Epidemiology of Ascariasis in Native Chicken at Joypurhat Area of Bangladesh

Md. GolamAzam¹, Md. Gausur Rahman², Moizur Rahman³, Md. Nuruzzaman⁴

¹Department of Pathology and Parasitology, Hajee Mohammad Danesh Science and Technology University, Dinajpur, Bangladesh
(Corresponding Author)
² Livestock Extension Officer, Upazila Livestock Office, Rajbarisadar, Rajbari, Bangladesh
³Department of Veterinary and Animal Sciences, University of Rajshahi, Rajshahi-6205, Bangladesh
⁴Lecturer, Dept. of Pathology and Parasitology, Sirajganj Government Veterinary College, Sirajganj

Abstract: In Bangladesh, poultry are affected by different types of helminth parasites which ascariasis in chicken is most common and has impact markedly on growth and production performances of chicken. The study was conducted to epidemiologically investigate 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 summer season (55%) followed by rainy (47.3%) and winter (40%) season.

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

1. Introduction

Poultry is an important 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 foodstuffs ranging from grains, fruits to insects which may harbour infective stages of parasites thereby predisposing them to parasitic infection particularly gastro-intestinal parasites [9]. Although, in commercial production system, parasitic infections have been reduced mostly due to improved housing, hygiene and management practices the prevalence of gastrointestinal parasites is still very rampant [10].

The traditional or backyard poultry production system has a great importance as main supplier of eggs and meat, and as source of 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 small intestine of domestic fowl and other birds. Young age, coccidiosis and feed deficient in vitamin A and protein are the most important predisposing factors. Despite being economically important parasite, 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 2018 at different areas of Joypurhat district of Bangladesh. One hundred 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. Forty (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 (χ²) 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], Samadad 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

<table>
<thead>
<tr>
<th>Total number of chicken examined</th>
<th>Number of positive case</th>
<th>Prevalence (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>120</td>
<td>57</td>
<td>47.5</td>
</tr>
</tbody>
</table>

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 summer season (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

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

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

<table>
<thead>
<tr>
<th>Age Group</th>
<th>No. of chicken examined</th>
<th>No. of positive case</th>
<th>Prevalence (%)</th>
<th>Odd ratio</th>
<th>Chi-square value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Young</td>
<td>65</td>
<td>27</td>
<td>41.5</td>
<td>AvsY =1.69</td>
<td>1.76</td>
</tr>
<tr>
<td>Adult</td>
<td>55</td>
<td>30</td>
<td>54.5</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

3.4 Sex-related prevalence of ascariasis in native chicken

The present study showed that the prevalence of Ascaridiagalli in male and female native chickens were 42.1% and 52.4% respectively. The calculated odd ratio (1.51) implied that the female chickens were 1.51 times more susceptible than the males (Table 4). The calculated odd ratio (1.51) implied that the female chickens were 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

<table>
<thead>
<tr>
<th>Sex group</th>
<th>No. of chicken examined</th>
<th>No. of positive case</th>
<th>Prevalence (%)</th>
<th>Odd ratio</th>
<th>Chi-square value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>57</td>
<td>24</td>
<td>42.1</td>
<td>FvsM =1.51</td>
<td>1.12</td>
</tr>
<tr>
<td>Female</td>
<td>63</td>
<td>33</td>
<td>52.4</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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


