TBE NEWS

TBE IN THE NETHERLANDS

Background

Until 2015, the Netherlands had been considered a non-endemic country for TBE. TBE was first detected in ticks collected in response to retrospective serologic screening of serum samples from roe deer which indicated that TBE virus might have been circulating in the Netherlands. In the TBE News, there have been various notes about TBE in the Netherlands, e.g., Snapshot week 10/2022, week 30/2021, and week 2/2020.

Various TBE foci have been identified in the Netherlands and phylogenetic analyses have been carried out of TBE virus strains isolated in this country. Now, new data have been published about a large-scale surveillance of ticks and wild rodents to investigate TBE virus presence and prevalence in potential new foci in the Netherlands .

Results

During several months in 2018, 2019 and 2020, a total of 44,916 questing ticks were collected by dragging, and in seven of 3,086 pools of these ticks, TBE virus-specific RNA could be detected by qRT-PCR. Whole genome sequences were obtained for three TBE virus RNA-tick pools: one from Zeist, east of Utrecht; and two from Dronten, east of Amsterdam. The two sequences from Dronten were 99.96% similar to one another, and the sequence from Zeist was 99.96% similar to a sequence obtained two years earlier from ticks collected in the same municipally. Phylogenetic analyses revealed that all sequences clustered within the TBE virus-Eu subtype. The sequences from Dronten were similar to a strain found in Lower Saxony, Germany, and the sequence from Zeist was more related to a strain circulating in Sweden.

In addition to detection of virus-specific RNA in ticks collected by dragging, a total of 1,370 ticks (*Ixodes ricinus*, *I. trianguliceps*) removed from rodents (*Apodemus*, *Myodes* and *Microtus* species) were screened for virus RNA. TBE virus RNA was not detected in these ticks from rodents.

The brain and spleen tissue from 320 rodents were tested for the presence of TBE virus RNA, and evidence for an infection was found in three rodents from two municipalities. Sequencing a fragment of the glycoprotein E gene revealed that these variants belonged to the Eu-subtype.

Five rodents tested positive in a TBE antibody ELISA; however, only one serum was confirmed positive in an antibody neutralization assay .

Discussion

The identification of new TBE virus strains and new TBE foci indicate that the distribution of TBE virus is more widespread in the Netherlands than previously found. The diversity of TBE variants indicate multiple introductions, most probably by migrating birds.

As found elsewhere in Europe, there is a focal distribution of TBE virus in the Netherlands.

Literature

Esser et al.
Continued circulation of tick-borne encephalitis virus and detection of novel transmission foci, the Netherlands
Emerg Infect Dis. 2022;28(12):2416-2424. doi:10.3201/eid2812.220552

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