

BLOOD PARASITES OF SHEEP AND GOAT AT AL-QASSIM REGION, SUADIA ARABIA

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ABSTRACT

Five hundred and twenty three blood samples (including 301 sheep and 132 goats) were examined in Al-Qassim Region, Saudi Arabia from 1994 to 1997. *Theileria hirci* was the only blood parasite infecting sheep and goats in this area. The overall infection rate was 20.46 (80/391) per cent in sheep and 7.57 (10/132) per cent in goats. The highest prevalence was recorded during the autumn season, nearly equal in winter and summer seasons, while it was minimum in the spring season. The Sudanese sheep exhibited the highest infection rate with *T. hirci*, while there was no significant difference in the infection rate between the Najdi and the Naeimi sheep.

INTRODUCTION

Sheep and goats are considered as the main animal resources in the Kingdom of Saudi Arabia. Their numbers according to estimates of the Saudi Ministry of Agriculture and Water in 1998 were 6,187,747 sheep and 3,46,715 goats. Mutton is preferred meat in the country especially at Islamic festivals and other social occasions.

There are two main breeds of sheep at Al-Qassim Region; the Najdi and Naeimi. The former is the local breed of Al-Qassim region, while Naeimi sheep is the foreign and newly adapted breed brought from the northern part of Saudi Arabia. It is famous between Badweens and farmers that the Naeimi sheep is more resistant than the Najdi one in the central region.

The aim of this investigation is to study the prevalence of the blood parasites in different seasons and breeds of sheep and goats in this area. Also, to study the susceptibility of the two breeds of sheep against the natural infection with ovine and caprine hematozoa.

MATERIALS AND METHODS

A survey on the blood parasites of sheep and goats was conducted for a period of three years (1994-1997). The samples were collected from 391 sheep and 132 goats. All the examined goats were local breeds, while the examined sheep were Najdi (149), Naeimi (103), Sudanese (26) and unidentified breeds (113). All the animals were female and of various ages (one month to 5 years).

All the investigated animals were sick and brought to Al-Qassim Veterinary Diagnostic Laboratory, Ministry of Agriculture, Bureidah province for routine

examination. The animals were brought in a recumbent state or freshly died. Slides were directly prepared from the ear vein blood (thin and thick films), if the animals were live. The impression smears were prepared from the prescapular lymph nodes, spleen, liver, kidney and the heart blood of the dead animals according to the method described by Kreier and Barker (1987). The smear was air dried, fixed in methanol and stained by freshly prepared Giemsa stain for 45 minutes (Levine, 1985). The parasites were identified according to the characters described by Levine (1985), Brown (1990), Kreier (1994) and Soulsby (1982).

RESULTS

The overall prevalence of *Theileria hirci* was recorded as 20.46 (80/391) per cent in examined sheep and 7.57 (10/132) per cent in goats. It has been found that the prevalence of *T. hirci* among the two hosts was higher during the autumn season and the infection rate among sheep was almost double than that of goats (30.76 and 14.70%, respectively). While the infection rate was nearly equal during the winter and summer seasons in two hosts. Also, it has been found that the incidence of the parasite reach to minimum during the spring season, whereas it was 5 per cent in sheep and no prevalence was recorded in goats (Table 1).

Koch's blue bodies were observed in the smears prepared from the prescapular lymph nodes and spleen of all infected samples. The parasites were also detected in smears made from other organs (liver, kidney, lung and heart). Parasitized RBCs with the piroplasm sometimes were observed scattered in several internal organs.

Table 1: Seasonal incidence of *T. hirci* affecting sheep and goats at Al-Qassim region, Saudi Arabia

Season	Sheep			Goats		
	No. Examined	Positive		No. Examined	Positive	
		No.	Percentage		No.	Percentage
Winter	105	21	20.00	46	03	6.52
Spring	60	03	5.00	21	00	0.00
Summer	122	24	19.67	31	02	6.45
Autumn	104	32	30.76	34	05	14.70
Total	391	80	20.46	132	10	7.57

Table 2: Incidence of *T. hirci* among different breeds of sheep at Al-Qassim region, Saudi Arabia

Breed	No. Examined	Positive	
		No.	Percentage
Najdi sheep	140	31	20.80
Naeimi sheep	103	24	23.30
Sudanese sheep	26	08	30.76
Unidentified sheep	113	17	15.04
Total	391	80	20.46
Goats	132	10	7.57

Regarding the susceptibility of the different breeds of sheep to the natural infection with *T. hirci*, it has been found that the incidence was higher (30.76%) in the Sudanese sheep than the other examined breeds (Table 2). Naeimi breed was found to be more susceptible (23.30%) to the infection than Najdi (20.80%) breed.

In small percentage (1%) of the examined blood of sheep and goats, small, round, basophilic granules were observed in erythrocytes. It was similar to the *Anaplasma* parasite. It was not identified and preserved for further studies.

DISCUSSION

During this study *T. hirci* was clearly demonstrated in the blood and tissue smears of the infected sheep and goats. The incidence of parasites in the present study was considered the second record from the Kingdom of Saudi Arabia, Hussein *et al.* (1991) was the first to record the parasites from indigenous sheep and goats in Saudi Arabia.

It has been found that the overall infection rate of *T. hirci* in the present study was 20.46 per cent in sheep and 7.57 per cent in goats, whereas incidence reported by Hussein *et al.* (1991) in goats was higher than in sheep at Al-Qassim region (13.3 and 6.7%, respectively). This difference in incidence could be due to the fact that the later authors randomly examined small number of sheep and goats (15 for each) from Bureidah province and they also did not mentioned the season of their study.

In the present study, *T. ovis* was not observed in the examined sheep and goats while it was recorded in the study of Hussein *et al.* (1991) with 20 per cent infection rate in sheep and 40 per cent in goats. The parasite was also recorded from Jeddah (Ghandour *et al.*, 1989) with low incidence and from eastern and northern region by Diab *et al.* (1984). *T. ovis* was not recorded in this study may be due to the parasite was considered non pathogenic blood parasite for sheep and goats, and the animals submitted to this study were only sick and logically they carried the pathogenic strain i.e. *T. hirci*.

During this study, it was noticed that 1 per cent of the examined blood samples of sheep and goats had Anaplasma like bodies in the RBCs. In fact, it might be *Rickettsia* or *Eperythrozoon*. Specific identification is difficult on the basis of specimens seen in blood smears. *Eperythrozoon ovis* was previously recorded from sheep and goats in the Kingdom by Diab *et al.* (1984) and Hussein *et al.* (1991).

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