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Evaluation of serodiagnostic methods for tick-borne encephalitis  
and a serological survey in wild rodents

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In October 1993, a human case of tick-borne encephalitis (TBE) was found in the Mitsuishi area of Kamiiso, Hokkaido. Therefore, survey of TBE has been urgently required to assess the antibody prevalence in Hokkaido. To evaluate the immunofluorescent antibody test (IFA) as a screening test, TBE antibodies were measured by anti-dog IgG IFA, protein-G (PG) IFA and the neutralization test (NT), and the results were compared each other.

The results are summarized as follows :

1) When dog sera were tested for the TBE antibody, there was a strong correlation between anti-dog IgG IFA and NT titers.

2) In dog sera tested for the TBE antibody, PG IFA titers were lower than the NT titer. The positive coincidence rate was 100% in PG IFA and NT results when the cutoff titer of PG IFA was set at 1:16. The results showed that PG IFA was suitable as a screening test for TBE sero-survey.

3) In rats inoculated with TBE virus, PG IFA titers showed a weak correlation with NT titers.

However, correlation coefficients of both titers were similar to that obtained in dog sera. Therefore, PG IFA may be useful as a screening test for different animal species.

4) Human sera were collected from residents in Kamiiso and Hakodate who had neurological disorders. None of the sera were positive for TBE antibody.

5) Small mammals were captured in the Mitsuishi area of Kamiiso, in June, July and October. The positive rate was significantly higher in October than in other months. TBE virus was found to be actively transmitted from summer to autumn among small mammals in the area.

6) Among 8 survey points for small mammals in addition to the Mitsuishi area, TBE-antibody positive animals were detected at 3 points, suggesting the wide spread of TBE virus in Kamiiso.

7) No positive individual was detected among small mammals from various regions in Hokkaido and Aomori prefectures.