



TBE IN CHILDREN

Background

TBE is a serious health risk in many regions of Europe and Asia. An increase of TBE has been observed over the last two decades in many TBE endemic regions. Most infections occur after a tick bite, while a minority of infections are caused by the consumption of unpasteurized milk or milk products. Severity of disease increases with age and in the past, TBE in children was often regarded as benign. The author of this newsletter very well remembers the attitudes of some physicians, when he gave a lecture about TBE and TBE vaccines about 20 years ago on the Aland islands: A natural TBE infection in children is harmless and one should not vaccinate them to achieve protection against a more severe TBE infection in older age by natural infection in early childhood. In the current review, Robert Steffen asked the question, if such an attitude still is justified.

Results

Compared to adults, TBE in children is less frequent. According to a survey in southern Germany, 11% of patients were under 14 years of age; in Slovenia, 24% were younger than 15 years and in Sweden, 6% were under 10 years. It should however be considered that the very young cannot express their discomfort and that TBE diagnosis may be missed in pre-school children. In this review, detailed incidences within the pediatric population are given for a number of European countries. A very low number of patients younger than three years have been reported; however, the youngest patient reported was 17 days old.

Compared to adults, TBE symptoms usually are milder and often unspecific in children. The incubation period in general varies from 4 to 28 days. The first phase is characterized by nonspecific influenza-like symptoms, such as

fever and headache. The proportion of children with fatigue, adynamia, malaise, vomiting and abdominal pain varied from 15 to 90%. In one study, the second phase was observed in about 90% of children and 5 to 30% in another study. The duration of the interval phase has been described 2 to 25 days. In the second phase, meningitis is the most frequent symptom, while meningoencephalitis occurs less often, and meningoencephalomyelitis is rarely diagnosed. Data on duration of hospitalization varied across studies and the proportion of children admitted to intensive care ranged from 0 to 22%. Permanent neurologic sequelae are rare in children, mostly reported below 10% in various studies. However, EEG abnormalities and cognitive signs like impaired attention, concentration and psychomotor speed were reported in several studies. In various studies cognitive disfunctions have been reported (e.g. fatigue, hyperactivity, irritability, memory impairment) and the results of these studies are discussed in detail in this review.

A broad variation relating to vaccination recommendations for children exists in Europe. While TBE vaccination in children is not recommended in Estonia, Lithuania and Sweden, other countries recommend it for individuals with a high-risk exposure. In Austria, the Czech Republic and Latvia, vaccination is recommended for all children, independent if the live in an endemic area or not. In contrast, Germany, Slovenia and Switzerland recommend vaccination only for those living in or visiting an endemic area.

The lower age limit for vaccination differs, but in most countries is 12 months. Because in children under 3 years of age, fever occurs in 5 to 15% of vaccinees, some countries recommend vaccination in children at the age of 3 years and older. Switzerland is the only country generally recommending TBE vaccination at the age of 6 years (unless there is a high-risk exposure).



Discussion

This review shows that TBE infection can occur at any age. In children, meningitis is the predominant form of infection and prognosis is markedly better in children than in adults. Follow-up studies have shown that up to two-thirds of children reported problems, mainly headache, fatigue and cognitive issues, and parents reported persistent attention and concentration deficits for many years. The cognitive handicaps and neurodevelopment deficits in children and its long-lasting impact on patients and their families do no longer justify emphasizing the importance of vaccination only in adults.

Literature

Steffen, R.

Tick-borne encephalitis (TBE) in children in Europe: Epidemiology, clinical outcome and comparison of vaccination recommendations

Ticks Tick Borne Dis. 2018, in press, <https://doi.org/10.1016/j.ttbdis.2018.08.003>

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