A STUDY OF *AEGYPTIANELLA SPP* IN SOME SPECIES OF BIRDS IN MOSUL CITY-IRAQ

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ABSTRACT

During this study examination of 205 blood samples collected from four species of birds , chickens(50), ducks(75), turkeys(30), and pigeon(50) in different regions of Mosul city for the detection of *Aegyptianella spp*. The total percentage of infection was 28.29% and infection was (33.33%), (30%), (26.66%), and (20%) in ducks ,pigeons, turkeys and chickens respectively . An Anaplasma –like organism form ,rounded and piriform shaped with varying sizes 0.83-4.15µ . Parasitemia in chickens, pigeons, turkeys, and ducks respectively were1.7%, 2.5%, 2.6%, 2.8%.

INTRODUCTION

Poultry products are important sources of protein for human throughout the world. Poultry diseases can be divided into five groups namely, bacterial, viral, fungal, parasitic and nutrional (1). Parasitic diseases in particular haemoparasites have been identified as the major impediment to chicken health world wide (2). Parasites affecting both wild and domestic birds (3), one of these a micro-organisms belonging to the genus Aegyptianella are rickettsial pathogens, seriously affecting majority of birds (4,5).

Aegyptianella was first described by carpano (1929) in both chickens and geese in Egypt (6). Aegyptianella spp occur within the erythrocytes and the morphology was described by (7). *Aegyptianella spp* are transmitted by the fowl tick *Argas persicus* (8,9).

The presence of those rickettsial organisms in the red cells of birds may result in conditions varying from a healthy carrier to a highly pathogenic and often fatal disease (6,10). The main clinical sings of acute Aegyptianellosis are fever, anemia, anorexia, diarrhea, pale discoloration of legs, staggering gait and jaundice (7,10,11).The aim of this study was to determine the prevalence of *Aegyptianella spp* affecting chickens, ducks, turkeys and pigeons in Mosul due to scarcity of publication in this area .

MATERIALS AND METHODS

A total of 205 blood samples were collected from 4 species of birds representing chickens (50), Ducks (75), Turkeys (30) and pigeons (50) from different regions in Mosul city.

Blood samples were taken from the brachial wing vein of each bird using disposable sterile syringes and needle (7). Thin blood smears were prepared and stained with Giemsa'S stain to identify the Aegyptianella (12) .Parasitemia was determined according to the method described by (13).

Identification of this species was made according to morphological features (5,7,11) and ocular micrometer was used for measurements .

RESULTS

The total percentage of infection with *Aegypyianella spp* was 28.29% and the highest percentages of infection appeared in ducks and pigeon were 33.33% ,30% respectively . The percentage of infection in chickens and turkeys wrere 20 %, 26.66 respectively (Table 1). Examination of thin blood smears of four birds species revealed the presence of initial bodies in the cytoplasm of red blood cells .These organisms appeared in different forms such as Anaplasma –like bodies, ,round and piriform shaped resembling those of babesia, violet or dark colored and lacking pigmented granules (Fig1,2,3) .The measurements of the organisms in different birds species was presented in Table (2).

Table (2) also shows the range and mean of the parasitemia in different birds ,the highest was 2.8%in ducks and the lower was 1.7% in chickens.

Table 1: Percentage of infection with *Aegyptianella spp*. in different species of birds examined

Species of birds	Number of birds examined	Number of infected birds	Percentage of infection
Chickens	50	10	20
Ducks	75	25	33.33
Turkeys	30	8	26.66
Pigeons	50	15	30
Total	205	58	28.29

Table 2 : The morphology and parasitemia from *Aegyptianella spp* in blood smears of different species of birds examined

Species of birds	Measurements Range(mean)µ	The percentage of parasitemia range (mean)
Chickens	0.83-4.15(2.11)	0.5-4.5(1.7)
Ducks	0.83-3.99(1.86)	0.55-4.5(2.8)
Turkeys	0.83- 4.15(1.56)	0.85-3.5(2.6)
Pigeons	0.83-3.32(1.84)	0.85-6.2(2.5)

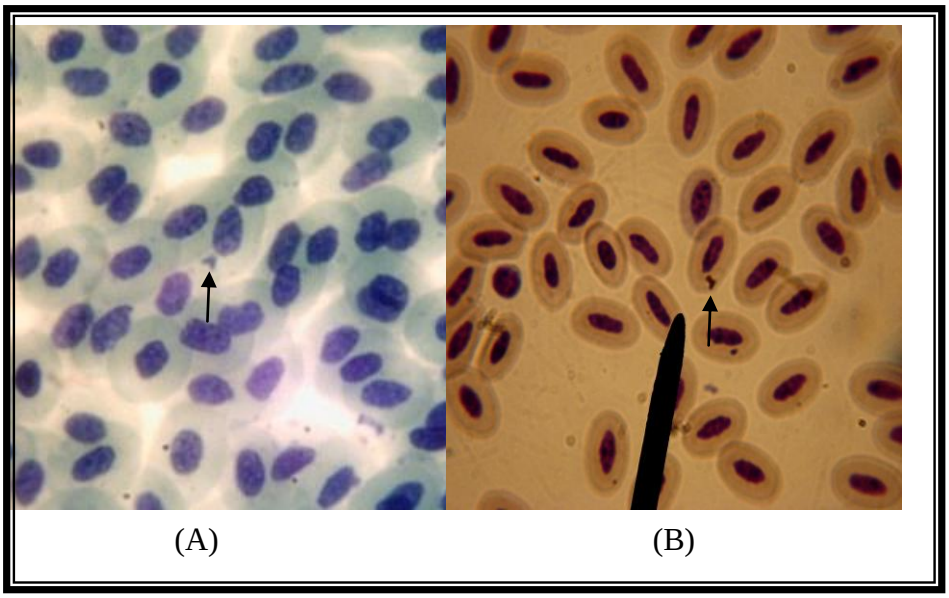

Fig 1: *Aegyptianella spp* (piriform shape) in blood smear of chickens(A) and ducks(B) ,1000X

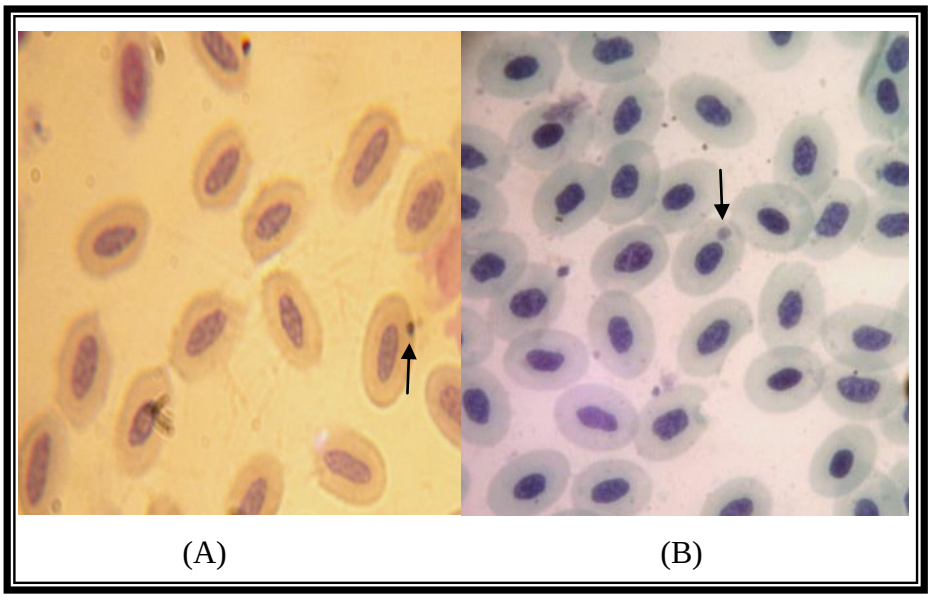

Fig 2: *Aegyptianella spp* (round form) in blood smears of turkeys (A) and chickens(B) by using digital camera, 1000X

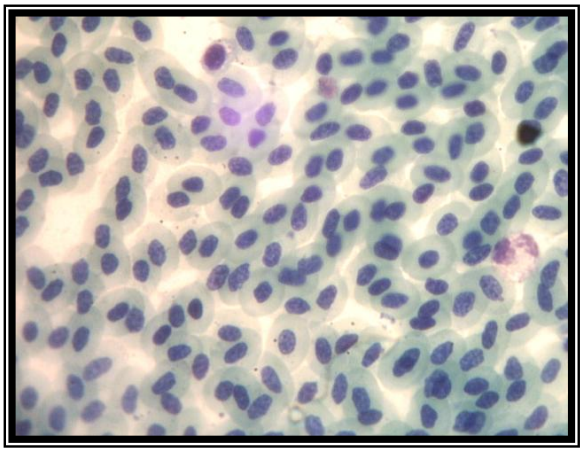

Fig 3: *Aegyptianella spp* in blood smears of chickens as small-analplasma organisms by using digital camera, 1000X

DISCUSSION

In this study, the total percentage of infection with *Aegyptianella spp* was 28.29% and the percentage of infection in chickens, ducks, turkeys and pigeons were 20%, 33.33%, 26.66%, 30% respectively.

In Iraq, there are no studies on *Aegyptianella spp* prevalence with which to compare the results of this study, Al-Alousi *etal* (14) reported 2% infection rate with *Aegyptianella spp*. among this study of endoparasites in turkeys in Mosul city .

In northern, southern and central regions of Lorestan province in Iran , Desfoulian *etal* (15) recorded that the percentage of infection in chickens, ducks, geese and turkeys was 33.3%, 9.5%, 33.3%, 23.9% respectively with the total percentage of infection was 7.6% .Data from a study in wild turkeys from southern Texas revealed the presence a small, intraerythrocytic rickettsia *Aegyptianella pullorum* in 24 of 300 blood samples (6).

Other reports which were performed in different parts of the world, Aegyptianella is considered to be highly pathogenic to birds especially chickens with mortality risks in the range of 30-80% amongst young birds and the Aegyptianella is described as one of important hemoparasites in poultry production(2). Results from a study in west and southern Africa indicate that *Aegyptianella pullorum* infection can be quite widespread among free range birds raised in the tropics, for example, in the blood smear investigations, prevalence of 9% and 6% have been reported in Ghana and Zimbabwe respectively (16,17). *Aegyptianella pullorum* is common and is widely distributed in the Tansania and the percentage of infection which were recorded in chickens was 15.3% (2). The variability in the prevalence of *A. pullorum* between studies could be attributed to differences in management system of the birds, ecoclimates or level of infestation of *Argas persicus*. Swai *etal* (2) revealed that the high prevalence of Aegyptianella occurs in birds if they had history of contact with ticks and ectoparasites infestation considerably with geographical location of a varying scale.

In this study, during examination thin blood smear by light microscope. Aegyptianella appeared in different forms they are : small-anaplasma like organisms, round, oval to piriform and clover-like shape violet to dark coloured organisms with

different sizes ranged between 0.83-4.15 □ m in all species of examined birds .According to the morphological features and microscopical measurements the species of Aegyptianella may be related *A.pullorum*, these results were in agreement with (2, 4,6, 10, 15). Euzeby (18) and Rikihisa *etal* (19) referred that the genus Aegyptianella contains a single species namely *A. pullorum* and a large variety of birds species appear to be susceptible to infection with *A.pullorum*. The species of Aegyptianella which were found in wild turkeys (*Meleagris gallopano*) in the USA, diagnosed as *A.pullorum* (6).Soulsby (11) revealed that there are two species of Aegyptianella occurs in birds they are : *A. pullorum* and *A. moshkovskii* Al-alousi *etal* (14) diagnosed the species *A. moshkovskii* in turkeys in Mosul city. however are different reports on the ultrastructural studies concerning Aegyptianellosis in birds in the world(15).

The mean percentage of parasitemia in chickens, ducks, turkeys and pigeons was 1.7%, 2.8%, 2.6%, 2.5% respectively and the infection could be regarded as subacute and chronic, these results were agreement with (10, 20, 21) and (11) referred that the Aegyptianellosis may be acute, subacute or chronic. Indigenous poultry rarely suffer the acute disease, but freshly introduced stock may die within a few days of the onest of the clinical entity, (20, 21) showed that identification of species of hemosporidians was possible when the intensity of infection was > 0.01% and when fully grown parasites were present in blood films.

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دراسة لطفيلي *Aegyptianella spp* في بعض أنواع الطيور في مدينة الموصل /العراق

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الخلاصة

خلال هذه الدراسة تم فحص 205 عينة دم جمعت من أربعة أنواع مختلفة من الطيور وهي الدجاج (50) عينة والبط (75) عينة والديك الرومي (30) عينة والحمام (50) عينة من مناطق مختلفة في مدينة الموصل وذلك للكشف عن طفيلي *Aegyptianella spp* ،بلغت نسبة الاصابة الكلية 28.29% وان الخمج قد شخص في البط والحمام والديك الرومي والدجاج (33.33%) (30%) (26.66%) (20%) على التوالي ولقد ظهر الطفيلي على شكل أجسام صغيرة تشبه الانابلازما وأجسام دائرية وبيضوية وكمثرية الشكل و بإحجام مختلفة تراوحت بين 0,83-4.15مايكرون وان معدل نسبة التطفل بلغ في كل من الدجاج والحمام والديك الرومي والبط 1,7% و2,5% و2,6% و 2,8% على التوالي .

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