Epidemiological Study of Sheep Thieleriasis in Thi-Qar Province

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SUMMARY

Ovine theileriosis is an important tick-borne disease of sheep in the world, caused by *Theileria hirci* (*T. lestoquardi*). The disease is economically important in small ruminants, particularly in sheep, causing clinical illness and mortalities in Middle East, west Asia, subcontinent, parts of Africa and Mediterranean Basin. The present study was carried out to determine the infection rate of theileriosis in sheep in East, west, north, south and center of The_Qar province by clinical signs and using microscopic examination of thin blood smears (ME).A total of 1400 sheep from 5 flocks (distributed in East, west, north, south and center of The_Qar province). Blood samples were collected from jugular veins of 580 infected sheep (diagnosed by clinical signs) ,blood samples collected in tubes containing EDTA. These samples were used for thin blood smears for ME (microscopical examination) by using Gemsa stain. Results showed the high infection rates were indicated in July, August and September (98 %, 45% and 55%) respectively, while the months March, April, May, and June were indicated lower percentage (10%, 27%, 25% and 30%) respectively, for this the total rate of infection by this parasite in sheep of Thi-Qar province in year 2012 was (41.42%) , this ratio is more than others in the last twenty years.

Key Words: Theileriasis, ovine, infection rate.

الخلاصة

تعتبر الحمى الصفراء (الثايليريا) من الأمراض الخطيرة التي تصيب الأغنام و التي تنتشر مع انتشار القراد. تحدث نتيجة الإصابة بطفيلي الثايليريا, وهو من الأمراض التي تسبب خسارة اقتصادية في المجترات الصغيرة وخاصة في الأغنام, يحدث هذا المرض أعراض مرضية ونسبة هلاكات كبيرة في الشرق الأوسط , غرب آسيا ,ومناطق من أفريقيا والمناطق الساحلية من البحر المتوسط. لقد صممت هذه الدراسة الوبائية لتحديد نسبة الإصابة بمرض الحمى الصفراء في الأغنام في محافظة ذي قار في المناطق (شرق ,غرب, شمال, جنوب, ومركز المحافظة) للفترة ما بين شهر آذار وشهر أيلول لسنة 2012 , حددت الإصابة عن طريق أعراض المرض وللتأكيد بواسطة اخذ عينات دم من الوريد الوداجي للحيوانات التي ظهرت عليها تلك الأعراض وعمل مسحات دموية وفحصها تحت المجهر الضوئي. أجريت الدراسة على 1400 حيوان (موزعة شرق, غرب, شمال, جنوب ومركز المحافظة), و كانت الأعراض ظاهرة على 580 حيوان فقط , جمعت العينات بواسطة أنابيب حاوية على مضاد التخثر ثم اخذت منها مسحات دموية على شرائح زجاجية وصبغت بصبغة كمزا لتشخيص الطفيلي. أظهرت النتائج نسبة إصابة عالية في أشهر تموز, آب وأيلول (98%, 45%, و55%) على التوالي, بينما ظهرت نسبة إصابة اقل في الأشهر آذار, نيسان, أيار وحزيران (10%, 27%, 25%, 30%)على التوالي, وبذلك تكون نسبة إصابة الأغنام بهذا المرض في محافظة ذي قار لعام 2012 (41.42%) وهي أعلى نسبة إصابة بهذا المرض خلال العشرين سنة الماضية

INTRODUCTION

Ovine theileriosis is a tick-borne hemoprotozoan disease in sheep and goats caused by *Theileria lestoquardi, T. ovis, T. separata* and the newly described *Theileria* sp. China (Jianxung and Yin, 1997, Kirvar, *et al.*,1998, Latif *et al*., 1997, Mazyad and Khalaf,2002, Nagore *et al*.,2004,
Papadopoulos *et al.*, 1996, Rao *et al.*,1991, Sasmal *et al*., 1982, Sayin *et al*., 1997. Sayin *et al*.,2002 and Uilenberg,1981).*T. lestoquardi* and *Theileria* sp. China highly

pathogenic and cause lymphoprolipherative disease with high mortality and morbidity(Hoosmand and Hawa **,** 1973 , Inci *et al.*, 2003, Jianxung and Yin, 1997, Kirvar, *et al.*,1998, Latif *et al*., 1997, Mazyad and Khalaf,2002, Nagore *et al*.,2004, Papadopoulos *et al.*, 1996, Rao *et al.*,1991, Sasmal *et al*., 1982, Sayin *et al*., 1997. Sayin *et al*.,2002 and Uilenberg,1981 and Yin *et al.*,2003) while *T. ovis* and *T. separata* are low or non-pathogenic species in small ruminants (Uilenberg,1981). Ovine malignant theileriosis caused by *T.lestoquardi* causes high rate mortality in the Mediterranean Basin, West Asia and the Indian subcontinent (Rao *et al.*,1991, Sasmal *et al*., 1982). Al-Amery and Hasso (Al-Amery and Hasso ,2002) reported that *T. lestoquardi* was determined in blood smears of the 33.6% of small ruminants in Iraq. The ovine theileriosis is an acute, subacute, or chronic disease characterized by pyrexia, malaise anorexia, lacrimation, digestive disturbances, emaciation, dyspnoea, swelling of the superficial and internal lymph nodes, enlargement of the spleen and liver, lymphoid infiltration of the kidneys, ulceration of the abomasum, icterus and transitory haemoglobinurea.

It was reported that *T. ovis* was found in Macedonia, Spain, Egypt and Syria by using microscopy, serology and molecular methods in sheep and goats (Mazyad and Khalaf,2002, Nagore *et al*.,2004, Papadopoulos *et al.*, 1996) Ovine theileriosis is an economically important disease of small ruminants, particularly sheep and causes clinical illness and mortalities.

Although *Theileria* infection in cattle has been extensively studied, little is known about theileriosis in sheep (Gao *et al*., 2002). Recently, interest has arisen in sheep-infecting *Theileria* parasites. Among known *Theileria* parasitesof sheep, *Theileria lestoquardi* and *Theileria* spp. from North China are considered highlypathogenic. The other species, *Theileria ovis*, *Theileria separata* and *Theileria recondita* cause subclinical infection in small ruminants (Altay *et al*., 2005). The precise identification of these organisms is essential to understand their epidemiology. The methods traditionally used to detect and identify these hemoparasites consist of microscopic examinations of thin blood smears and serological tests(Heidarpour Bami, *et al.*,2010).

Bovine theileriosis has been extensively studied worldwide but information concerning ovine theileriosis is sporadic. The aim of the present study was to determine the prevalence of *T. ovis* and to investigate the presence of *T. lestoquardi* in sheep areas located in East, west, north, south and center of The_Qar governorate by using microscopic examination of thin blood smears (ME).

MATERIALS AND METHODS

The presence of the disease was confirmed on the basis of clinical signs and Giemsa stained blood smears.

- Collection of samples: This study was carried out in the period between March 2012 – September 2012. Blood samples were collected from sheep in five geographical areas in thi-qar (north, south, east, west, and the center). A total of 1400 sheep from 5 flocks. Blood samples were collected from jugular veins of 580 infected sheep (diagnosed by clinical signs) ,blood samples collected in tubes containing EDTA.These samples were used for thin blood smears for ME (microscopical examination) by using Gemsa stain.

- Microscopic examination: Thin blood smears were prepared immediately after drawing the blood samples and labeled in the field. After returning to the laboratory, the blood smears were fixed with methanol for five minutes, stained with Giemsa at a dilution of 5% in buffer solution for 30 minutes. and then examined for the presence of *Theileria* species under light microscopy.

RESULTS AND DISCUSSION:

According to month results showed that out of 1400 sheep from 5 areas of thi-qar with 580 (41.42%) blood samples from suspect infected cases in the period between March 2012 to September 2012 were positive for *Thieleria* investigation, however high infection rate were indicated in July, August, September (98 %, 45% and 55%) respectively, while the months March, April, May, and June were indicated lower percentage (10%, 27%, 25% and 30%) respectively (Table 1).

When compared the percentage of infection during this time, showed significant difference ($P< 0.05$) in prevalence between groups. This difference in prevalence may be due to the fact that animals were examined during the seasons (March, April, May and June 2012) in less hot and humid weather than the other were conducted in (July, August and September 2012). Hot and humid season favors the propagation and multiplication of ticks (Soulsby, 1982).

Prevalence of ticks was higher during the summer, The variation in tick prevalence in different areas can be attributed to a variety of factors like geoclimatic conditions, association and life style of different species of animals, awareness/ education of the farmers and farm managemental practices (Khan *et al*., 1993). The high prevalence rate during the hot months (July-august) may be attributed to hot and humid season prevalent during these months as ticks infestation is influenced by temperature, and relative humidity (Gosh *et al*., 2007).

Table (1): Distribution of theileriosis according to months.

No.	Months	No. of sheep	Infected no. %
1	March 2012	200	10 %
2	April 2012	200	27 %
3	May 2012	200	25 %
4	June 2012	200	30 %
5	July 2012	200	98 %
6	August 2012	200	45 %
7	September 2012	200	55 %
	Total	1400	41.42%

$p< 0.05$

Out of total sheep examined were (580) depending on the clinical signs and symptoms , 225 were lambs (less than 6 month of age) and 355 were adults (more than 6 month of age), while 357 were females and 223 were male. All were found to be positive for the presence of theileriosis(Table 2) and (Table 3) respectively.

Table (2): Infection rate of theileriosis in sheep in different age groups.

Age	Groups	No. of sheep	positive D.S *
1 day-less than 6 months	Lambs	596	225
More than 6 months	Adults	804	355

***D.S: Direct Smear .**

Table (3): Infection rate of theileriosis in sheep in different sex groups.

Sex	**groups**	**No. of sheep**	**positive D.S ***
	Male	**596**	**223**
	female	**804**	**357**

*** D.S: Direct Smear .**

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