*Proceedings of the Third Annual Meeting for Animal Production Under Arid Conditions, Vol. 1: 167-173*


# Serological Survey Against Some Viral Diseases in Camels in Sharkia Governorate, Egypt.

M.I. Eisa

Department of Animal Med. Zagazig University, Egypt.

## ABSTRACT

365 sera samples were collected during 1997 from two groups of camels in Sharkia governorate, Egypt. The first group: 190 sera samples collected from slaughtered camels at Belbas abattoir, while the second group: 175 sera samples collected from individual camels which were in contact with cattle herds.

Sera samples were tested by serum neutralization test for the presence of antibodies against infectious Bovine Rhinotracheitis (IBR), Parainfluenza-3 (PI3), Bovine Viral diarrhea (BVD) and Rift Valley fever (RVF). The percentage of seropositive in first group was: IBR (2.1%), PI3 (1.5%), BVD (1%), and RVF (4.7%) while in the second group it was: IBR (2.8%), PI3 (2.3%), BVD (1.7%) and RVF (6.8%).

Results of the present study indicate that camels can be infected sub clinically with these diseases and this most probably plays a significant role in the epizootiology of these viral diseases.

**Key words:** Viral Disease, Survey, Camels, Egypt.

## INTRODUCTION

Camels have long been imported to Egypt from the Sudan for slaughter, for human consumption, for use as draught animals or as mounts by the Frontier Police. The numbers have varied annually owing in part to economic and political considerations and the boldness of smugglers. Between 50,000 and 100,000 Sudanese camels enter Egypt each year (Hoogstraal *et al.*, 1979). Camels are susceptible to many viral diseases and play an important role in the epizootiology of the diseases and also play a role in amplification of some viruses.

BHV-1 antibodies in Peruvian llamas and alpacas were 16.7% and 16.2% respectively, Rosadio *et al.*, (1993) when herds grazed on

the same pasture together with cattle, sheep and goats. Burgemeister *et al.*, (1975) detected neutralizing antibodies (5.8% seropositive) to infectious bovine rhinotracheitis (IBR) virus in camels sera. Antibodies to the respiratory viruses mentioned have been found in camels all over the world (Kaaden, 1995). Olaleye *et al.*, (1989) identified antibodies to the parainfluenza virus 3 (PI3) at the rate of 18.5% in Nigeria. It is interesting to note the high incidence rate of antibodies to PI3 under dry desert conditions (El Amin and Kheir, 1985). In spite of the high incidence rate of antibodies, the PI3 virus itself has not yet been isolated.

Bovine viral diarrhea (BVD) is a widespread disease among various domesticated ruminants in Africa (Hamblin and Hedger; 1979). Tantawi *et al.*, (1984) reported that in a seroepidemiological survey carried out on serum samples collected from healthy camels in Egypt, 5 out of 116 (4.3%) were found positive for precipitating antibodies to the BVD virus and that camels can be infected subclinically with BVD. Wernery and Wernery (1990), explained the higher incidence of BVD in breeding animals (9.2%) when compared to racing dromedaries (3.6%) by the greater size of the breeding herds and their closer contact to cattle herds.

Walker (1975) described symptoms of RVF in camels as abortion and death of the young. Hoogstraal *et al.*, (1979) reported that domestic sheep, cattle, buffaloes, camels and goats act as amplifying hosts to RVF diseases. Rift Valley Fever RVF antibodies were detected in sera of camels collected from different governarates during an outbreak by HI test at the rate of 15.6%. (Aly, 1979), while Eisa (1987) detected RVF antibodies in camel sera in Shairkia governorate using SNT test (9%). Davies et al., (1985) detected RVF antibodies in camel sera by SNT at the rate of 22% in Kenya. Meegan *et al.*, (1979) reported that camels suffer clinically and play a role in the eipzootiology of Rift valley fever in Egypt in 1977-1978. Camels are susceptible to RVF by subclinical or mild form (Peters & Meegan, 1981). The camel appears to harbor the RVF virus without developing the disease (Kaaden, 1995).

This paper describes a serological survey on some serum samples collected from slaughtered camels at an abattoir and from individual camels which were in contact with cattle herds.

## MATERIALS AND METHODS

### Serum samples

A total 365 serum samples were collected (190) from apparently healthy camels which were slaughtered at Belbas abattoir and 175 from individual camels which were in contact with cattle herds. The sera were separated and stored at 20 °C until used and tested by SNT for IBR, PI3, BVD and RVF

### Viruses and serological test

IBR virus: Abou-Hammed strain which was isolated by Hafez (1973) was used. PI3 strain 45 was isolated and identified by Singh & Thanaa Baz (1966) from Egyptian buffaloes.
BVD virus Iman strain and RVF virus ZH 501 strain.

All these virus strains were kindly supplied by the Animal Health Research Institute, Dokki, Giza. Serum samples were inactivated at 56 °C for 30 minutes before being used in the serum neutralization test (SNT) according to Dracel (1975) for IBR, Edwin and Nathalie (1979) for PI3 and RVF, Frey and Liess (1971) for BVD.

## RESULTS AND DISCUSSION

Serum neutralizing antibodies were detected in collected camel serum against IBR, PI3, BVD and RVF viruses. The results of this investigation revealed the demonstration of neutralizing antibodies against different viruses in two groups of camel sera. In first group: (190 sera samples) the percentage of seropositive were: IBR (2.1%), PI3 (1.5%), BVD (1%) and RVF (4.7%) Table 1. The presence of these neutralizing antibodies in camel sera reflects the fact that these camels can be infected sub clinically with these diseases, and that the percentage of positive sera was low due to the low susceptibility of camels to these diseases.

The positive percentage against RVF is higher than in the recent outbreak of RVF in Egypt (Gabery *et al.*, 1994). These seropositive results coincide with (Tantwi *et al.*, 1984; Burgemeister, 1975; Davies, 1985 and Kaaden, 1995).

In the second group (175 sera samples), the percentage of seropositive were: IBR (2.8%), PI3 (2.3%), BVD (1.7%) and RVF (6.8%) Table 1. The present data showed clearly that camels acquired these diseases naturally, but in a mild or sub clinical form. For these camels there are no records or instructions for vaccination in Egypt against these or other diseases. These results coincide with Hamblin & Hedger, 1979; Meegan *et al.*, 1979; Eisa, 1987 and Rosadio *et al.*, 1993. The difference in percentage between different viruses is due to previous season.

The seropositive results in two groups were similar, but the percentage in second group was slightly higher than the first group. This may be due to the contact between these camels and cattle population. The results coincide with (Wernery and Wernery, 1990).

Table 1: Results of SNT of in camel sera against different viruses.

| | IBR | PI3 | BVD | RVF |
|---|---|---|---|---|
| First Group | | | | |
| No. of Sera | 190 | 190 | 190 | 190 |
| No. of Positive | 4 | 3 | 2 | 9 |
| % Positive | 2.1 | 1.5 | 1 | 4.7 |
| Second Group | | | | |
| No. of Sera | 175 | 175 | 175 | 175 |
| No. of Positive | 5 | 4 | 3 | 12 |
| % Positive | 2.8 | 2.3 | 1.7 | 6.8 |

## CONCLUSION

Camels may be considered as carriers or reservoirs for these viruses and most probably play a significant role in the epizootiology of these diseases.

## ACKNOWLEDGEMENT

I would like to thank all the members of Virology Department, Animal Health Research Institute, Dokki, Cairo for the facilities they provided me.

## REFERENCES

Aly, R.R. 1979. Study of RVF in camels in Egypt. M.V.Sc. Thesis (Micro.) Fac. Vet. Med. Cairo Univ., Egypt.

Burgemeister, R., W. Van Leyk, and R. Gossler. 1975. Untersuchurgen uber vorkommen von parasitosen, bakteriellen und viralen infektion skrankheiten bei Dromedaren in Sudtuneisen. Deushe tierarztliche wochenshrift 82: 341-384.

Darcel, C. and Q. Le. 1975. Some factors influencing microtest method for neutralizing antibodies to the virus of IBR. Can. Vet. J. 16 (2): 59-62.

Davies, F.G., J. Kirous and H. Mbugua 1985. RVF in Kenya: The presence of antibody to the virus in camels. J. of Hyg., 94 (2): 241-244.

Edwin, H.L. and J.S. Nathalie. 1979. Microneutralization test in cell cultures. Diag. Proc. Virol. Rich. & Chlamydial Inf. 5th edition. 108-111.

Eisa, M.I. 1987. Some studies on RVF M.V.Sc. Thesis (Infectious diseases), Fac. Vet. Med. Zag. Univ., Egypt.

El Amin, M.A. and S.A. Kheir. 1985. Detection of influenza antibody in animal sera from Kassal region, Sudan. Rev. Elev. Med. Vet. Pays Trop. 38 (2): 127-129.

Frey, H.R. and B. Liess. 1971. Growth curve studies and applicability of highly cytopathogenic BVD-MD virus strain

for diagnostic purposes using the microtitre methods. Zbl-Vet. Med., B. 18: 61-71.

Gabery, G.H., M.A. Nawal, A. Hadia, M.M. Fathia, and N.N. Ayob. 1994. Unclassical picture of RVF in man and animals in Aswan governarate in May 1993. Vet. Med. J. Giza, Vol. 48 (1): 135-138.

Hafez, S.M. 1973. Isolation and identification of IBR virus. Proc. 10th Arab. Vet. Conger., Cario.

Hamblin, C. and R.S. Hedger. 1979. The prevalence of antibodies to bovine viral diarrheas disease virus in African wildlife. Com. Immum. Micro. & Infectious diseases. Vol. 2: 295-303.

Hoogstraal, H., J.M. Meegan, G.M. and Khalil. 1979. The RVF epizootic in Egypt 1977-1978. Trans. Roy. Soc. Trop. Med. & Hyg. Vol. 73 No. 6: 624-629.

Kaaden, R.O. 1995. Infectious diseases of camelids. Black well Wissenschafts-Verlag, Berlin, 1995.

Meegan, J.M., H. Hoogstraal, and M.I. Moussa. 1979. An epizootic of RVF in Egypt in 1977. Vet. Rec. 105 (5): 124-125.

Olaleye, O.O., S.S. Baba and S.A. Omalabu. 1989. Preliminary survey for antibodies against respiratory viruses among slaughter camels. Off. Int. Epiz. 8 (3): 779-783.

Peters, C.J. and J.M. Meegan. 1981. RVF in CRC handbook series in zoonases, Beran G. Ed., CRC press, Boca Raton, Fla. 403.

Rosadio, R.H., H. Rivera, and A. Manchego. 1993. Prevalence of neutralizing antibodies to bovine herpesvirus-1 in Peruvian livestock. Vet. Rec. 132, 611-612.

Singh, K.V. and Thanaa Baz. 1966. Isolation of PI3 virus from water buffaloes in Egypt. Can. Comp. Vet. Sci., 30: 70-79.

Tantawi, H.W., R.R. Youssef, R.M. Arab, M.S. Marzouk, and R.H. Itman. 1984. Some studies on bovine viral diarrhea disease in camel. Vet. Med. J. 32 (3): 9-15.

Walker, J.S. 1975. RVF, foreign animal disease, their prevention, diagnosis and control committee on foreign animal diseases of United States. Animal Health Assoc., 209-221.

Wernery, U. and R. Wernery. 1990. Seroepidemiologische untersuchungen zum. BVD/MD, IBR/IPV. J. Vet. Med. B. 38, 523-528.