



TBE VIRUS INFECTION WITHOUT INVOLVEMENT OF THE CENTRAL NERVOUS SYSTEM CAUSES A SIGNIFICANT DISEASE BURDEN

Background

After infection by the TBE virus, individuals usually suffer from unspecific influenza-like illness during the first viremic phase, followed by a second viremic phase with neurological symptoms ranging from meningitis to severe neurological forms like encephalitis and myelitis. However, so-called „abortive forms” or „fever forms” of the disease without involvement of the central nervous system (CNS) are also reported with varying frequencies across different countries.

Published data on this form of the disease suggest that the health burden of non-CNS TBE may be underestimated, and there is currently no clear consensus on the clinical importance and health burden of TBE infections without CNS inflammation.

A nationwide retrospective cross-sectional study was conducted in Latvia using data collected from 2007 to 2022 to assess the epidemiological, clinical, and laboratory characteristics of TBE virus infections without CNS involvement.

Results

Between 2007 and 2022, a total of 4,124 TBE virus infections were identified in Latvia, of which 823 cases were non-CNS TBE cases (20% of all cases) – patients without symptoms not associated with meningeal signs.

Non-CNS cases were reported from all regions of Latvia, and no significant differences were detected among the different regions. The seasonal pattern showed no difference between non-CNS and CNS-TBE cases.

The median age of non-CNS cases was 51 years, with 53 (6.4%) of the cases being children. No significant difference was found among the age groups.

The most common general symptoms in non-CNS patients were fatigue (90.9%), fever of at least 38° C (89.8%), headache (84.1%), dizziness (56.8%), nausea/vomiting (44.3%), and myalgia (36.4%). A total of 159 out of 173 (91.9%) patients reported between 2018 and 2022 were hospitalized, with a median hospitalization length of seven days. None of the patients was admitted to the intensive care unit.

Discussion

The data from this study confirm that the TBE burden on public health is indeed higher than estimated by official nationwide TBE surveillance data. According to the official case definition adopted in Europe in 2012, reporting symptomatic TBE virus infections without signs of CNS inflammation is not mandatory. Non-CNS TBE can significantly impact a patient's health.

Despite the absence of neurological symptoms, 92% of the non-CNS patients experienced conditions that required hospitalization.

TBE is almost exclusively associated with non-vaccinated individuals. In the non-CNS TBE patients, 97.7% were unvaccinated. The proportion of vaccinated individuals in non-CNS cases was higher than in CNS cases (2.3% vs. 1.7%), indicating that vaccination may reduce the severity of the disease



Literature

Freimane et al.
Tick-borne encephalitis infections without CNS involvement: An observational study in Latvia, 2007-2022. *PLoS One*. 2024;19(6):e0305120.
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