

Study the Prevalence of Pigeon Coccidiosis in Baghdad City

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Summary

The present study was conducted to record the prevalence of pigeon coccidiosis in Baghdad city. Out of 40 birds 14 (35%) were infected with *Eimeria* spp. which divided into 8 males (38.09 %) and 6 females (31.57 %). Insignificant effects on the body weight gain was recorded between the infected birds ($234.78 \pm 6.32g$) and non infected once ($258.461 \pm 9.2g$); Also in both sex males ($236.87 \pm 9.41g$, $260.07 \pm 10.88g$) and females ($232 \pm 8.63g$, $256.84 \pm 15.29g$) respectively.

Keywords: Pigeon, Coccidiosis, Prevalence, Baghdad.

Introduction

Pigeons of the order *Columbiformes* are ubiquitous birds and can be found in virtually every town and city around the globe (1). The impact of parasites on birds ecology and behavior became carefully studied lately, Most of the investigations concern the relationship between parasite infection and some birds, sexual selection, sexual ornaments, breeding parameters or nestlings condition. However, papers that deal with influence of parasites on birds are still not very numerous. Mainly the interactions between birds and ectoparasites or protozoan blood parasites were studied, but the influence of other groups of endo- parasites on birds was rarely studied (2). Coccidia (Protozoa, Apicomplexa) which lived in alimentary canal, was described in various birds species. The infective stage of coccidian, oocysts, are excreted with host dropping and must be transmitted orally with food. Therefore birds foraging on the ground are specially exposed to infection (3).

Most intestinal *Coccidia* have a complex but direct life cycle in which the infective form of the parasite invade a single host animal for development to sexual maturity; the life cycle is complete in 1-2 weeks. *Coccidia* are found worldwide; Birds may be infected at any time. Although little is known about the conditions that may lead to the development of clinical disease in the wild birds, birds may become diseased more frequently during periods of stress (4). Coccidiosis of the pigeon may occasionally be seen in young squabs, especially where these are reared intensively

and when conditional of hygiene are poor. Older birds serve as carrier and remain apparently healthy (5). The parasite has a form called an oocyst that is passed out in the feces; It takes 14 days in a damp and warm environment for oocyst to (ripen) to where they can develop into true coccidiosis if ingested. They can survive for long periods and are infectious as coccidiosis only when they ripen. Pigeons can be infected only by ripe oocysts of pigeon coccidia, and not by these of any other animals (6). Researchers (7) refer to the that *Coccidia* are common pathogenic parasites in pigeons (*Columba livia*). Coccidiosis is most commonly seen in young pigeons and rarely in adult birds; Infection in domesticate pigeons are typically mixed and commonly include *Eimeria columborum* and *E. labbeana*. The prevalence of infection is 5.1 % to 71.9 % and worldwide mortality in juvenile pigeons varies from 5 % to 70 % with most deaths occurring in the third and fourth month of life. The aim of the study is to estimate the prevalence of *Eimeria* spp in pigeons.

Materials and Methods

Fourty pigeon (males and females) of *columbidae* family examined during a period December 2011 to March 2012 for protozoal infections.

Two fecal analysis methods were used for examination (8). Direct smear, this methods was done by mixing a drop and tape water with bite of feces using an applicator stick on glass microscopic slide covered with slip and examined at low (10X) and high power.

Flotation method; Comminute thoroughly a small quantity of feces, about 1 gm, with sufficient saturated salt solution in a beaker to make a fluid mixture. Pour the comminuted preparation through cheese cloth, and discard the debris. Pour fluid into straight sided tube until a convex meniscus appears at the top of the tube, and apply a cover slip immediately.

Little or no fluid should escape from the container when the cover slip is applied nor should there be so little fluid as to permit air bubbles under it. Allow preparation to stand on a level surface for 7-8 minutes, remove the cover slips apply.

Statistical evaluation was carried out by using T- test value less than ($P < 0.05$) consider as statistically significant (9).

Results and Discussion

The present study shows that out of 40 pigeon 14 (35%) were infected with *Eimeria spp.* (table, 1 and figure,1).

Table, 1: Prevalence of *Eimeria spp* in pigeon (Columbidae).

Number of samples examined	Positive	Percentage (%)
40	14	35



Figure, 1: Shape and diameter of *Eimeria spp* Oocyst in pigeon (40X)

Infection rate according to sex: results of this study showed that the infection rate of males and females were 38.09% and 31.57% respectively (Table,2). Effect of infection on body weight: The infection with *Eimeria spp.* showed decrease in the body weight of

infected pigeon (234.78 ± 6.32) compared with non-infected pigeon (258.461 ± 9.2). Also, In both sexes, without significant difference between infected and non-infected of both sexes (Tables, 3 and 4).

Table, 2: Prevalence of *Eimeria spp* infection according to sex.

Sex	Number of samples	Positive	Percentage (%)
Males	21	8	38.09
Females	19	6	31.57
Total	40	14	35

Table, 3: Effect of *Eimeria spp* infection on body weight of Columbidae pigeon.

Number of samples examined	Positive (Mean \pm SE) g	Percentage (%) (Mean \pm SE) g
40	234.78 ± 6.32	258.461 ± 9.2

Table, 4: Effects of *Eimeria spp* infection in the body weight of both sex.

Sex	Number of samples	Positive (mean \pm SE) g	Negative (mean \pm SE) g
Males	21	236.87 ± 9.41	260.07 ± 10.88
Females	19	232 ± 8.63	256.84 ± 15.29

Coccidia are common pathogenic parasites in pigeons (*Columba livia*), Coccidiosis is most commonly seen in young pigeons and only rarely in adult birds; Infections in domestic pigeons are typically mixed and commonly include *Eimeria columbarum* and *Eimeria labbeana* and the reported prevalence of infection is 5.1 – 71.9 % (7). Other researchers (10) reported infection Coccidial oocysts in 50% of the *Columbia livia*, while (1) was recorded on infection rate of *Eimeria sp.* 100%. Whereas (11) found that out of 145 feed domestic pigeons (*Columbia livia*) 98 (67.58%) were positive for *Eimeria* oocysts 80 (55.17%) and 74 (51.03%) were infected with *E. columbarum* and *E. labbeana* respectively and 56 (38.62%) samples were positive for both *Eimeria* species. Also, the high infection rate of pigeon coccidiosis in our study may due to the stress factor that can produce an outbreak (6).

The decrease in the body weight of infected pigeons compared with non-infected one may

be due to that the infection with coccidian parasites life cycle which is endogenous developmental cycle stages occur in the epithelial cells of the intestine from the anterior region down to the rectum and the second generation of schizonts forms may penetrate into the deeper tissues (5).

Coccidia invasions are able to cause negative changes in hosts, intestine flora, and reduce the amount of the vitamins from group B in hosts' organism (12) or have not found any effects on adult birds (3 and 13). These results agree with our results.

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دراسة نسبة انتشار داء الاكريات في حمام مدينة بغداد

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الخلاصة

هدفت هذه الدراسة معرفة مدى انتشار داء الاكريات في حمام مدينة بغداد . فحص 40 طير، فظهرت النتائج ان 14(35%) مصابة بطفيلي الايميريا، قسمت بواقع 8 (38.09%) في الذكور و 6 (31.57%) في الاناث . أثرت الأصابة بالاكريات تأثيرا غير معنوي على مستوي وزن جسم في الحمام المصاب (6.32± 234.78 غم) عنها في غير المصاب 9.2± (258.461غم)؛ وكذلك في كلا الجنسين، الذكور (9.41 ± 236.87، غم)، الاناث (10.88±260.07، غم) في الاناث (8.63 ± 232) غم. (15.29±256.84 غم).

الكلمات المفتاحية: داء الاكريات، الحمام، بغداد، انتشار.