasan [6]who reported that no significant was found in relation to sex related prevalence of *Ascaridiagalli*.

Table 4: Sex-related prevalence of ascariasis in native chicken

Sex group	No. of chicken examined	No. of positive case	Prevalence (%)	Odd ratio	Chi-square value
Male	57	24	42.1	FvsM =1.51	1.12
Female	63	33	52.4		

4. Conclusions

Ascaridiagalli is parasitic nematode of poultry causing great economic losses in poultry industry, especially in scavenging chickens worldwide. In this study, the prevalence of *Ascaridiagalli* in indigenous chickens was investigated in the different areas of Joypurhat district of Bangladesh. Overall 47.5% prevalence of *Ascaridiagalli* was found in the native chickens. The prevalence of ascariasis in native chicken was significantly (P<0.05) affected by age, sex and seasons of the year. The prevalence rate was higher in female, adult chicken than male, young chicken respectively. Prevalence of ascariasis was higher in summer season than rainy and winter season.

References

[1] Haque, “Prevalence of helminth parasites in desi fowl (*Gallus gallusdomesticus*) at Parbhani”, Journal of Parasitic Diseases,31(1): pp.61-64, 1986.
[2] M.S.Haq, “Studies on helminthes infections of chicken under rural condition of Bangladesh”, Bangladesh Veterinary Journal, 20: pp.55-60, 1986.
[3] Islam ,W.M.S.Abdul, and Saikh, “A survey of helminth infection in the gastrointestinal tract of domestic fowls in Mymensingh district, Bangladesh”, Ceylon Veterinary Journal, 15(3): pp.107-109, 1967.
[4] A.H.M.Kamal, “Pathological investigation on the mortality of chickens in Bangladesh Agricultural University Poultry Farm”, M.Sc. (Vet. Science) Thesis, Department of Pathology, Bangladesh Agricultural University, Mymensingh, 1989.

[5] C.Norton, "A survey of nematodes from the lower digestive tract of domestic fowls", Journal of helminthology, 38: pp.269-282, 1964.
[6] M. Hasan, "Prevalence and embryonation ofAscarids in Indigenous chicken", Master thesis. Department of Parasitology Bangladesh Agricultural University Mymensingh, 2014.
[7] M.M.H. Mondal and A.N.M.A.Quadir, "Some epidemiological aspects of ascarids infection in chicken under the existing conditions of Bangladesh Agricultural University poultry Farm", Bangladesh Agricultural University Research Progress, 5:pp.332-336, 1991.
[8] M.A. Samad and A.Rahman, Incidence of gastrointestinal parasitic infection in domestic fowls of Bangladesh, Poultry Adviser, 18(10):pp.33-38,1986.
[9] S.J.Oniye, P.A.Audu, D.A.Adebate, B.B.Kwaghe andO.J.Ajanusi,"Survey of Helminth Parasites of laughing dove (Streptopeliasenegalensis) in Zaria, Nigeria", African Journal of Natural Science, 4: pp.65-66, 2001.
[10] V.S.Pandey, F.Demeyand A. Verhuslt, "Parasitic diseases: A neglected problem in village poultry in Subsaharan Africa", In: Pandey VS, Demey F (Eds). Village poultry production in Africa Rabat, Morocco, 1: pp.362-141, 1992.
[11] M.G.Mostafa,"Methods of statistics", Fourth edn.Karim Press and Publications, Dhaka, pp. 296-298, 1989.
[12] J.J. Schlesselman, "Case-Control Studies: Design, Conduct, Analysis", New York: Oxford University Press, 1982.