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SCREENING OF DOMESTIC RUMINANTS SERA FOR THE PRESENCE OF ANTI-CAMEL POX VIRUS NEUTRALIZING ANTIBODIES AT AL-HASSA DISTRICT OF SAUDI ARABIA

(With 2 Tables)

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فحص أمصال المجترات المستأنسة لوجود مضادات الأجسام المناعية ضد جدري الجمال بمنطقة الأحساء بالمملكة العربية السعودية

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في هذه الدراسة تم فحص مجموعة أمصال الحيوانات المجترة المستأنسة وذلك لمعرفة وجود مضادات الأجسام المناعية ضد فيروس جدري الجمال. وشملت الدراسة أمصال كل من الجمال، الأبقار، الضأن والماعز الموجودة بمنطقة الأحساء بالمملكة العربية السعودية. أثبتت التحاليل وجود ما نسبته ٢١% للأجسام المضادة للجدري في أمصال الجمال المرباة بالرعي البدوي، وما نسبته ٤ % فقط في أمصال الجمال التي جمعت من المسالخ، بينما لم تسفر نتائج التحليل عن وجود أي من الأجسام المناعية المضادة في أمصال الأبقار، بينما وجدت ما نسبته ٦ % ، ١٠% في أمصال كل من الضأن والمعز. هذا وقد تمت مناقشة نتائج دراسة الأجسام المضادة في الحيوانات المذكورة أعلاه وعلاقتها بوبائية مرض جدري الجمال في المملكة العربية السعودية.

SUMMARY

Examination of ruminants sera for the presence of anti-camel pox virus neutralizing antibodies in Al-Hassa district has revealed that, the prevalence in the nomadic pastorates camels was 21%, while in abattoir camels' sera 4%. Bovine, ovine and caprine sera have produced zero, 6 and 10% prevalence. The presence of such neutralizing antibodies in the animal sera was discussed in relation to the epidemiology of the disease in the country.

Key words: *(Camelus dromedarius), anti-camel pox virus antibodies, Al-Hassa, KSA.*

INTRODUCTION

Camel pox is an infectious disease of camels, manifested by cutaneous nodules on the skin (Rash lesions) that cover the mouth, head, neck, legs and perineal area, or generalized lesions that cover all the body of both *Camelus dromedarius* or *Camelus bactrianus* camels. The disease was reported from all camel raising areas, except Australia (Wernery and Kaaden, 1994).

The causative virus belongs to the genus orthopoxvirus. Camel pox virus isolates from Africa, the Middle East and Russian were found to be characteristically similar (Davies *et al.*, 1985).

Since the first isolation and identification of the camel pox (CP) in Saudi Arabia (Hafez *et al.*, 1986), several forms of the disease were noted. These included a mild form, slow spreading form and also a severe devastating form of the disease (Hassanein *et al.*, 1993; Al-Hindi *et al.*, 1994; Abu Elzein *et al.*, 1999; Hussein and Al-Mufarrej, 1999). The disease has also been reported in some of the neighboring countries such as Iran (Baxby, 1972), Iraq (Al-Falluji *et al.*, 1979), Yemen (Odend'Hal, 1983), United Arab Emirates (Kaaden *et al.*, 1992) and Bahrain (Higgins *et al.*, 1992).

The present work reveals the possible presence of anti-camel pox neutralizing antibodies, in other domestic ruminants.

MATERIALS and METHODS

1. **Serum Samples:**

A total of 350 serum samples were collected from domestic ruminants. Two hundred were from camels, 50 were from cattle and 50 from each sheep and goats. The samples were then stored at -20°C.

2. **The Reference camel pox virus:**

A reference tissue culture adapted camel pox virus (Jouf strain), previously isolated and identified (Hafez *et al.*, 1992) was kindly provided by Dr. Habib Al-Khalf, vaccine research centre. The virus was twicely propagated on vero cells and titrated before its use in the serum neutralization test (SNT).

3. **The Microserum Neutralization Test (SNT):**

The micro SNT, was used as described by Davies *et al.*, (1985), with the modification that, the tested sera were diluted in (MEM) medium. Two fold dilution were made for each tested serum starting from 1/10. The diluted serum was added to an equal volume of

predetermined camel pox virus, containing 100 TCID/50 to each well. The mixture was incubated at 37°C for 1h and then overnight at 4°C. A 0.05 ml of suspended vero cell culture was added to each well at concentration of 10^6/ml, prepared in 2% fetal calf serum (FCS) maintenance medium. The plates were incubated at 37°C for 3-5 days.

RESULTS

Results of serum neutralization are shown in Tables 1, 2

Table 1: End - point titres of neutralizing antibodies of ruminants' sera against camel pox virus.

Source of the Sample serum	Reciprocal end-point titres								
Nomadic Camel serum	0 0	10 6	20 8	40 5	80 2	160 0	320 0	640 0	1280 0
Abattoir Camel serum	0	1	3	0	0	0	0	0	0
Cattle Serum	0	0	0	0	0	0	0	0	0
Sheep serum (Nomadic)	0	1	2	0	0	0	0	0	0
Goat serum (Nomadic)	0	3	1	1	0	0	0	0	0

The end-point titer was taken when 50 percent or more of the cytopathic effects of the camel pox virus was suppressed, as the reciprocal of the dilution (Davies *et al.*, 1985).

Table 2: Number of positive serum samples tested against camelpox Virus.

Type of the animal sample	No. of tested Sera	No. of Positives	% positive
Nomadic Camel serum	100	21	21%
Abattoir Camel serum	100	4	4%
Cattle	50	0	0 %
Sheep serum	50	3	6 %
Goat serum	50	5	10 %
Total	350	33	32 %

DISCUSSION

Results of the SNT (Tables 1 & 2) revealed presence of neutralizing anti camel pox antibodies in ruminants at Al-Hassa district. Of the total serum samples studied, 33 were found positive (9.14%). When the serum samples were grouped according to their species and type of management, it was found that the prevalence in nomadic camels was 21%, and in abbatoir camels it was 4%. It must be mentioned that camel pox vaccination is not practiced, so far, by the official authority of the Ministry of Agriculture in this region (Dr. Yousuf, personal communication). This shows that the seroconversion in these camels was due to previous exposure to camelpox virus.

Sheep and goats produced 6% and 10% prevalence respectively, and the prevalence in cattle was 0% (Table 2). In this country, Sheep & goats are usually reared in close contact with camels, so their exposure to the camelpox virus cannot be ruled out.

Earlier studies by Davies and Otema, (1981) did not reveal cross-relationship between strains of capripox virus and camel pox viruses. However, anti-camel pox neutralization antibodies were detected in the sheep and goats serum of the present study.

Cattle produced 0% prevalence. That could probably be due to fact that cattle are raised in closed farms and this is the typical management system of raising cattle in Saudi Arabia. They usually don't come in contact with any other animal species.

Due to the only little information available about the epidemiology of camel pox in Saudi Arabia, a nation-wide study is required to investigate the exact prevalence of the disease among camels and to verify the response of other ruminants which share grazing areas with camels.

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