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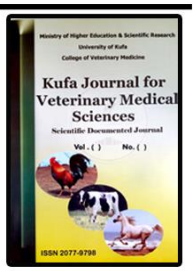

Some Epidemiological Aspects of Piroplasmosis of Sheep and Camels in desert of Al-najaf

Ahmed Jassim Al-mialy Abdulameer A.Hatem
Abdul Hadi Jaythoom AL-Abedi Ismaeel Raheem jabbar
Zainab mohammed ali
Faculty of Veterinary Medicine/University of Kufa
Ahmed J.Almialy@uokufa.edu.iq 07718593162

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Abstract

This project attends to exam the prevalence of piroplasmosis in sheep and camels in Al-Najaf desert of Iraq during period of May 2015 to April 2016. The samples were randomly collected from different regions in Al-Najaf province and represent 230 sheep (127 female, 103 male) and 140 camels (90 shecamels and 50 male) . Blood smears were subjected to Geimsa stained and microscopic examination. It was observed that prevalence of babesiosis and theileriosis in sheep were 26.9% and 12.17% respectively ,while in camels the prevalence was25% for babesiosis and 10.7% for theileriosis . The highest incidence for babesiosis was recorded in camels at age more than 4 years , while the lowest percentage was recorded in ages between6-12 month in both species. The highest ratio for theileriosis was observed in camels at ages 1-4 years.

The maximal occurrence of babesiosis and theileriosis were noticed in summer season (33.5%) and (15%) respectively in both species , while in winter season were (17.6%)and ((7.6%)respectively .

The highest percentage of babesiosis was found in females of sheep and camels (41.7%and 30%respectively) than male (18.4%and 16%respectively).

Key words:Piroplasmosis,Babesiosis,Theileriosis,Al-Najaf province

بعض الجوانب الوبائية لمرض الأوالي الدموية في الجمال والاغنام في بادية النجف

احمد جاسم الميالي عبد الأمير عبد الفتلاوي عبد الهادي جيثوم العابدي
اسماعيل رحيم جبار زينب محمد علي
كلية الطب البيطري / جامعة الكوفة / النجف الاشرف
Ahmed J.Almialy@uokufa.edu.iq

الخلاصة:

اجريت هذه الدراسة لمعرفة مدى انتشار الاوالي الطفيلية في الاغنام والجمال في جزيرة النجف الاشرف واستمرت الدراسة ابتداءا من شهر ايار 2015 ولغاية شهر نيسان 2016 . حيث أخذت العينات بصورة عشوائية من مناطق مختلفة في محافظة النجف الاشرف وحيث كان عدد الحيوانات الاجمالي 340وبواقع 230 راس غنم مقسمة الى 127 اناث و103 ذكور و 140 راس جمال مقسمة الى 90 اناث و 50 ذكور وبعد جمع عينات الدم من الحيوانات صبغت بصبغة الكمزا وفحصت بالمجهر الضوئي وكانت نسبة الاصابة بالبابيزيا 26.9% والثليريا 12.17% في الأغنام بينما كانت نسبة الاصابة في الجمال بمرض

البابيزيا بنسبة 25% والثليريا بنسبة 10.7% حيث سجل ارتفاع في نسبة الاصابة بمرض البابيزيا في الجمال في الاعمار الاكثر من 4 سنوات بينما كانت نسبة الأصابة منخفضة في الاعمار بين 6-12 شهر في كلا الجنسين . وكان هناك ارتفاع بنسبة الاصابة بالثاليريا في الجمال ذات الاعمار مابين 1 الى 4 سنة .ولوحظ حدوث اعلى نسبة للاصابة في فصل الصيف للبابيزيا بنسبة 33.5% اما الثليريا فكانت نسبنها 15% في كلا الجنسين .. بينما كانت النسبة في فصل الشتاء هي 17.6% لمرض البابيزيا و 7.6% لمرض الثليريا . وظهرت نسبة الاصابة بالبابيزيا عالية في اناث الجمال والاغنام وبواقع 30% للجمال و 41.7% للاغنام مقارنة بالذكور حيث كانت 18.4% للاغنام و 16%للجمال ..

الكلمات المفتاحية : الأوالي ,البابيزيا,الثاليريا, محافظة النجف

1.Introduction

Sheep and camels constitute a large and major proportion in the desert of Al-Najaf. The most importance of these animals lies in the production of meat and milk to meet the humans consumption. (1). Recently, there has been a marked increase in the incidence of blood parasites in these animals.

Babesiosis and Theileriosis are widespread diseases in the world that influence many groups of farm animals with a large - scale on cattle and sheep (2). Most economic losses of these diseases are the death of infected animals , low productivity of milk and the cost of treatment (3), in addition to restriction of movement of animals for trade by quarantine laws.

Piroplasmosis is a tick borne blood protozoal parasitic disease ,the main causes in camel areBabesia caballi and Theileria equi ,both of them are transfered by several tick species setto the genus Hyalomma, Rhipicephalus and Dermacentor(4).In sheep the main causes are Babesia ovis , Babesia motasi, Theileria hicri andTheileria ovis which transmitted via ticks of the genus Haemaphysalis , Dermacentor and Rhipicephalus (5).

Both diseases have been recorded in Iraq, The agricultural environment and subtropical climate of areas between (5931° N - 2044°E) encourage gain and amplification of ticks which act as natural vectors of babesiosis and theileriosis (6) and its worthy of mention that Al-Najaf district lies in this geographical region . The two diseases are apicomplexan parasites infecting a wide variety of organisms , which carried by ticks . Mentioned diseases clinically characterized by fever followed by inappetence, depression, polypnea, weaknessand a reluctance to move(7). Hemoglobinuria is often present, anemia and jaundice develop especially in more prolonged and severe cases. In theileriosis , there is generalized swelling of external lymph nodes (8 , 9).

There is a seasonal deviation in the prevalence of clinical babesiosis and theileriosis, the greatest incidence occurs soon after the peak of the tick population, higher temperatures increase tick activity while humidity and rainfall have little effect (10) and (11).

The aims of this research are :

a.Establishing a plan to investigate piroplasmosis of sheep and camels in Al-Najaf desert.

b. Develop a comprehensive program for the eradication of diseases in the region.

c. Establishing the scientific basis in the eradication of ticks.

Materials and methods :

A total370 Whole blood specimens were randomly collected on both seasons (summer((5^{th}-10^{th} months))& winter((11^{th}-4^{th} months))) representative 230sheep (127 female, 103 male) and 140 camels (90 female and 50 male) from different region in Al-Najaf province from May 2015 to April 2016. The ages of the animals were grouping to three classes which were 6 – 12 months , 1 – 4 years and more than 4 years .

Description of each animal with general inspection and close clinical examination of animals on the farms were completed , vital signs were recorded .Suspected clinically infected animals, lymph biopsies from enlargement lymph nodes stained with Giemsa revealed schizonts in lymphocytes (12).

Three to five ml of blood samples were from the ear vein on vacutainers tubes containing ethylenediamine tetraacetic acid (EDTA) and transferred to laboratory of veterinary hospital in ice box for microscopic examination , thick and thin blood smear were prepared from each blood sample, air dried and fixed in methanol for 2-3 minutes. Staining was done in 5% Giemsa's stain and flush was achieved of distilled water buffered to pH 7.2, then examined with immersion oil for the identification of blood parasites as described by (12).

Results :

Babesiosis were detected microscopically in the Giemsa's stained blood films of 26.9% and 25% of the examined sheep and camelsrespectively , while theileriosis were recorded 12.17% and 10.7% in the same previous animals in order as in table (1) .

Table 1. Number of positive cases and prevalence of piroplasmosis of sheep and camels in Al-najaf province .

Type of animal	No. of approved animals	positive cases for babesiosis (Prevalence %)	positive cases for theileriosis (Prevalence %)
Sheep	230	62 (26.9%)	28 (12.17%)
Camels	140	35 (25%)	15 (10.7%)
Total	370	97	43

As observed in the following table (table 2) the highest prevalence of piroplasmosis occured in 1-4 years old in both sheep and camels 31.8% and 33.9% respectively. The highest incidence of babesiosis was recorded in sheep more than 4 years old (57.1%) followed camels (33.9%)at age 1-4 years in addition to infection of theileriosis 44.4% in same age, the lowest level of infection was recorded in young animals at age 6-12 months in both species.

Table 2. Prevalence of piroplasmosis in relationship to the age of sheep and camels

Age	Sheep			camels		
	No.of examined	+ve babesiosis	+ve theileriosis	No.of examined	+ve babesiosis	+ve theileriosis
6-12 months	85	7 8.2%	4 4.7%	44	7 15.9%	2 4.5%
1-4 years	110	35 31.8%	17 15.4%	53	18 33.9%	8 44.4%
>4 years	35	20 57.1%	7 20%	43	10 23.2%	5 11.6%
Total	230	62	28	140	35	15

The effect of seasons on infection rates of piroplasmosis was checked , the maximal prevalence of babesiosis and theileriosis were recorded in summer season (33.5%) and (15%) respectively , displaced by winter season (17.6%)and ((7.6%)respectively as seen in table (3).

Table (3) prevalence of piroplasmosis of sheep and camels in relation toseasons

Type of animals	Summer			Winter		
	No.of examined	+ve babesiosis (%)	+ve theileriosis (%)	No.of examined	+ve babesiosis (%)	+ve theileriosis (%)
Sheep	132	43 (32.5%)	21 (15.9%)	98	19 (19.3%)	7 (7.1%)
Camels	68	24 35.2%	9 (13.2%)	72	11 15.2%	6 8.3%
Total	200	67 (33.5%)	30 (15%)	170	30 (17.6%)	13 (7.6%)

Higher percentage of babesiosis was found in females of sheep and camels (41.7%and 30%respectively) than male (18.4%and 16%respectively) As we see it in table (4).

Table (4): Distribution of piroplasmosis on both sexes of sheep and camels

Type of animal	No.of examined	Female ♀	Male ♂	+ve for babesiosis		+ve for theileriosis	
				♀	♂	♀	♂
Sheep	230	127	103	43 41.7 %	19 18.4 %	20 19.4 %	8 7.7%
camel	140	90	50	27 30%	8 16%	11 12.2 %	4 8 %
Total	370	217	153	70 32.2 %	27 17.6 %	29 13.3 %	14 9.1%

Statistical Analysis : The collected data were analyzed by SPSS software.

Discussion :

The geographical nature of Al-Najaf district is diverse, there are rural areas, which depend on agriculture and animal husbandry, specifically cows and buffaloes and there are desert areas, which is concerned with breeding of sheep and camels. The rural areas depend mainly on rice farming, which requires large quantities of water for irrigation, during the study period, where there was a large shortage in water irrigation, which led to the lack of cultivated areas, which negatively affected the increase in the number of ticks and deterioration of animal health due to lack of feed.

Ovine babesiosis was recorded 26.9% lesser than (13) 56.3% in Sulaimani and (14) in Iraq and higher than (15)which reported15.42%. These differences are due to different sheep breeds, immunological status of flocks and geographical diversity.

Microscopic examination of blood samples for camel babesiosis show 25%higher than (16) in Iraq and less than (17)inEgypt. But disagreement with (18) inJordan,while camel theileriosis was recorded15 (10.7%)out of 140 Giemsa stained blood smear higher than (16) , the interpretation of these results is due to reduced number of parasites in blood in chronic infection in opposite in acute infection (chronic piroplasmosis) .On the other hand The lack of vaccines for blood parasites in Iraq has helped spread of the disease in endemic areas.

These differences in infectious rates could be due to weather changement , the widely varied on farming systems, competence of ticks , paltryof health care and Absence of veterinary services.

All animals in this study were local breeds making them it more resistant to the disease as a result of continuous exposure to the pathogen and developing immunity against infection lead reduced prevalence in naïve animals(19).

Blood prtozoalparasites infection was present in all age groups table (2).The age play an important role of the occurrence of the infections. The prevalence of Babesiosis was found in the age between1-4 years (31.8% and 33.9% of sheep and camels respectively) as results of (20) in Bangladesh, followed in >4 years (57.1% and 23.2% in the sheep and camels respectively) .Minimal percentage of piroplasmosis were recorded at 6 – 12 months of age agreement with (21) who noticed increment infection in adult than young animals. The presenceof maternal immunity of newborn animals make them more resistant to infection beside low number of tick infestation of young animals.

Seasonal prevalence of piroplasmosis in sheep and camels in the study area is shown in table (3) The prevalence of babesiosis was ranked the highest in summer (32.5%)and(33.5%)in sheep and camels respectively compare to winter (19.3%)and(17.6%) in the same animals as recorded by (22). High rate of theileriosis infection was present in summer as in babesiosis in both species in line with study of (23). Over the last two years (2014&2015) there have been extreme climatic changes in Al-Najaf province, such as a sharp rise in temperature and a lack of cultured areas due to water scarcity and lack of rainfall during the winter season, leading to an unprecedented increase in the number of ticks, which is considered the main carrier and vector of blood parasites , in addition the non-use of pesticides in the control of ticks and for a long time has exacerbated the disease and endemic in specific area.

Among 127 female sheep 43 (41.7%) and 20 (19.4%) were infectedbybabesiosis and theileriosis respectively in line with (24) table (4), also we noticed the female camel infected by babesiosis and theileriosis were 30% and 12% respectively, followed male camel 16% and 8% for babesiosis and theileriosis infection in line with (25).As aresult of sending the lattest to abattoir for slaughter

Females were high exposure to stress of production of milk and gestation compared to males, makethem more susceptible to piroplasmosis infection (26,27), also females live longer than males due to the latter sent to abattoir for slaughter. In opposite to the results in study (28) which showed that there was no effect of sex on the rate of infection.

References:

1. Tavassoli1 M, M Tabatabaei, BE Nejad, MH Tabatabaei, A Najafabadi and SH Pourseyed, 2011. Detection of Theileria annulata by the PCR-RFLP in ticks (Acari, Ixodidae) collected from cattle inwest and North West Iran. Acta Parasitologica, 56: 8-13.

2.Bishop, R., Musoke, A., Morzaria, S., Gardner, M., Nene, V., 2004. Theileria: intracellular protozoan parasites of wild and domestic ruminants transmitted by ixodid ticks. Parasitology 129, S271–S283.

3. Yusufmia.B.A.S., Collins N.E., Nkuna R., Troskie M., Van Den Bossche P. & Penzhorn B.L.2010. Occurrence of Theileria parva and other haemoprotozoa in cattle at the edge of Hluhluwe-iMfolozi Park, KwaZulu-Natal, South Africa. Journal of South African Veterinary Association, 81, 45-49.

4. Hassan AH. 2010.A pathological study on theileriosis in cattle in Sulaimaniyah region, Iraq. Ph.D. Thesis College of Vet Medicine, Sulaimania Univ.

5. Abdelrahim IA, Ismail AA, Majiid AM, Mohammed AS, Ibrahim AM, et al. (2009). Detection of Babesia caballi in the one-humped Camel (Camelus dromedaries) using the Reverse Line Block (RLB) in Sudan. Sudan J Vet Res 24: 69-72.

6.Uilenberg G (2006) Babesia-a historical overview. Vet Parasitol 138: 3-10.

7.Ellis JT, DA Morrison, MP Reichel, 2003. Genomics and its impact on parasitology and the potentialfor development of new parasite control methods. DNA. Cellular Biology, 32: 395-403.

8. Tageldin MH, Fadiya AA, Sabra AA and Ismaily SI. 2005. Theileriosis in sheep and goats in the Sultanate of Oman. Trop Anim Hlth Prod, 37: 491-493.

9. El Imam AH, Hassan,SM, Gameel AA, El Hussein AM, Taha KM and Salih DA. 2015. Variation in susceptibility of three Sudanese sheep ecotypes to natural infection with Theileria lestoquardi. Small Rumin Res, 124: 105-111.

10. Ijaz, M., A. Rehman, M.M. Ali, M. Umair, S. Khalid, K. Mehmoo and A. Hanif, 2013. Clinico-epidemiology and therapeutical trials on Babesiosis in Sheep and goats in Lahore, Pakistan.The Journal of Animal & Plant Sciences, 23: 666-669.

11. Esmaeilnejad, B., M. Tavassoli, S. Asri-Rezaei, B. Dalir-Naghadeh, K. Mardani, M. Golabi, J. Arjmand, A. Kazemnia and G. Jalilzadeh, 2015. Determination of prevalence and risk factors of infection with Babesia ovis in small ruminants from west Azerbaijan province, Iran by Polymerase chain reaction. Journal Arthropod-Borne Disease, 9: 246-252.

12.Coles DVM PhD, Embert H.1986. Veterinary Clinical Pathology ISBN 10: 0721618286 ISBN 13: 9780721618289.

13. Shadan H. A. and Aram A.M. 2014. Babesiosis of smallruminants in Sulaimani city**.** AL-Qadisiya Journal of Vet. Med. Sci. Vol. 13 No. 2 .

14.Al-Hadethi H. and Al-Saffar T.M. 1988. Prevalence of Parasitic infection of sheep in Northren Iraq. J. Vet. Parasitol.2, 93-95.

15. Sulaiman EG, Arslan S H, Al-Obaidi Q T and Daham E (2010). Clinical, haematological and biochemical studies of babesiosis in native goats in Mosul .Iraqi Journal of Veterinary Sciences, Vol. 24, No. 1,31-35.

16. H. J. Jasim, G. Y. Azzal, and R. M. Othman, 2015 "Conventional and molecular detection of *Babesia caballi* and *Theileria equi* parasites in infected camels in south of Iraq," *Basrah Journal of Veterinary Research*, vol. 14, no. 2, pp. 110–121.

17. Abd-Elmaleck BS, Abed GH, Mandourt AM (2014) Some Protozoan Parasites Infecting Blood of Camels (*Camelus dromedarius*) at Assiut Locality, Upper Egypt. J Bacteriol Parasitol 5: 184.

18. Qablan ,M.A.; Sloboda ,M .; Jiruka , M.; Obornik , M.; Dwairi,S. ; Amer, Z.S.; Horn ,P. ; Lukes ,J. and Modry , D. (2012).Quest

for the piroplasms in camels : identification of Theileriaequi and Babesiacaballi in Jordanian dromedaries by PCR .Vet.parasitol.,186: 456-460.

19.Seyyed P. Z., Behzad E. and Mohammad R. 2011: Study of the prevalence of babesiosis in domestic animals with suspected signs in Mazandaran province , North of Iran. Journal of animal and veterinary advance 10 (6) : 712-714.

20.Islam MS, SA Rahman, P Sarker, Anisuzzaman and MMH Mondal, 2009. Prevalence and populationdensity of ectoparasitic infestation in cattle in Sirajgonj district, Bangladesh. Bangladesh ResearchPublications Journal. 2: 332-339.

21. Mustafa BH. 2006. Epidemiology study of ovine piroplasmosis (Babesiosis and Theileriosis) in Sulaimanyia Governorate, north Iraq. M.Sc. Thesis submitted of the college of Agriculture Univ. of Sulaimanyia Iraq.

22.Zahid IA, M Latif and KB Baloch, 2005. Incidence and treatment of theileriasis and babesiasis. Pakistan Veterinary Journal, 25: 137-139.

23. Hosein HI, Samia AA, FA Ibrahim, Abou-Elnaga TR, Gebely MA, Mona AM.Med. J 2007 Seroprevalence of Babesia ovis in small ruminants in Siwa Oasis, Egypt. BS. Vet.; 17,1,19 24.

24.Swelum AA, Ismael AB, Khalaf AF, Abouheif MA (2014) Clinical and laboratory findings associated with naturally occurring babesiosis in dromedary camels.
Bull Vet Inst Pulaway 58: 229-233.

25. - Khamesipour F, Doosti A, Koohi A, Chehelgerdi M, Mokhtari-Farsani A, et al.
(2015) Determination of the presence of Babesia DNA in blood of cattle, camel
and sheep in Iran by PCR. Arch Biol Sci Belgrade 67: 83-90.

26. Iqbal, F., Fatima, M., Shahnawaz, S., Naeem, M., Shaikh, R.S., Shakiah A.S. *et al.*, 2011, 'A study on the determination of risk factors associated with babesiosis and prevalence of *Babesia* sp., by PCR amplification, in small ruminants from Southern Punjab (Pakistan)', *Parasite* 18, 229–234.

27. Mennat T R (2011). Epidemiological survey of ovine Theileriosis in Basrah province. M. Sc. Thesis, College of Veterinary Medicine , University of Basrah

28.Yas A. D. and Noaman N. A'aiz. 2014. Prevalence of Theileriosis in sheep in Wasit province. AL-Qadisiya Journal of Vet. Med. Sci. Vol. 13 No. 2 . 5-6.