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PREVALENCE OF PIROPLASMOSIS AMONG SHEEP IN THE CENTRAL PART OF IRAQ

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SUMMARY

Out of 704 sheep examined from three provinces (Baghdad, Hilla and Diala) in the central part of Iraq, 323(45.88%) were infected with *Theileria hirci*, 80(11.36%) with *Anaplasma ovis* and 19(2.70%) with *Babesia motasi*. The percentage of sheep infected with *Th. hirci* was much higher ($P < 0.01$) than those with *A. ovis* and *B. motasi*. The rate of infection with *Th. hirci* and *A. ovis* but not *B. motasi* increased with advancing age. There was no significant ($P>0.05$) difference in the rate of infection between males and females.

INTRODUCTION

Little work has been done on ovine piroplasmosis in Iraq. Khayyat and Gilder (1947) and Leiper(1957) reported the occurance of *Th. hirci*, *A. ovis* and *B. motasi* among sheep. *Anaplasma ovis* and *B. motasi* were mainly responsible for outbreakes of sheep piroplasmosis in the northern part of the country (Khayyat and Gilder, 1947). Infection with *Th. hirci* was the cause of high mortality rate in sheep in Baghdad (Hooshmand-Red and Hawa, 1973).

This study was undertaken to determine the prevalence of piroplasmosis in sheep of different ages and both sexes in the central part of Iraq.

MATERIALS AND METHODS

The present study was performed on 454 sheep from five different flocks in Baghdad province and 250 sheep slaughtered at Baghdad, Hilla and Diala abattiors (Central part of Iraq). Blood samples were collected from the jugular vein of apparently healthy sheep during the period from October, 1984 to August, 1985. Thick and thin blood smears were prepared from each sample and stained with Giemsa's stain. All smears were examined microscopically for erythrocytic form of *Babesia*, *Anaplasma* and *Theileria*. For the latter, lymphocytes in these smears were examined for the presence of shizonts. One way analysis of variance, F-test and student's t-test were used to analyze the data.

RESULTS

A total of 704 sheep were examined, 323 (45.88%) were found infected with *Th. hirci*, 80(11.36%) with *A. ovis* and 19(2.70%) with *B. motasi* (Table 1). The percentage of sheep infected with *Th. hirci* was significantly ($P < 0.01$) higher than those with *A. ovis* and *B. motasi*, while this difference was not significant ($P > 0.05$) between *A. ovis* and *B. motasi* infections. There was an increase in the rate of infection with *Th. hirci* and *A. ovis* with advancement of age, while babesiosis observed mainly in the age groups under 4 years. There was no significant ($P > 0.05$) difference in the rate of infection between males and females (Table 2).

Table 1: Prevalence of *Th. hirci*, *A. ovis* and *B. motasi* infections in sheep in relation to age.

Age in years	No. of sheep examined	No. of positive (%)		
		Th. hirci	*A. ovis*	*B. motasi*
<1	248	103(41.53)	31(12.5)	10(4.03)
1-2	40	17(42.5)	2(5)	0
2-3	38	34(89.47)	13(34.21)	0
3-4	109	81(74.31)	31(28.44)	7(6.42)
4-5	19	12(63.15)	0	0
unknown	250	76(30.4)	3(1.2)	2(0.8)
Total	704	323(45.88)	80(11.36)	19(2.70)

Table 2: Prevalence of *Th. hirci*, *A. ovis* and *B. motasi* infections in sheep in relation to sex.

Sex	No. of sheep examined	No. of positive (%)		
		Th. hirci	*A. ovis*	*B. motasi*
Male	217	104(47.93)	40(18.43)	10(4.61)
Female	237	143(60.34)	37(15.61)	7(2.95)
unknown	250	76(30.4)	3(1.2)	2(0.8)
Total	704	323(45.88)	80(11.36)	19(2.70)

Of all sheep examined, 58(8.24%) showed infection with *Th. hirci* and *A. ovis* 3(0.43%) with *Th. hirci* and *B. motasi* and 14(1.99%) with infection of *Th. hirci*, *A. ovis* and *B. motasi* (Table 3).

Table 3: Prevalence of single, double and mixed infections of *Th. hirci*, *A. ovis* and *B. motasi* among sheep examined.

Type of infection	No. of positive	% Positive
Th. hirci	248	35.23
A.ovis	8	1.14
B. motasi	2	0.28
Th. hirci & *A. ovis*	58	8.24
Th. hirci & *B. motasi*	3	0.43
Th. hirci, *A. ovis* & *B. motasi*	14	1.99

DISCUSSION

Theileria hirci, *Anaplasma ovis* and *Babesia motasi* were considered to be the cause of ovin piroplasmosis. Mixed infections with these parasites were also reported (Khayyat and Gilder, 1947). Usually, outbreaks of theileriosis, anaplasmosis and babesiosis follow heavy infestation with ticks particularly in spring season.

In enzootic area in Baghdad province Hooshmand-Rad and Hawa (1973) found that there were high morbidity (100%) and mortality (89.74%) rates in flock of sheep infected with *Th. hirci*. Latif *et al.* (1977) reported

infection rate of 30.33% among 300 sheep in the central part of Iraq using indirect fluorescent antibody test. In the present study the rate of infection with *Th. hirci* was 45.88%. The difference in the rate of infection was probably due to the difference in the techniques used and the number of animals examined.

The low incidence of both anaplasmosis and babesiosis might be due to the geographic distribution of tick vectors transmitting these diseases. *Babesia motasi* was known to be transmitted by one-host tick, *Rhipicephalus bursa* (Motas, 1903).. Robson *et al.* (1968) in their survey found that this species existed only in the northern part of the country. Hooshmand-Rad and Howa (1973) reported that *Hyalomma anatolicum anatolicum* was responsible for the transmission of *Th. hirci* to sheep in the central and south parts of the country. This support our findings of the high incidence of *Th. hirci* infection (45.88%) as compared to *A. ovis* (11.36%) and *B. motasi* (2.70%) infections. The high rate of infection with *Th. hirci* in apparently healthy animals could be explained that these animals were carriers. In addition, some of these flocks might have been treated with drugs affecting babesiosis and anaplasmosis rather than theilerosis. A higher incidence of theilerosis and anaplasmosis among aged sheep was likely due to the repeated exposure of these animals to the infection during successive years.

This preliminary study indicates that theilerosis constitute a major problem among sheep in Iraq. Further work towards the prevalence of piroplasmosis in sheep in the whole country is needed.

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مدى انتشار طفيليات الدم في الاغنام
في الجزء الاوسط من العراق

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الخلاصة

لقد تم فحص 704 رأس من الغنم في ثلاثة محافظات وهي بغداد، الحلة وديالى وتبين ان 323 (45.88%) من الاغنام مصابة بـ Theileria hirci و 80 (11.36%) مصابة بـ Anaplasma ovis و 19 (2.70%) مصابة بـ Babesia motasi. ان نسبة الاصابة بـ Th. hirci كان اكثر ($P<0.01$) مما هو عليه بـ A. ovis و B. motasi. لقد لوحظت زيادة في معدل الاصابة بـ Th. hirci و A. ovis مع تقدم العمر. لم توجد اي فروقات معنوية ($P>0.05$) بمعدل الاصابة بين الذكور والاناث.