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Emergence of Northern European TBE virus strains in Central Europe

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Tick-borne encephalitis (TBE) is the most important tick-borne viral disease in Europe. The virus belongs to the family “Flaviviridae”. Using genetic analyses strains from different geographic origin can be identified and characterized.

During the last years TBE virus strains were isolated and genetically characterized. The whole genomes of the isolated virus strains were sequenced and compared to the comprehensive TBE virus data base of the National TBE Reference laboratory.

During 2012 to 2025 a total of >400 TBE virus strains from >100 TBE natural foci in Germany and Europe were isolated and genetically characterized. Among these up to 2017, the TBEV strains identified had their origin mainly in Eastern European countries. Since 2018, a total of nine TBE viruses from different foci could be detected and characterized which were genetically closely related to TBE virus strains from Scandinavia, Russia and Latvia.

Northern European TBE virus strains are increasingly detected in Central Europe. Reasons for their increased emergence may be changes in bird migration which finally establish new TBE natural foci. So far, only limited data on their pathogenicity and the efficacy of the commercially available TBE vaccines against these emerging strains are available. The new Northern European TBE virus strains might be one reason for the increase of reported human TBE cases in Central Europe.

Keywords

Tick-borne encephalitis, Bird migration, Northern European TBE virus

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Professional Status of the Speaker

Professor

Junior Scientist Status

No, I am not a Junior Scientist.

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