



Seroepidemiology of Rift Valley Fever in Basrah

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Abstract:

This study was conducted in Basrah to evaluate the seroepidemiological prevalence of Rift valley fever in Basrah . Serum samples were collected from 1215 sheep from 5 distinct regions in Basrah and submitted to the ELISA test to estimate the titer of specific antibodies against rift valley fever virus . The result revealed that , the overall seroprevalence RVF in Basrah was 0. 89 % . There was no significant differences in the seroprevalence of RVF among different regions in Basrah ($P > 0.05$) . The highest seroprevalence were reported in sheep older than 3 years compared with other age groups and this difference were statistically highly significant ($P < 0.01$) . On other hands there was no statistical difference in the seroprevalence of RVF between male and female ($P > 0.05$) .

الانتشار المصلي لحمى الوادي المتصدع في البصرة

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الخلاصة:

أجريت هذه الدراسة في البصرة للتحري عن نسبة الانتشار المصلي لحمى الوادي المتصدع في البصرة . تم جمع 1215 نموذج دم من الاغنام في 5 مناطق مختلفة من البصرة و تم قياس معيار الاضداد الخاصة باستخدام اختبار الاليزا . أظهرت النتائج ان النسبة الكلية للانتشار المصلي لحمى الوادي المتصدع في البصرة كانت 0.89%. لم تسجل فروقات معنوية في انتشار المرض بين المناطق المختلفة ($P > 0.05$) . سجلت اعلى نسبة للانتشار المصلي للمرض في الاغنام التي تزيد اعمارها عن ثلاث سنين مقارنة بالمجاميع الاخرى ($P < 0.01$) . بينما لم تسجل معنوية في انتشار المرض بين الذكور و الاناث ($P > 0.05$) .

Introduction :

Rift Valley fever (RVF) is an economically imporyant mosquitoes – viral borne s disease of ruminants (1). The first reported of disease was in Kenya in the nineteenth century , but the causative agent was not isolated until 1930 (2) . Ades is the species of mosquitoes that is incriminated in the biological transmission (3 ; 4 and 5) , although Glossina ,

Culicoides , Culex species and sad flies may play limited role in biological and mechanical transmission (6 and 7) .

The disease recorded in Southern Africa in 1950 (8) . A severe outbreak of the disease that mainly affect the sheep occurred in Namibia in 1955 following exceptionally heavy rains with few cases of the disease continuing to be occurred in

1976 . Rift valley fever also recorded in Zimbabwe in 1955 , 1969 and all pregnant cows were aborted with dead rate about 3% and 30% of total cattle become infected which identified by serological test . The disease reach to Sudan and Egypt in 1976 , the epidemic occurred along the Nile delta in which both human and animals were affected (9) . The disease occurred in Senegal in 1987 and the epidemics in Mauritania , Senegal and Egypt which were characterized by high mortality rate (10) . In 2000 , the disease was firstly reported outer Africa in Saudi Arabia and Yemen (11) .

The Iraq should take all effort and good management to face this dangerous disease, the important thing which increase the threaten of RVF is the long open bordering between Iraq and Saudi Arabia , especially after reported the disease in Saudi Arabia in October 2000 (12) which increase the ability to transmission the disease to Iraq .

For the greatest importance of RVF represented by its recording in neighboring countries , human transmissible and presence of the vector of virus in Iraq (13) . This study was adapted to evaluate the seroepidemiological status of RVF in Basrah – Iraq .

Materials and Methods:

Serum samples were collected from 1215 sheep in 5 distinct regions of Basrah ;

the age of animals ranging from one month to five years . Sera were testing using c ELISA according to procedure described by (14) .

Results:

Out of 1215 serum samples tested , 108 gave positive results for anti RVF antibodies (8.88%) . Table 1 show the seroprevalence of RVF in sheep in different regions of study , the highest prevalence of disease was reported in the west region (10. 38%) and the lowest prevalence was reported in city centre (7.27 %) , but there was no significant differences in the seroprevalence of the disease among regions of the study ($P > 0.05$) .

The seroprevalence of Rift valley fever in relation to age were represented in table 2. The highest seroprevalence were reported in sheep older than 3 years of age (16.38 %) compare with those between one and three years (7. 38%) and those less than one year of age (2. 36%) . There was highly significant differences in the seroprevalence of RVF among age groups ($P < 0,01$) .

Table 3 show the relation between the seroprevalence of RVF and sex of animal . The higher prevalence was reported in male (9.2 %) than female (8. 8 %) , but this difference was statistically not significant ($P > 0.05$) .

Table 1 : Geographical distribution of the RVF

	No. of tested animals	Positive	%
East	245	22	8.97
West	260	27	10.38
North	235	19	8.08
South	255	24	9.4
City centre	220	16	7.27
Total	1215	108	8.89

$$X^2 = 1.704 ,$$

$$P > 0.05$$

Table 2 : Seroprevalence of RVF in relation to age .

	No. of tested animals	Positive	%
< One year	380	9	2.36
1 – 3 years	420	31	7.38
> 3 years	415	68	16.38

$$X^2 = 49.926, \quad P < 0.01$$

Table 3 : Seroprevalence of RVF in relation to gender .

	No. of tested animals	Positive	%
Male	130	12	9.2
Female	1085	96	8.8
Total	1215	108	8.88

$$X^2 = 0.021, \quad P > 0.05$$

Discussion:

In order to account for the distribution of covariate factors (genetic , nutritional , geographicaletc) , that may impact on the diagnostic sensitivity and specificity , the intended target population should preferably be sampled using single random , systemic or stratified sampling methods (15) . This is the first study on the rift valley fever in Iraq . the most important lessons learnt from this analysis are that , a preparedness and contingency plane is urgently needed for any country under threat from RVF (16) . Many important factors must be present in order to see an outbreak of RVF in an area . The virus abundance , availability ,of the susceptible animals , humans and the mosquitoes population , all are necessary for the virus infection cycle (17) .

The seroprevalence of RVF reported in this study was lower than those reported by other authors . (16 in Sudan , 9 in Egypt , 10 in Senegal and Mauritania , 11 in Saudi Arabia and Yemen) .

Warming climate is likely to have an impact on the geographical distribution of RVF. Higher temperature increase mosquitoes feeding frequency and eggs production and decrease the duration of their development cycle as well as the

extrinsic incubation period of RVF in mosquitoes . Therefore higher temperature associated with increased rainfall may result in higher vectors densities and vector competence and subsequently a higher RVF transmission rate (18) . This can explain why the prevalence of RVF in Basrah reported in this study was lower than reported in Africa , Saudi Arabia and Yemen .

The seroprevalence of RVF was higher significantly in animals older than 3 years compared with other age groups . This result can be explained by the frequent exposure to the virus lead to increase the chance of infection (19) .

The findings of this study also suggest that there was sex predilection of the virus and there was no significant difference in the seroprevalence of RVF in the different regions of the study suggests that the disease was prevalent throughout the area of study equally and there was no previous data for comparison.

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