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Prevalence of *ascaridia galli* in different broiler poultry farms of potohar region of rawalpindi-pakistan

Abstract

This study was conducted from September 2017 to August 2018 to find out the prevalence of *A. galli* in different broiler poultry farms of Rawalpindi region. During this period total of about n=3100 chicken intestines were collected and examined for the presence of *A. galli*. These birds were examined according to breed wise (Ross-308, Cobb-510, Hubbard Classic, Arbo Acra) each breed consist of n=775 birds. In these n=3100 birds about n=888 birds were infected and the overall prevalence rate of *A. galli* was about 28.64%. In this study total n=775 chicken were examined of each breed in which 202 (26.06%) were found infected of Ross-308, 239 birds were found infected of cobb-510 at rate of (30.83%) and about 220 birds (28.4 %) were infected of Hubbard classic and 227 birds were found infected of Arbo Acar (29.29%). The seasonal prevalence percentage of *A. galli* infection in broiler was found highest during summer (36.71%) followed by rainy (27.02%) and lowest during the winter season (16.89%). The overall study shows that *A. galli* is the most common and highly prevalent nematode in the broiler chicken of Rawalpindi region. The study also shows that *A. galli* is common health problem in poultry chicken so suggest the need of proper poultry management.

Keywords: ascaridia galli, broiler farms, potohar region rawalpindi distract, prevalence

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Introduction

Birds are important for their commercial, recreational, ethical, spiritual values and form a rich protein source for humans. There is a rich diversity of birds in this area. Among birds, Poultry is of great importance in commercial production system. Chicken was the only poultry bird being reared for meat and egg production. After textile it is the 2nd largest industry, which plays a dynamic role in the GDP of Pakistan. Poultry products are rich source of protein and good source of income. Importance of poultry is further emphasized by its demand and production ability in the country.[1,2] Currently the income from poultry sector is more than Rs. 564 billion, the contribution of poultry in agriculture and livestock is 6.4% and 11.5%, respectively.[3] Intensive rising of poultry in commercial farms inevitably exposes flock to the various diseases which cause mortality of the birds and loss to the farmers. The infection of local chicken by endoparasites is more common due to their free-ranging mode of life.[4] This parasitic diseases cause reduce growth, effect egg production, emaciation and anemia also cause death.[5] As in birds parasites the nematodes are very important group, there 25 families of nematodes in which 13 are documented very harmful for birds. Ascaridiosis is the most common disease which is caused by nematode parasite named *Ascaridia galli,* it is worldwide problem but mostly it is documented in free rang birds.[6] As it was reported that helminth parasitism is most dangerous problem in chicken.[7] Commonly birds show symptoms when their age is about 10-12 weeks.[5] Through post mortem it is directly identified, furthermore it is also identified by the examination of fecal samples.[8] It is restricted to small intestine of bird such as chicken, turkey, geese, guinea, fowl and wild bird. Several factors may be influenced on the prevalence and intensity of helminthes, such as climatic conditions (temperature and humidity).[9] Purpose of current study is to evaluate the prevalence rate of *A. galli* in broiler birds in Rawalpindi.

Material and methods

Study area

The survey was carried out at different broiler farms of Potohar region of Rawalpindi distract (Chakri, Chak beli khan, Cheena, Damhyial, Patt, Mardyal, Sial, Chakri Vakilan, Rawat, Adiala). The farm contains latest heating ventilation automation. These areas contain largest bird's capacity farms.

Study design

Current research was conduct from September 2017 - August 2018. In this duration total 3100 chickens (Cobb-510, Ross-308, Arbo Acare, Hubbard Classic), 775 birds of each breed were observed of different sex, age, location and season for the occurrence of adult helminthes parasite (*A. galli*). Age and sex of chickens were inquired from attendants at farms.

Sampling and birds examination

For the collection of endo-parsites the chicken were slaughtered and carefully observed the body of the hosts, intestines were removed and kept in separate petri dishes. To observe the adult parasite open the intestine with sharp scissor to observed its contents.

Parasite collection, identification, preservation

Stereomicroscopy was used to collect the materials while there species was identify through light microscopy according to their morphological characteristics. The adult parasite were isolated and collected with forceps to preserve it in 10% formalin.

Data analysis

Data were recorded in Microsoft Excel while Minitab® version 14 (Minitab Inc., Pennsylvania, USA) was used for statistical analysis.

Results

Prevalence

The results showed the presence of parasitic in broiler birds of four different breeds (Cobb-510, Ross-308, Arbo Acare and Hubbard Classic). A total n=3100 (775 each breeds) specimens were examine throughout the current study which exposed 36.62% (1135/3100) of infection by *Ascaridia galli* in this area Figure 1.

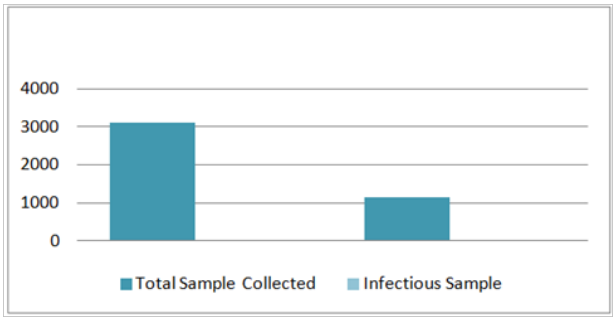

Figure 1 Specimens examined.

Breed wise prevalence

A total n=775 bird's specimens of intestines were examined of each and every breed's. In which 202 birds were found infected of Ross-308 at prevalence rate was 26.06%, 239 birds were found infected of Cobb-510 (30.83%), Hubbard classic 220 birds at rate of 28.4%. While Arbo Acre chicks were observed maximum for the occurrence of *A. galli* 227 birds were found infected of at (29.29%) as show in Figure 2.

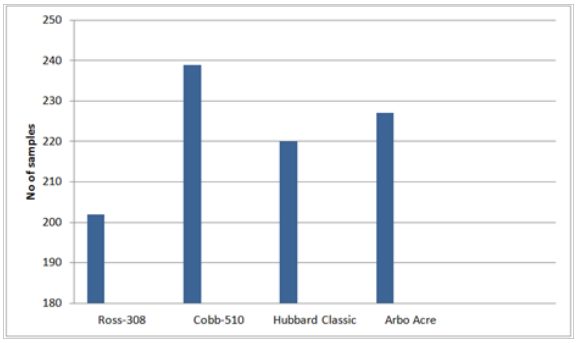

Figure 2 Breed wise prevalence.

Age wise prevalence

Occurrence percentage at different ages of chicken were <4 weeks (5.22%), <5 weeks (7.22%), <6 weeks (12.55%) and <7 weeks (14.18%) Figure 3.

Season wise prevalence

In relation to seasons it was documented that the rate of occurrence of *A. galli* (summer 34.13%, drizzly 26.25%, spring 16.75% and winter 16.25%). The seasonal occurrence rate of *A. galli* infectivity in broiler was documented maximum throughout summer followed by drizzly and minimum during the wintry weather as showed in Figure 4.

Gender wise prevalence

Gender was determined by vent sexing and feathering sexing. Total 1225 birds out of 3100 were male, while 1875 birds were female observed. Prevalence percentage in female was higher 22.45% while in male 17.22% Figure 5.

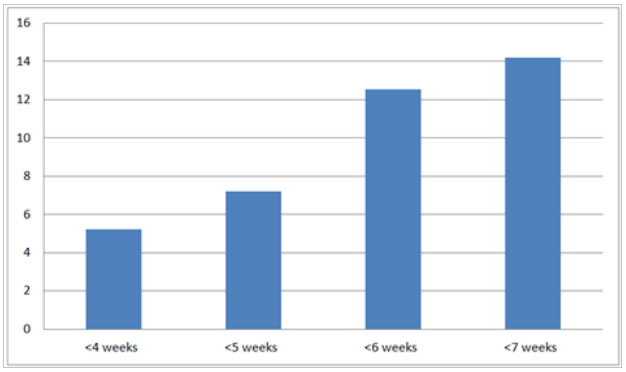

Figure 3 Age wise prevalence.

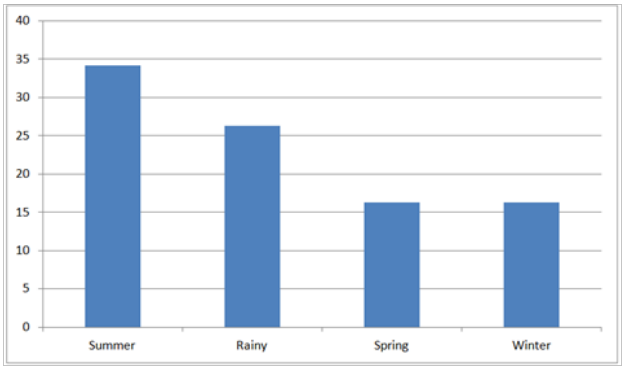

Figure 4 Season wise prevalence.

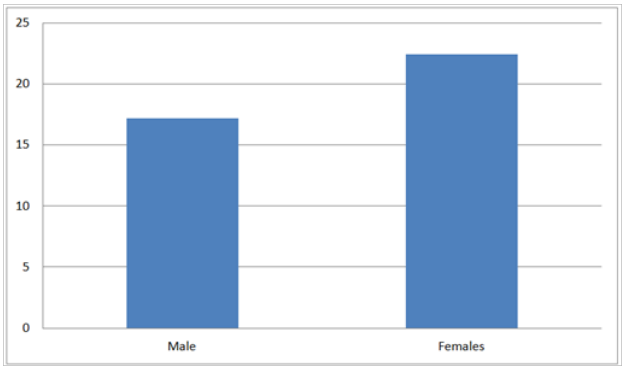

Figure 5 gender wise prevalence.

Area wise prevalence

Broiler farms were located in different Potohar areas of Rawalpindi distract. These sample were collected from the Chakri, Chak beli khan, Cheena, Damhyial, Patt, Mardyal, Sial, Chakri Vakilan, Rawat, Adiala every area have different occurrence percentage i.e 13.11%, 14.95%, 12.27%, 18.22%, 15.12%, 22.12%, 21.52%, 20.73%, 19.12% and 20.27% respectively.

Discussion

The records that has been resulting from 888 infected birds out of 3100 show that the overall prevalence percentage of 28.64 %, which is equivalent to 25.63% in Kenya by[10] 25.7% in Pakistan by[11] and less the 21.44 % in Mardan by.[12] The survey show the prevalence percentage in female and male 22.45% and 17.22% respectively

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which is documented maximum infestation rate.[13] It was documented that females are extra susceptible to infestation as compare to male by helminthes parasites due to feeding nature of female while male is selective in feeding habits.[14] The variation in overall percentage is due to the climatic situation contribute in rising of infective stage, also there is recorded in different regions in variation of chicken internal immunity by using of antihelmintic drugs which kill the parasite. Indigenous birds are more prevalent to affect due to their free-ranging mode of life. As such those birds are taking feed from the superficial layer of soil which is the highest risk of ingestion parasitic eggs, water or by eating grasshopper and worms.[15,16] Parasitological surveys play a vital role to tacking of parasite in different areas. Thus, it is strongly recommended, constant tracking of helminthic parasites in domestic/ broiler poultry in Pakistan.

Conclusion

Ascaridia is most common species in broiler poultry birds. The occurrence of Ascaridiosis was found in highest percentage during summer than the rainy and minimum percentage during spring and winter season. This parasite affects the health of broiler. Current research tends that helminth infection is highly prevalent in this region. It is necessary to control the helminth infection.

Author's contribution

Dr. Adnan Yousaf was the main researcher, Dr. Azizullah Memon was research supervisor, Dr. Nasir Rajput was Co-Supervisor, Dr. Rehana Shahnawaz revised the article, Dr. Tahseen Jamil contributions in statistics Dr. Sadaf Rajpar helped in paper write up, Dr. Maryam Mushtaq and Dr. Muhammad Saleh Tabasam help in other activities related to the research.

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Conflicts of interest

We declare that we don't have any competing interest.

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