

## Detection of some protozoal infections in Quails in Baghdad city

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### Abstract

The aim of this study was conducted to estimate the prevalence of some blood protozoal infections of quails in Baghdad (Al-Husainia, Baghdad Al-Jadeda and Al-Rashedia) by using 57 blood samples of both sexes, 9 of them were infected 9.67% which divided into 10.52% *Leukocytozoon* spp and 5.26% *Plasmodium* spp. The infection rates of males and females were 9.67% and 23.07% respectively. A higher infection rate was recorded in Baghdad Al-Jadeda 28.57% and the lowest infection rate 8.33% was found in Al-Rashedia. Also, a higher infection rate was recorded in May month 25%, while the lowest infection rate was found in February month 0.0%.

**Key words:** Quail, Blood, *Leukocytozoon*, Sexes, Al-Rashedia.

الكشف عن بعض الأولي الدمية في طائر السمان في مدينة بغداد

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### الخلاصة

هدفت الدراسة الحالية معرفة مدى انتشار بعض الأولي الدمية في طائر السمان في بعض مناطق مدينة بغداد (الحسينية، بغداد الجديدة والراشدية) من خلال جمع 57 عينة دم من الوريد الوداجي ولكلا الجنسين، فكانت 9 منها مصابة وبنسبة إصابة كلية بلغت 9.67% توزعت بواقع 10.52% بطفيلي *Leukocytozoon* spp و 15.26% بطفيلي *Plasmodium* spp. وبلغت نسبة إصابة الذكور والإناث 9.67% و 23.07% على التوالي، وكانت أعلى نسبة في منطقة بغداد الجديدة 28.57% وأقلها في مدينة الراشدية 8.33% كما بلغت أعلى نسبة إصابة في شهر أيار 25% وأقلها في شهر شباط 0.0%.

### Introduction

Quails are mild-sized birds. In recent years, it has become a very important, in some areas for commercial meat soil (1). These birds are very useful, economic and has been introduced to Iraq as domestic birds, because it has desirable meat, which has tasteful, energy higher than in chickens meat and for eggs production (2). *Haematozoa* of Iraq birds are rather partially known beginning from the study of (3). Four genera (*Plasmodium*, *Haemoproteus*, *Leukocytozoon* and *Trypanosoma*) of blood parasites were well known as avian haematoprotzoa observed in a variety of birds species (4) emphasized that plasmodium spp. occur over arrange of several avian families have extensive host ranges encompassing a number of avian families and orders. It is a common mosquito transmitted blood protozoon of wild birds that has a worldwide distribution. The most likely reason for this is the environmental differences and the availability of insect vectors of plasmodium spp. (9). There is a little scientific information about the blood protozoal infections of quails in Baghdad city, so the present study was conducted identification of these parasites.

### Materials and Methods

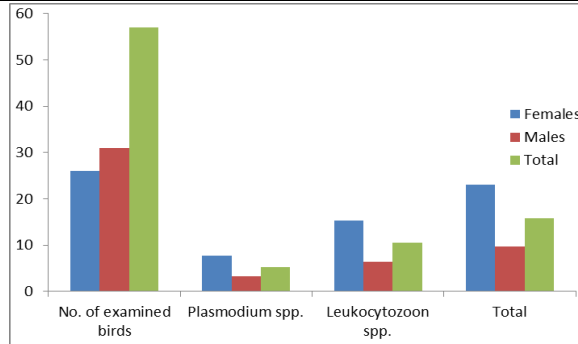
A total of 57 Japanese quails blood samples from Jugular vein of both sexes were collected randomly at Baghdad city (Al-Husainia, Baghdad Al-Jadeda and Al-Rashedia) during the period 1/1/2014 to 31/5/2014. Thin blood smears were made, air dried, fixed in absolute methanol, and stained with Giemsa's stain 10% for 30 minutes, then slides were examined under the light microscope for the detection the protozoal infection by using the oil immersion lens. The identification of the parasites was done according to (5).

**Results and Discussion**

- **Infection rates according to the sex of quails:** A high blood protozoal infection rate was recorded in quails 15.78 (9/57). Females quails showed a high blood protozoal infection rate 23.07% (6/26) compared with males quails 9.67% (3/31); Also, a high infection rates of *Leukocytozoon* spp. 15.38% (4/26) and 6.45% (2/31) were found compared to *Plasmodium* spp. 7.69% (2/26) and 3.22% (1/31) in females compared to males 6.45% (2/31) and 3.22% (1/31) quails (Table 1 and Fig. 1).

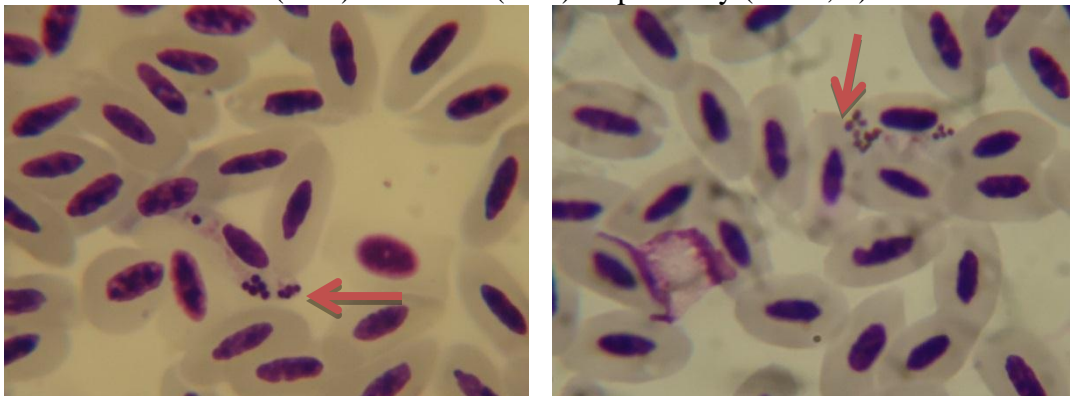
**Table (1) Infection rate according to the sex of quails**

Sex	No. of examined birds	<i>Plasmodium</i> spp. (%)	<i>Leukocytozoon</i> spp. (%)	Total (%)
Females	26	2(7.69)	4(15.38)	6(23.07)
Males	31	1(3.22)	2(6.45)	3(9.67)
Total	57	3(5.26)	6(10.52)	9(15.78)

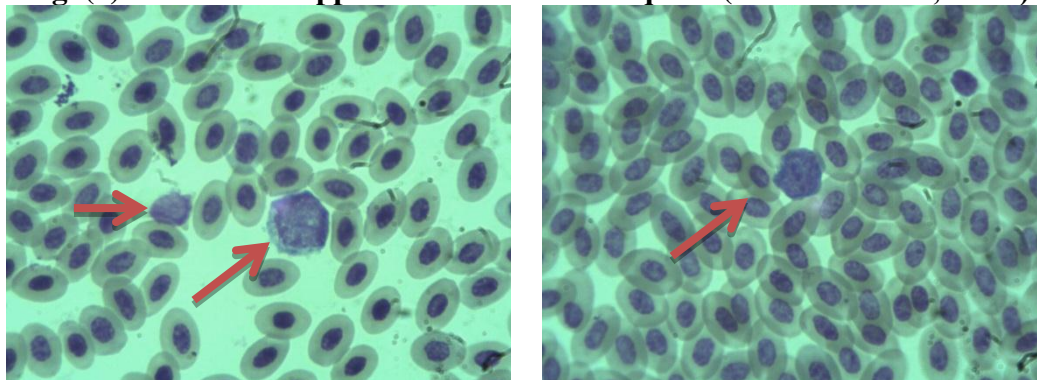


**Fig. (1) The protozoal infection rate according to the sex of quails**

- **Infection rate according to species of parasite:** Only two species of blood protozoa were found *Plasmodium* spp. and *Leukocytozoon* spp. (Fig.2) with an infection rates 5.26 (3/57) and 10.52 (6/57) respectively (Table, 2).



**Fig. (2) Plasmodium spp. in a blood smear of quail. (Giemsa's stain, X100)**



**Fig. (3) Leukocytozoon spp. in quail blood smears of by Giemsa's stain (X100)**

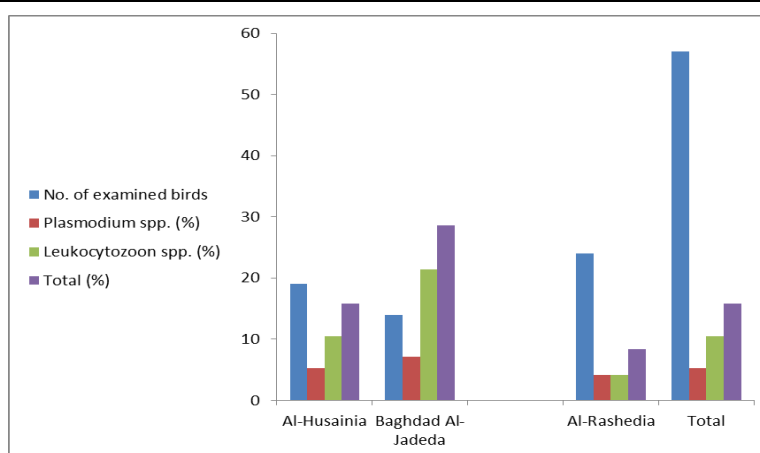
**Table (2) The protozoal infection rate according to the species of parasite in quails**

No. of examined birds	<i>Plasmodium</i> spp.(%)	<i>Leukocytozoon</i> spp.(%)
57	3 (5.26)	6 (10.52)

- **Infection rate according to areas of the study:** The blood protozoal infection rate according to areas was showed a higher infection rate recorded in Baghdad Al-Jadeda 28.57% (4/14), followed by Al-Husainia 15.78% (3/19) and a lower infection rate was found in Al-Rashedia 8.33% (2/24). Also, *Leukocytozoon* spp. showed a higher infection rates 21.42% (3/14) and 10.52% (2/19) such as *Plasmodium*spp. 7.14% (1/14) and 5.26% (1/19) in both areas Baghdad Al-Jadeda and Al-Husainia respectively, while *Plasmodium*spp. and *Leukocytozoon*spp. showed an equal infection rate 4.16% (1/24) in Al-Rashedia area. (Table, 3 and Fig. 4).

**Table (3) The protozoal infection rate according to areas of the study**

Areas of the study	No. of examined birds	<i>Plasmodium</i> spp. (%)	<i>Leukocytozoon</i> spp. (%)	Total (%)
Al-Husainia	19	1 (5.26)	2 (10.52)	3 (15.78)
Baghdadb Al-Jadeda	14	1 (7.14)	3 (21.42)	4 (28.57)
Al-Rashedia	24	1 (4.16)	1 (4.16)	2 (8.33)
Total	57	3 (5.26)	6 (10.52)	9 (15.78)

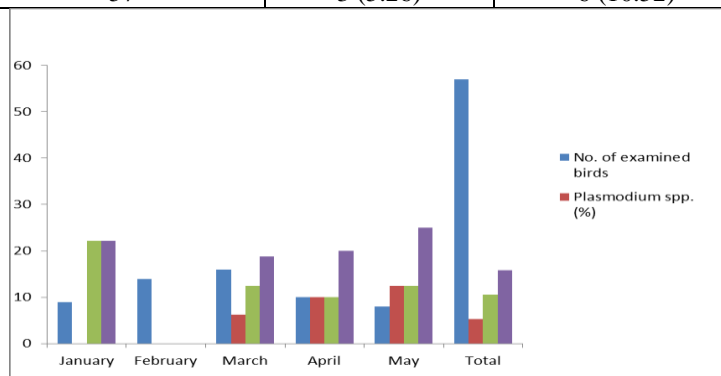


**Fig. (4) The protozoal infection rate according to areas of the study**

- **Infection rate according to months of the study:** The blood protozoal infection rates were showed that May had a higher infection rate 25% (2/8), followed by January and April months 22.22% (2/9) and 20% (2/10) respectively, while non-infection rate was recorded in February month 0% (0/14). A higher infection rate of *Plasmodium* spp. was recorded in May h 12.50% (1/8) and non-infection rates were recorded (0%) in January and February months. (Table, 4 and Fig. 5).

**Table (4) The protozoal infection rate according to the months of the study**

Months	No. of examined birds	<i>Plasmodium</i> spp. (%)	<i>Leukocytozoon</i> spp. (%)	Total (%)
January	9	0 (0.00)	2 (22.22)	2 (22.22)
February	14	0 (0.00)	0 (0.00)	0 (0.00)
March	16	1 (6.25)	2 (12.50)	3 (18.75)
April	10	1 (10.00)	1 (10.00)	2 (20.00)
May	8	1 (12.50)	1 (12.50)	2 (25.00)
Total	57	3 (5.26)	6 (10.52)	9 (15.78)



**Fig. (5) The blood protozoal infection rate according to the months of the study**

Avian haematozoa especially haemosporidia, including species of *Haemoproteus*, *Leukocytozoon* and *Plasmodium* are transmitted by blood sucking dipteran insects (6). These parasites occur worldwide, irrespective of climatic barriers (7). Also, (8) pointed out the biological differences between rural and urban dwelling birds, could be attributed to the urban ecological conditions. These factors with their contributions may be reflex the differences in the rates of blood protozoal infections. The present results of *Plasmodium*spp. infection rate were high 5.26% and *Leukocytozoon* spp. 10.52% than in *Pycnonotus Zelucogenus*, 1.1% *Passer domesticus biblicus*, 5.3%, *Columba livia* for *Plasmodium relictum* 1.1% and *Closeta Leukocytozoon toddy* 8.8% in *Himantopus himantopus*. (9) while (10) found infection rate 1.11% of *Plasmodium* in pigeons. The total infection rate of blood protozoa was 15.78% in the present study was agreement with (11) who recorded 83 out of 489 birds infected with haematozoa 16.97%. A high infection rate was recorded in female quails 23.07% that agree with (10, 12) in pigeon. The protozoal infection rates were differ in different areas of the study that was mentioned by (9) who found the infection rate for birds of urban areas remarkably less than at recorded from rural areas, which referred to the reduced presence of parasitic vectors is the reason for the low parasitemia in urban birds. In addition, urban areas may provide increase food and water resources, which can enhance immune capacity to resist infection and the ability to climinate parasites. Also, the infection rates were differ in different months of the study that agree with (9, 13) who found that *Leukocytozoon* had a seasonal incidence in the wild, with parasitaemia being highest in the spring season. On one hand, warm season had a limit parasitic infection (1). There was no effect of months in the infection rates of the present study may due to the distribution of the vectors in the areas of the study. Conclusion, There is an effect of sex and areas, but not of months in the infection rates of blood protozoal infections in quail.

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