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SEROLOGICAL SURVEY ON THE PREVALENCE OF BOVINE HERPES 1 (BHV_1) IN DOMESTIC ANIMALS IN EGYPT

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INTRODUCTION

BHV_1 is a viral disease of domestic animals which belongs to the Family Herpesviridae. It is characterized by various clinical manifestations including respiratory form (Miller, 1955 and McKercher et al., 1959), infectious pustular vulvovaginitis (IPV) , encephalitis (French, 1962 a-b), conjunctivitis (McKercher et al., 1959), endometritis and infertility (Bouters et al., 1964), enteritis (Wellman et al., 1974), ocular carcinoma (Russel et al., 1956) and abortion in cattle (Jensen et al., (1955) Affections in other species as vaginitis and balanitis in pigs (Onstad & Saxegaard, 19679),respiratory affection in goats (Mohanty et al., 1972) and recurrent opthalmitis of horses (Jubb and Kennedy, 1970).

In Egypt, the virus was isolated for the first time from cattle suffering from a respiratory syndrom (Hafez et al., 1974), as well as from local cattle (cows) and buffaloes affected with the genital form (Mohsen et al., 1978).

This study aimed to explore the role and the degree of the spreading of the disease among Egyptian farm animals in ten nominated Governorates in upper and lower Egypt from 1986-1988.

MATERIALS AND METHODS

Virus: IBR virus Colorado strain, kindly supplied by the Veterinary Diagnostic Laboratories. Ames, Iowa, USA was passaged 3 times in (MDBK) cell line.

Cell culture: MDBK cell line was obtained from Institute of Veterinary Serum and Vaccine Research and Production, Abbassia. Monoloyer cell cultures were grown in Eagle's MEM supplemented with 10% NCS.

Sera: Serum samples have been collected from cattle, buffaloes, sheep, goats and camel from ten Governorates in Upper and Lower Egypt in sterile containers and heat inactivated at 56°C for 30 minutes before being tested.

Virus titration : IBR virus "Clorado strain" was titrated in MDBK cells using the microplate technique described by Darcel (1975). The attained virus titre reached 10^5/ml $TCID_{50}$

Neutralization test: The microneutralization test and its parameters were performed according to the method described by FADDL diagnostic lab. protocol 602. The test was carried out using MDBK cell and Colorado strain of IBR virus. Final serum dilution of 1:8 was used in this survey.

RESULTS AND DISCUSSION

Analysis of the data given in **Table 1**, reveals that a total of 16651 serum samples were screended by SNT against IBR virus colorado strain in a dilution of 1:8 during the period Oct. 1985- Sept. 1988. The

Table (1): Incidence percentage of BHV_1 neutralizing antibody among different species of domestic animals in 10 Egyptian Governorates during the period Oct. 1985-Sept. 1988

Species / Govern.	Cattle			Buffaloes			Sheep			Goat			Camel			Total percentages %
	T	+ve	%	T	+ve	%	T	+ve	%	T	+ve	%	T	+ve	%	
Aswan	131	23	17.6	37	11	29.7	241	48	20	65	30	46.2	8	0	0	22.7
Quena	1117	309	27.7	584	78	13.4	1245	233	18.7	946	170	18	36	0	0	15.5
Suhag	856	160	18.7	1044	192	18.4	888	178	20.1	862	205	23.8	37	9	24.3	21.2
Assiut	940	136	14.5	1054	170	16.1	820	142	17.3	710	134	18.8	65	11	17	16.7
El-Wadi El-Gedid	214	33	15.2	-	-	-	671	112	16.9	92	16	17.4	-	-	-	16.5
Menia	513	28	4.3	358	25	6.9	113	8	7.1	75	5	6.6	13	3	23	9.6
Beni Suef	629	135	12.4	198	16	8.1	19	0	0	7	1	14	-	-	-	10.7
Fayoum	477	99	20.8	275	38	13.8	32	4	12.5	19	8	42	3	0	0	22.1
Giza	168	38	22.6	117	34	29.1	74	12	12.2	49	10	30.4	9	0	0	21.1
Matruh	11	1	9.1	11	4	36.4	457	45	9.8	343	37	10.8	-	-	-	16.5
Total	5056	962	19	3678	568	15.4	4578	782	17.1	3168	616	19.4	171	23	13.5	

Total No. of animals = 16651 Total +ve = 2951 Percentage of positive reactors = 17.6 %

incidence of positive reactors from all tested sera collected from different species of domestic animals in ten nominanted governorates reached 17.6%. This result denotes that BHV_1 is circulating among all tested domestic animal species in the mentioned governorates. It can be concluded that the virus is widly spread due to an active infection rather than vaccination as there is no vaccination programme policy against IBR/IPV except for vaccinated Friesian breed of cattle imported from European countries.

The comparative incidence of positive reactors among different animal species revealed that the highest percentages of positive reactors were reported for cattle and goats (about 19%) which significantly exceeded other species denoting the host specificity to these animal species. However, the role of goats in spread of the virus should be explored since it is known that they can naturally contract the disease.

The disease in cattle and buffaloes has been recorded in Egypt by Hafez and Frey (1973) who found in some farms suffering from pneumoenteritis in calves that the proportion of positive samples reached 68.7% in calves and 32.3% in buffalo calves. El-Debeigy (1975) indicated that younger calves were more susceptible to pneumoenteritis syndrome and that the disease occurred nearly with the same proportion all over the year in cattle, while there was seasonal variation in buffaloes. At any rate, proposal for carrying serological studies on the prevalence of IBR infection in certain farms harbouring cases of pneumoenteritis in calves or abortion in breeding cattle and buffaloes, is suggested which may give a better idea of the disease. The data representing the effect of species, breed, sex, farm, age, season and locality are computerized in progress.

The presented data showed a lower incidence of IBR/IPV antiboies in buffaloes than bovine sera; this may be attributed to lower susceptibility of buffaloes

to infection or may be due to the fact that buffalo herds are not in high aggregates like that of cattle. The presented data also show a remarkable proportion of positive reactors for IBR among goats. The role of this animal species in exposure to the disease and its dissemination needs further investigations.

The role of camel in IBR infection is not clear, however, it is the first record showing the occurrence of BHV_1, neutralizing antibodies in camel sera (13.5%) and further studies are required in the aspect of the epidemology of the disease in these animal species.

The distribution of BHV_1 infection among the mentioned governorates as measured by SNT demonstrated that Aswan, Suhag, Fayoum and Giza Governorates had the highest rate of positive reactors to SNT against BHV_1. The higher rate of infection in the first 2 governorates (22.7% & 21.2%) might be explained by the presence of these animals under stress factors such as higher temperature and humidity. These factors had only little effect on the survival of IBR virus since it is characterized by high stability under adverse environmental condition . This suggestion is evidenced by Sanger (1967) and El-Azhary and Derbyshire (1979) as they found that IBR virus was able to survive at least long enough for airborne infection at a temperature of 32°C and high relative humidity of 90%. The virus can withstand a temperature of 37°C for 10 days and at 22°C for 50 days (Griffen et al., 1958).

On the other hand, Fayoum and Giza Governorates show a correlated percentage of infection for this disease (22% & 21%) respectively. The high rate of infection in these governorates could be explained by the fact that both governorates are in close connection with each others allowing free movement and exchange of animals between them beside the big animal marketing occurring in Giza. The lowest rate of infection

presented in Menia and Beni Suef Governorates (9.6% & 10.7%) respectively could be attributed to climatic and management conditions. Variation in the rate of infection among the different animal species among the nominated governorates is depending on the chance of exposure to IBR infection of these animals governed by environmental conditions, management and animal movement. The size problem of BHV_1, among Egyptian domestic animal and its economical impact especially in pneumoenteric calves and in aborted animals should be investigated and evaluated before the decision of vaccination policy against disease is taken.

SUMMARY

A total of 16651 serum samples were collected over a period of 3 years from cattle (5056), buffaloes (3678), sheep (4578), goats (3168) and camel (171) representing ten Governorates in Upper and Lower Egypt. These serum samples were screened by serum neutralization test (SNT) in a final dilution of 1:8. The incidence of BHV_1 positive serum reactors were 19, 15.4 , 17, 19.4, 13.5% in the tested sera of cattle, buffaloes, sheep, goats and camel respectively. The percentages denote the prevalence of BHV_1, infection since no policy of vaccination against BHV_1 has been adopted.

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