P 22 Exchange of tick-borne encephalitis virus subtypes between tick species in Estonia, Latvia, and eastern Poland

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Tick-borne encephalitis virus (TBEV) is widely distributed in the Baltic countries and eastern Poland where the reported tick-borne encephalitis morbidity is the highest in Europe. Based on phylogenetic analysis, 3 subtypes of TBEV have been described, the Western (W-TBEV), the Far-Eastern (FE-TBEV), and the Siberian (S-TBEV) subtypes. TBEV is transmitted by ixodid ticks: the W-TBEV subtype by *Ixodes ricinus*, the FE-TBEV and the S-TBEV subtypes by *I. persulcatus*. In 2 Baltic countries, Latvia and Estonia, the distribution of both tick species overlap, and all 3 TBEV subtypes have been shown to cocirculate. In Lithuania and Poland, however, *I. ricinus* is the main vector of TBEV.

In the present study, we amplified and sequenced the partial E and NS3 genes of TBEV from *I. ricinus*, *I. persulcatus*, and *Dermacentor reticulatus* ticks collected in Estonia, Latvia, Lithuania, and north-eastern Poland.

In Estonia where both *I. persulcatus* and *I. ricinus* occur, the S-TBEV subtype was detected not only in *I. persulcatus* ticks, as it had been expected, but also in *I. ricinus*. In Latvia, the opposite exchange of TBEV subtypes between tick species was found, W-TBEV in *I. persulcatus* ticks. In Lithuania, only *I. ricinus* ticks were collected, and the W-TBEV subtype was amplified. In north-eastern Poland, W-TBEV was detected in *I. ricinus* and *D. reticulatus* ticks, although *D. reticulatus* cannot independently maintain TBEV, but it may sustain virus circulation in *I. ricinus* populations.

Genetic and phylogenetic analysis of partial E and NS3 genes showed that TBEV strains detected in different tick species in the same locality were identical or closely related.

We found that in areas where several species of ticks occur, an exchange of TBEV subtypes between different tick species may occur. Up to date, distributions of the S-TBEV subtype and *I. persulcatus* correspond, and the western boundary of the S-TBEV subtype was found to occur in eastern Estonia and Latvia. Although we could not found any feature of adaptation of the S- and W-TBEV strains to the new tick species, detection of S-TBEV strains in *I. ricinus* ticks in areas where both tick species overlap, might be the first step to adaptation of S-TBEV strains to *I. ricinus* ticks and a spread to the west.