

TICK-BORNE ENCEPHALITIS ON BORNHOLM

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EPI-NEWS has previously dealt with tick-borne encephalitis (TBE) on the island of Bornholm, with three case histories and a report of earlier studies, EPI-NEWS 33/99 and 20/00. Preliminary results are now available from several new studies to quantify the risk of getting TBE on the island. These results permit the formulation of more detailed TBE vaccination proposals for stays on the island.

New estimates of incidence

Just over a year ago several types of study were initiated to elucidate the incidence and risk of TBE infection on Bornholm:

- 1) Testing for TBE of CSF specimens previously sent in to Statens Serum Institut in which the aetiological agent had not been identified. The specimens were from patients admitted to Bornholm Central Hospital with CNS infections during the period 1994-99. The study showed that at least 1-2 Bornholm residents per year acquire TBE requiring hospital admission (reported by Kirsten Laurson).
- 2) Testing of healthy forestry workers on Bornholm for TBE antibodies. A total of 32 workers were tested, of whom about 20% were found to be seropositive, indicating prior infection (reported by K. Kristiansen).
- 3) Examination of the prevalence of TBE virus in Bornholm ticks showed that about 2% carry the virus (reported by Per Moestrup Jensen).
- 4) Determination of the prevalence of TBE antibodies in blood donors resident on Bornholm is in progress (reported by K. Kristiansen).
- 5) During the three years 1998-2000 eight patients, including two tourists, were admitted to hospital with TBE acquired on Bornholm. The preliminary conclusions of these studies are that the risk of acquiring TBE on Bornholm is of the same order of magnitude as about 50 years ago, EPI-NEWS 20/00, and that TBE must be regarded as endemic on Bornholm.

Course of TBE

The course of TBE is characteristically two-phased. After an incubation period of 7-14 days, an influenza-like illness develops, lasting for a

few days. About 1/3 of patients develop features of a lymphocytic meningitis or meningo-encephalitis after a symptom-free interval of a few days to three weeks. However, the infection may occasionally pass unnoticed, or may start with CNS symptoms.

About 1/3 of hospitalized patients develop persistent mental or neurological sequelae of varying degrees of severity. The mortality is 1-2%. TBE rarely takes a serious course in children below school age. Older patients, however, are more likely to suffer serious neurological consequences.

Transmission of TBE virus

TBE is caused by a flavivirus and is transmitted by bites from woodland ticks and, exceptionally, from unpasteurized milk. Typical hosts of the virus are mice and roe deer. In Denmark the virus has only been found in relation to tick bites and only from Bornholm. In contrast to *Borrelia* transmission, in which the risk of infection is reduced by removing the tick within 24 hours, transfer of the TBE virus probably occurs immediately on biting. The high season for infection is May to September, and typical risk areas are woods with dense undergrowth and shrubs.

Prevention of tick bites

Prevention of TBE is by avoiding tick bites and by vaccination. The risk of tick bites can be reduced by using boots and long trousers plus frequent inspections and brushing off the ticks. There is no evidence that the use of mosquito repellents has any effect.

TBE vaccine

Since 1984, Statens Serum Institut has obtained limited, but increasing amounts of the FSME (FrühSommer Meningoencephalitis)-IMMUN vaccine. This is produced by Baxter AG in Austria, where it has been used to vaccinate more than 70% of the population over the last 20 years. The vaccine contains purified, formalin-killed TBE virus adsorbed to aluminium hydroxide. The starting material is TBE virus replicated in chicken embryo fibroblast cultures. Clinical trials show seroconversion in 98-100% after two to three doses. Austrian data show that the degree

of protection is of the same order, 95-100%. The vaccine also protects against the subtype of TBE virus that occurs in Russia and other parts of Asia. The duration of immunity has not been ascertained with certainty. The vaccine is given intramuscularly and may produce local reactions such as soreness, redness and swelling. In some cases generalized reactions may occur, more often in children, in the form of transient pyrexia, headache and myalgia. Isolated cases of neuritis have been described with a possible relation to TBE vaccination.

Vaccination recommendations

In assessing the indication for TBE vaccination in individual cases, it is relevant to consider the time spent on Bornholm during the summer months and how often the person concerned is likely to frequent the ticks' usual haunts. As a guide, vaccination is suggested for permanent or regular summer residents of Bornholm, if these regularly walk off the paths in woods and shrubbery. Short-term tourists staying for a few weeks are not usually recommended vaccination. This applies e.g. to ordinary summer holiday camps. In cases of special exposure risk, e.g. forestry or regular play, sports or hobby activities in woodlands, vaccination should be considered for exposure periods of a few weeks. As the side effects of FSME-IMMUN are relatively mild, there will rarely be grounds for advising against vaccination, if this is specifically requested.

Vaccination procedure

The vaccine, FSME-IMMUN Inject, is given i.m. twice at an interval of 1-3 months (minimum 2 weeks), followed by a booster dose after 9-12 months. The manufacturer recommends revaccination every 3 years. In Sweden, revaccination is only at 5-year intervals after the 4th dose. The price per dose is DKK 170.52 excluding VAT, and is not subject to Health Service subsidy. (Kåre Kristiansen, MOH, Bornholm, Tove Rønne, Dept. of Epidemiology, Klaus Bro-Jørgensen, Dept. of Medicine)

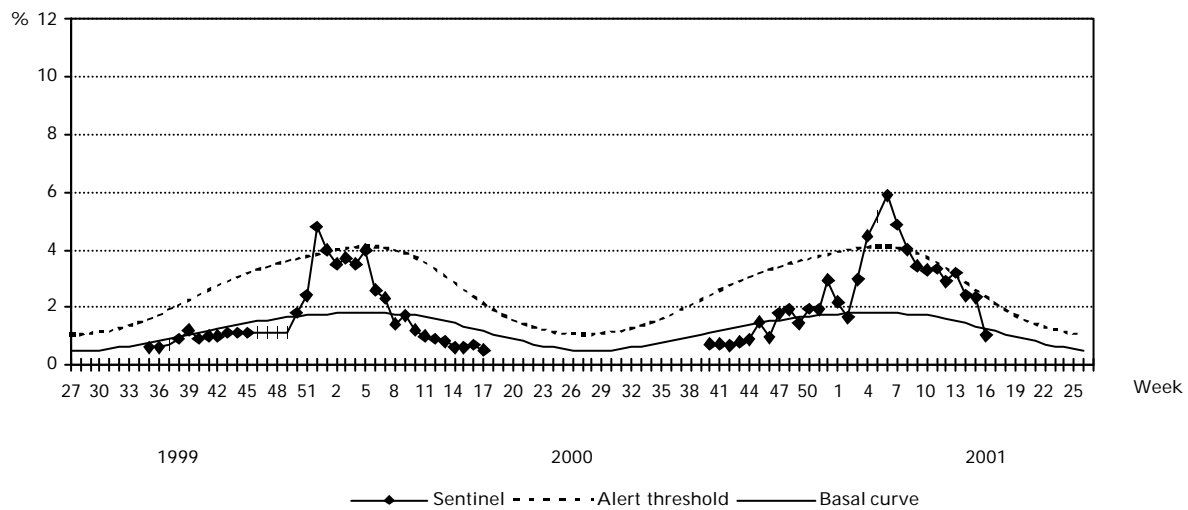
Patients with laboratory-diagnosed RSV or rotavirus infections, 2001

January		February		March	
RSV	Rota	RSV	Rota	RSV	Rota
288	50	383	28	401	65

Reported from the following Clinical Microbiology Departments:
 Aalborg Hospital (South), Aarhus Municipal Hospital, Herning Central Hospital,
 Hvidovre Hospital, Odense University Hospital, Slagelse Central Hospital,
 Viborg Hospital. Dept. of Virology, Statens Serum Institut: Rotavirus only reported for January.

Sentinel surveillance of influenza activity

Weekly percentage of consultations, 1999/2000/2001



- Sentinel:** Influenza consultations as % of total consultations
- Basal curve:** Expected frequency of influenza consultations under non-epidemic conditions
- Alert threshold:** Possible incipient epidemic

(Dept. of Epidemiology)