V 23 Temporal dynamics of ticks and tick-borne encephalitis viruses in a natural focus in southern Germany during a period of two years

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Tick-borne encephalitis virus (TBEV) is a member of the genus Flavivirus in the family Flaviviridae. It is transmitted in nature by ticks. So far, the dynamics of TBE natural transmission foci is only partially understood. Different models are used to predict TBEV occurrence and risk of infection for humans.

In the current study, we present data on the abundance of ticks and of TBEV in a single TBE focus during a period of 2 years. *Ixodes ricinus* ticks were sampled monthly in a standardized way from May 2009 until October 2010. Ticks were sorted according to developmental stage and tested for presence of TBEV using a real-time RT-PCR. Positive tick samples were cultivated in cell culture. The E genes from TBEV-positive ticks and positive cell cultures were sequenced and compared to the available sequences.

In both years, the highest total numbers of ticks were detected in May and June. The total numbers of ticks decreased in June and remained on a stable number for the rest of the year. In 2010, the decrease of tick numbers during the summer was more prominent than in 2009. TBEV infection rates in ticks differed significantly during the 2 years. While in 2009 8 TBEV-positive ticks were adults and one of 9 positive ticks was a nymphal tick, in 2010 2 of 8 positive ticks were adults and six were nymphs. Although in 2010 the highest number of ticks was sampled in April, the first positive ticks were only found in May.

Ticks as well as TBEV in ticks show significant seasonal abundance. The actual data will help to better understand the dynamics of TBEV in ticks and to predict the risk of infection for humans.