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A SEROLOGICAL SURVEY OF TICK-BORNE ENCEPHALITIS
(TBE) IN HOKKAIDO AND ISOLATION OF TBE VIRUS
FROM INFECTED DOG BLOOD

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In October 1993, a suspected case of Russian spring-summer encephalitis (RSSE) was found in the town of Kamiiso in Hokkaido. Therefore, to determine the prevalence of tick-borne encephalitis (TBE) virus, a seroepidemiological survey was performed among people, cattle and dogs in the case-study area. The sera were tested for neutralizing (NT) antibodies against Langat virus strain TP-21 (TBE complex) and Japanese encephalitis (JE) virus strain JaGAR-01 (mosquito-borne complex) to detect TBE-specific antibodies. Virus isolation was performed using blood samples from dogs with positive antibodies to Langat virus. Furthermore, the seroepidemiological survey was extended to dogs and deer from various locations in Hokkaido and Honshu.

The results are summarized as follows :

1. All of cattle sera of the patient's farm were negative against TBE virus, but one goat serum was positive. On a neighbouring farm, 5 of 27 (18.7%) cattle sera were positive.
2. Eight of 9 (88.9%) dog sera collected in the case study area had the antibody to Langat virus and showed extremely high titers to RSSE virus.
3. Twenty-four residents in the case study area were negative, but the patient and a neighboring farmer, who had suffered from severe encephalitis 35 years earlier, were positive for the TBE virus.
4. Two of 150 (1.3%) dogs sera in Hokkaido were positive for the TBE virus, one from Kamiiso and another from the city of Tomakomai, and they were suspected to have been infected with TBE virus. Sixty dog sera in Honshu were negative for TBE virus.
5. Forty-two deer sera from Hokkaido and the Tohoku region were negative against TBE virus, being under the detection level (1 : 20).
6. From April to June 1995, 5 beagle puppies introduced into the patient's farm and 10 native puppies of a neighboring farm were kept loose so as to be fed on by ticks. Blood samples were obtained from the dogs at regular intervals for monitoring TBE virus activity. None of the sera were positive in the first samples on April, but 4 of 5 (80%) sera of the beagles and 6 of 10 (60%) sera of native dogs were positive in the NT test on July 1st. Thus, the results clearly demonstrated the existence of a

natural focus of TBE virus in the case-study area. Furthermore, 3 virus strains were isolated by the intracerebral inoculation method to suckling mice from the blood samples of 7 days before the sero-converted day. The isolated virus strains were identified as TBE virus by IFA test using monoclonal antibodies specific to TBE virus.