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SEROLOGICAL STUDY ON DISTRIBUTION OF UUKUNIEMI VIRUS IN MAN*)

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Abstract. Blood samples from 934 persons living in the Nitra region (Central Slovakia) were tested for hemagglutination-inhibiting (HI) antibodies to Uukuniemi virus antigen. Antibodies to Uukuniemi virus were found in 4.8 % of the examined sera. The highest percentage of reaction 9.3 % was found in the village of Jelenec. For comparison cattle sera were also examined for the presence of HI antibodies to Uukuniemi virus. No antibodies were found in bovine sera taken in Obyce; only 2 % of positive sera were found in Kostolany village.

Human population and domestic animals from the region of Tribeč, which is recognized to be natural focus of tick-borne encephalitis (TE), were subjected to serological examination for the presence of antibodies to arboviruses. We started with the testing of arbovirus antigens of group A, B and Bunyamwera supergroup in haemagglutination-inhibition test. Two distant regions were chosen for comparison, namely western Slovakia (Bratislava) and eastern Slovakia (Michalovce). At the locality of Jarok, which belongs to the Tribeč focus investigated, 27 % of human population were found to possess antibodies to TE, while only 3—4 % of humans from the control regions (Michalovce, Bratislava) were antibody-positive.

A relatively high percentage of sera reacted with Ťahyňa antigen in all the regions studied. No antibodies to Čalovo virus antigen (Bunyamwera supergroup) could be detected in human sera (GREŠÍKOVÁ and SEKEYOVÁ 1967).

Examination of sera from domestic animals for the presence of antibodies to the above arboviruses revealed high infestation of domestic animals with TE virus in the Tribeč region. 30 % of sera reacted with TE virus antigen in hemagglutination-inhibition test. It is of interest that 12 % of sera from domestic animals reacted with Čalovo virus antigen, while no antibodies to this antigen were found in human sera (SEKEYOVÁ and GREŠÍKOVÁ 1969).

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Table 1. HI antibodies to TBE, Uukuniemi and WEE viruses in human and bovine sera from the Tribeč region

Antigen	Jarok	Topoľčianky	Jelenec	Obyce	Obyce	Kostolany
	Origin of sera					
	Human	Human	Human	Human	Bovine	Bovine
Uukuniemi	0	3.9	9.3	5.8	0	2.0
Tick-borne encephalitis	21.5	15.2	5.1	6.2	5.0	25.0
Western equine encephalomyelitis	0	0	0	0	0	2.0

We tried to recognize immunological response of humans to Tribeč virus (this virus was isolated in 1963). As Tribeč virus is hemagglutinin-deficient, we employed virus-neutralization test for this serological examination. Of 100 sera examined in total, 3 % reacted with Tribeč virus (GREŠÍKOVÁ et al. 1965). Analysis of the results obtained revealed that the percentage of positively reacting sera with Tribeč virus increases with growing age of individuals examined, though this age-dependence was more pronounced with TE virus. This is in correlation with the findings obtained from the patients hospitalized with clinical diagnosis of aseptic meningitis in the Tribeč region. Examination of their sera in complement-fixation test showed that—except one isolated instance of antibody increase—all the other results were negative.

After repeated Uukuniemi virus isolation from this region (KOŽUCH et al. 1968) we decided to undertake serological examination of humans and domestic animals for the newly isolated virus. TE virus was used for comparison; specificity of the test was checked by WEE virus.

By courtesy of the Sanitary District Epidemiological Station in Nitra we obtained 934 serum samples taken from humans in the following localities: Obyce, Jarok, Topoľčianky and Jelenec (all situated in the Tribeč region). Before used, the sera were kept frozen at —15 °C. The sera were acetone treated (for comparison also rivanol-treated), adsorbed by concentrated goose erythrocytes and then tested in haemagglutination-inhibition test with 4—8 haemagglutination units of respective antigens added. Of all the 934 sera examined, 4.8 % reacted with Uukuniemi virus antigen, and 10.7 % reacted with TE virus antigen; antibody levels fluctuated from 1 : 20—1 : 640 with the former and 1 : 20—1 : 1280 with the latter virus antigen. Percentage of positive sera was found to increase with growing age.

The highest percentage of positively reacting sera belonged to people from the community of Jelenec (9.3 %). Human sera collected from Obyce community showed antibodies to Uukuniemi virus in 5.8 %, those from Topoľčianky—3.9 %. No Uukuniemi virus antibodies were found in human sera collected at Jarok