MICROSCOPIC EXAMINATION OF OVINE BABESIOSIS AT BAGHDAD CITY / IRAQ

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ABSTRACT

This study was conducted to detect the prevalence of Babesiosis in different areas at Baghdad city, by using microscopic examination ;180 sheep's head blood samples were collected from each local breed (122 males and 58 females) with different age groups from 6 months to more than one year old, during the period extended from 1/October2019 to end of April 2020.Giemsa stained blood smears were done for detection *Babesia spp*. ; The overall rate of infection with *Babesia spp*. in sheep was 15.55% (28/180), significant differences P≤0.05 was recorded between male 19.67% (24/122) and female 6.89% (4/58), and sheep with equal or more than one year old registered higher rate of infection 18.18% (2/11) , also highest rate of infection recorded in April 45% (9/20) with highly significant differences P≤0.01 between months of study.

Key world: prevalence, *babesia,* local breed, blood samples, sheep, Iraq.

الفحص المجهري لداء الكمثريات في الأغنام في مدينة بغداد / العراق

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المستخلص:

اجريت الدراسة الحالية للكشف عن انتشار داء الكمثريات في الاغنام في مناطق مختلفة من مدينة بغداد باستخدام الطرق التقليدية ، جمعت 180 عينة دم من اغنام محلية (122 ذكر و 58 انثى) من فئات عمرية مختلفة تراوحت من 6 شهور الى اكثر من سنة للفترة من بداية تشرين الاول 2019 الى نهاية نيسان 2020 . عملت مسحات دموية وصبغت بالكمزا للكشف عن جنس البابيزيا بلغت نسبة الاصابة الكلية للاغنام بطفيلي البابيزيا % 15.55 (28/ 180)، وقد سجل فرق معنوي بمستوى P≤0.05 بين الذكور 19.67% (24/122) و الاناث 6.89% (4/58)، كما ان الفئات العمرية تساوي او اكبر من سنة سجلت اعلى نسبة للاصابة وقد بلغت 18.18% (2/11)، وكانت اعلى نسبة للاصابة في شهر نيسان 45% (9/20) مع وجود فروق معنوية عالية P≤0.01 بين اشهر الدراسة

الكلمات المفتاحية: الانتشار، بابيزيا، سلالة محلية، سحات دموية، اغنام، العراق.

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INTRODUCTION

Babesiosis is a tick-borne infectious disease caused by intra-erythrocytic Apicomplexan protozoan parasites of the genus *Babesia.* Wild and domestic animals are reservoir hosts for more than 100 *Babesia spp.,* Humans are infected by a few of these species and described as an important disease of livestock. (2,18). Economically *Babesia* is the most widespread parasite due to exposure of 400 million animals' infection through the world, with consequent heavy economic losses such as mortality, reduction in meat and milk yield and indirectly through control measures of ticks. Babesiosis especially in ruminants has great economic importance, because unlike many other parasitic disease, it effects adults more severely than young animal, leading to direct losses through death and the restriction of movement of animals by quarantine laws (4,5,12) Three species that are morphologically different, *B. ovis, B. motasi* and *B. crassa,* effect sheep and goats severely; victims are characterized by such symptoms as fever, anemia, jaundice, emaciation, hemoglobinuria and death (3,13). *Babesia spp.* are transmitted by tick species belong to the genera *Hyalomma, Rhipicephalus* and *Boophilus* (8,19). Generally, diagnosis of Babesiosis is make by microscopic identification of Giemsa stained blood smear, (17). Some researchers studied the prevalence of *Babesia spp.,* in Iraq Zangana recorded the prevalence of *Babesia motasi* in Duhok province 4%(20/500) in goats, while Renneker recorded 1.5% (3/195) in sheep of *Babesia ovis* in the Kurdistan Region, and Abdul-Hassan and Ali registered highest rate of *Babesia spp*. in goats 11.7% at Al-Qadisiya province. (1,15, 20). This study was designed to detect *Babesia spp.* at Baghdad city and study the effect of sex, age group and months on ovine Babesiosis prevalence.

MATERIALS AND METHODS

1- Samples Collection

One hundred and eighty blood samples of sheep from Alshulla slaughter house and local markets at Baghdad city were used in this study, of both sex (122) male, and (58) female, with age groups ranging from 6 month to ≥ 1 years, during the period from October 2019 to end of April 2020.

2- Laboratory examination

Giemsa stained blood smears were done after fixing blood smears by using absolute Ethanol according to (6). The Laboratory examinations were done at the research Parasitology laboratory of the Veterinary Medicine College /Baghdad University. Stained smears were examined under oil immersion (X100).

RESULTS AND DISCUSSION

Result of the study recorded total rate of Infection with *Babesia spp.* in sheep by microscopic examination of giemsa stained blood smear 15.56% (28/180) at Baghdad city (Table 1). *Babesia spp*. prepared by microscopic examination as singly small round, ovoid or pairs as pear or pyriform shape intraerythrocytic, stained dark blue (Fig 1). This finding was accordance with Hussain et al (9) in Qena province upper Egypt who recorded 11.53%(15/130) *Babesia motasi* and 10%(13/130) with *Babesia ovis*, with single or paired pyriform of ovoid shape and close accordance with Haghi et al (7) whom recorded overall rate with ovine Babesiosis in sheep and goats 15.4%(34/220) in Iran and accordance with Nasir, M. A., (11) who recorded17.86% (5/28) with ovine Babesiosis in Turkish awassi sheep in Baghdad city. Significant differences P≤0.05 was recorded between male that showed highest rate of infection 19.67% (24/122) and female which recorded 6.89% (4/58) (Table 2). This result not compatible with Kage et al whom registered highest rate with *Babesia spp.* in sheep and goat's female in India (10), also in accordance with Rjeibi et al (16) in Tunis recorded highest rate in female 10.8% than in male 2.1%. this due to differences in number of samples collected and method of diagnosis. Older sheep with age group 1 year and above revealed highest rate of infection with *Babesia spp.* 18.18% (2/11) without significant differences between age groups (Table3). This result agreed with Kage et al in India whom observed that sheep and goats oldest than 6 months age recorded highest rate of infection (10), also with Abdul-Hassan, in Al-Qadisiya province, Iraq who recorded 26.6% in goats (1). Animals less than 6 months of age were resistable to Babesial infection because of the natural resistance supports from dam colostrum. According to months of study

April showed highest rate of infection with *Babesia spp.* 45% (9/20), with highest significant difference (P≤0.01) between months of study (Table4). This result disagreed with Abdul-Hassan whom registered highest rate of *Babesia spp.* in goats in October and lower in April at Al-Qadisiya province, Iraq (1). This fluctuation in prevalence between months might be due to samples number used and variation of environmental conditions that effect both parasite and vector, differences in results might be due to numbers of ticks and continuous exposure of animals in study areas (14).

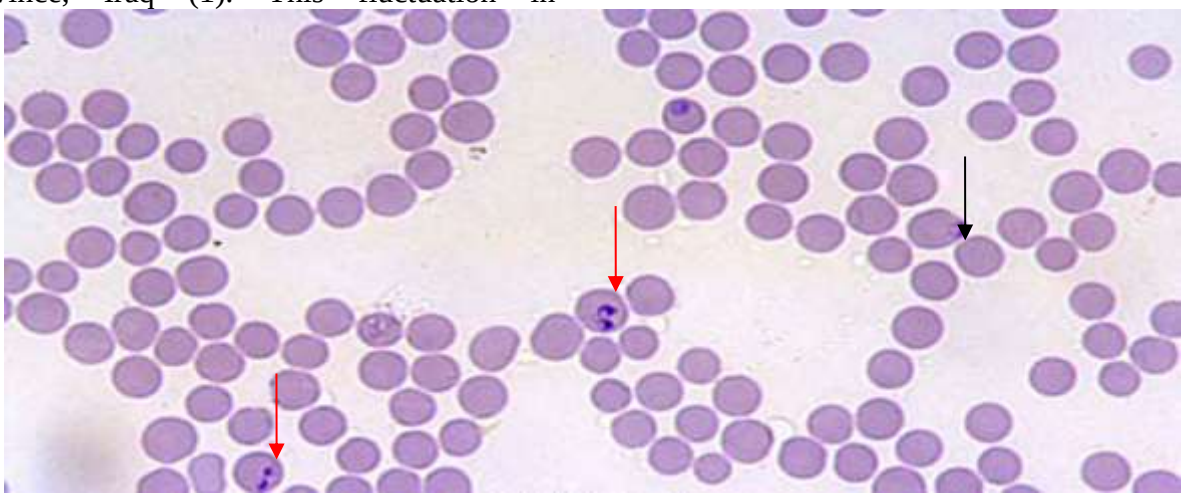

Figure 1. Giemsa stained blood smear under oil immersion(X100) showed *Babesia spp.* intraerythrocytic singly small round or ovoid (black arrow) or pairs pyriform shape (red arrow)

Table 1. Total rate of infection with Babesia spp.in sheep.

Infection	No	Percentage (%)
Positive	28	15.56
Negative	152	84.44
Total	180	100%

** (P≤0.01)-Highly significant

Table 2. Rate of Infection with *Babesia spp.* according to sex

Sex	No. of examined	No. of Positive	Percentage (%)
Male	122	24	19.67
Female	58	4	6.89
Total	180	28	15.56

* (P≤0.05)-Significant.

Table 3. Rate of Infection with Babesia spp. according to age groups

Age groups	Total no.	No. of Positive	Percentage (%)
6 months	19	3	15.78
6-12 months	150	23	15.33
≥ 1 years	11	2	18.18
Total	180	28	15.56

NS: Non-Significant

Table 4: Rate of Infection with *Babesia spp.* according to months of study.

Months	No of examined	Positive No.	Percentage (%)
October	30	4	13.33
November	30	3	10.00
December	30	0	0.00
January	30	0	0.00
February	30	10	33.33
March	10	2	20.00
April	20	9	45.00
Total	180	28	15.56

** (P≤0.01)-Highly significant.

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