



EPIDEMIOLOGICAL STUDY AND IDENTIFICATION OF ECTOPARASITE AND HAEMOPROTOZOA IN DOMESTIC PIGEONS

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ABSTRACT

The present study was conducted to investigate the ectoparasites infestation and haemoprotozoa of some columbidae birds using field screening in some Baghdad areas. A total of 100 pigeon samples of both sexes were collected during the period from October 2016 to February 2017. Results revealed that the pigeon of *Columbicola Columba* infested by one lice species in a percentage rate of 53%. The highest infestation rate (75%) was detected in January, while the lowest infestation rate (30%) in October. Also one genera of soft tick *Argas parsecs* was isolated from examined pigeon nests with a total percentage rate of 33.33%. The highest infestation rate (83.3%) in November, while the lowest infestation rate (0.0%) in February. The study also showed that the pigeons were infected by one haemoparasite *Haemoproteus Columba* in percentage rate 51%. The highest infection rate (65%) was reported in November and the lowest (35%) in January.

KEYWORDS: ectoparasites haemoprotozoa domestic pigeon.

INTRODUCTION

Birds are the source for food and enjoy in addition to their importance role in the environmental resistance through eating the insects and harmful organisms for human animal and plant. Birds formed a class of the phylum of the animal's kingdom this class contain about 8600 types which divided into 20 orders. The birds belong to the family columbidae in general and the wild bird specially as a vector for the spread of some zoonotic diseases for the human such avian influenza (Piasecki, 2006). The birds infected by different types of ectoparasites like lice, ticks and flies which live on the skin and feathers as permanent or temporary which lead to economic big losses and causes noise for them with in appetite in addition to decrease their production of meat and eggs due to their feed on their blood and transmitted many disease causes birds also can transmitted infection disease from infected birds to the healthy birds which lead to death of a lot of them (Derakhshanfar et al., 2006). Birds infected by many haemoparasites *Plasmodium*, *Haemoproteus* and *Leukocytozoon* that transmitted by many insects which act as transport host, lead to stress to the bird and infection by many diseases as result a great economic losses in the chickens industry of meat and eggs production could be occurred (Jordan, 1990). As the studies on the parasites that could infect the pigeons in Iraq are rare, this study was conducted to diagnose the parasitic infection in pigeons because it can be an important source of the spread of parasites to other birds and even poultry.

MATERIALS AND METHOD

A total of 100 birds of wild and domesticated pigeons of different ages and sexes were included in this study during the period from October 2016 to February 2017 to detect the ectoparasites. Also 100 blood smears samples were done for detect the haemoprotozoa parasites of different

areas at Baghdad city. The total sample divided into three groups: 33 birds of *Columba livia*, 33 birds of *Streptopelia decaocta* and 34 birds of *Columba lives domestic*. The first two birds were collected by hunters, while the 3rd was bought from the local market. The classification of these birds was performed according to Al-Lawus, (1961). The pigeons brought to the Protozoa Laboratory of Veterinary College and all information about the birds were recorded in a special list which prepared before for this purpose which include areas of lice, ticks on the body, history of collection, sex, case history and others. Ectoparasites were collected from the feathers of the infected pigeons before slaughtered. They were found in the head between femurs and under wings in the first degree and other areas of the body also (30 nests) of birds were examined for ticks. A blood samples were collected and subjected to Games stain.

Statistical Analysis

Statistical analysis of data was performed using SAS (Statistical Analysis System - version 9.1). The infection rates were compared by using Chi-square test. $P < 0.05$ was considered statistically significant.

RESULTS & DISCUSSION

Results showed that a total infection rate of lice was 53% with only one species of lice that infested pigeons (*Columbicola Columba*). The highest infection rate was recorded in January (75%) while the lowest infection rate was recorded in October (30%), this result agreed with Abul-hub (1961) who recorded the same species *C. columbicola* parasitic in the pigeons of Baghdad province while disagreed with others (Zankana, 1982; Karim, 2006) who found the species *Columbicola tschulyschman* that parasitized on the domesticated pigeon. These differences may be due to different in the season of sample collection, the number of samples and areas (Table 1, Fig. 1, 2)

TABLE 1: Numbers and infection rate of lice in pigeons.

Month	N. of birds examined	N. of infected bird (%)	Chi square value	P
October 2016	20	6 (30%)	11.88	0.01
November	20	8 (40%)		
December	20	14 (70%)		
January 2017	20	15 (75%)		
February	20	10 (50%)		
Total	100	53 (53%)		



FIGURE 1: *Columbicola Columba* (male)



FIGURE 2: *Columbicola Columba* (female)

Soft tick

The results of this study showed that the pigeon nests infected with one species of soft ticks (*Argas persecs*) nymph and adults with a total infection rate of 33.33% (Table 2) (Fig 3). The highest infection rate was recorded in November (83.3%) while the lowest infection rate was recorded in October (16.66%) and not infection was recorded in February. These results agreed with Al-Janabi et al., 1980) and Shamsudden et al., (1988) while

disagreed with Mohammad, (1996) in the Middle and West Iraq when the species *A. reflex's* was recorded in a percentage rate 10.9% in the wild pigeons and rodents. The differences in the species compared with the result of this study may be due to the numbers of nests species of birds examined and the environmental factors that the pigeons suffer during the months of study also the differences in the geographical sites and the migratory birds that have a great role in the spread of ectoparasites.

TABLE 2: Number and the infection rate of lice (adult) of the species *Argas persicus* in the pigeon nests

Month	Number of nests examine	Infected (%)	Chi square value	P
October 2016	6	1 (16.66%)	10.50	0.03
November	6	5 (83.3%)		
December	6	2 (33.33%)		
January 2017	6	2 (33.33%)		
February	6	0 (0)		
Total	30	10 (33.33%)		



FIGURE 3: *Argas persecs* adult

The species *H. Columba* was diagnosed as a parasites in pigeon with a total infection rate (51%) (Table 3)(Fig 4). The result agreed with Esmail, (2004) who found the species *H. Columba* infestation on the pigeon and birds in

Egypt, but disagree with Mohammad, (1999) who refer to species *H. burhinrs* in Baghdad. These differences may be due to the different in the regions and the size of sample subjected to diagnosis.

TABLE 3: Number and infection rate of *Haemoproteus* parasite in pigeons

Month	N .of pigeons examined	Number of infection (%)
October 2016	20	12 (60%)
November	20	13 (65%)
December	20	9 (45%)
January 2017	20	7 (35%)
February	20	10 (50%)
Total	100	51 (51%)

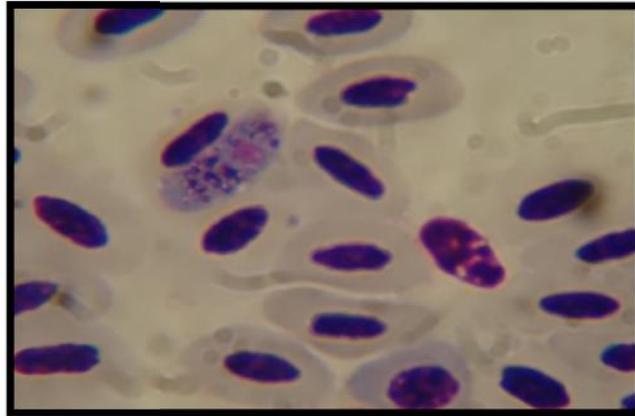


FIGURE 4: *haemoproteus Columba*

CONCLUSION

Results showed that the infection rates of pigeons were high with lice in the species *Columbicola Columba* (53%), only one species of the soft tick of the genus *Argas parsecs* (33.33%) and with Haemoparasite *H. Columba* (51%). These results confirm the essential role of pigeons as could be a source of transmission.

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