

Confirmation of tick-borne encephalitis foci by standardized assessment of TBEV prevalence in questing *Ixodes ricinus* ticks collected in four Polish districts

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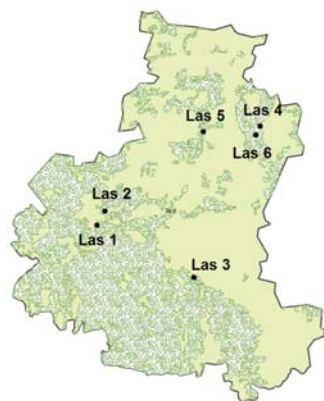
Background

- Tick-borne encephalitis (TBE) is endemic in limited areas of Poland.
- Recently performed seroprevalence studies of humans and household animals have indicated presence of TBE foci in regions believed to be free of disease.
- The present study was aimed to validate the endemic status of administrative districts in selected areas of Poland.

Material and Methods

- Four administrative districts were selected in areas, where
 - » no TBE cases were reported during 1993-2008, and
 - » indirect evidence indicated possible existence of local TBEV circulation.
- In each district at least 3 distant sampling sites were selected representing woodlands in the districts (Fig. 1)

Figure 1. Selection of sampling sites in a district to represent the studied area (example of Starogard district in Pomorskie voivodeship)



- At least 500 ticks – nymphs and adults – were collected in each district during two sampling visits in Spring and Autumn 2008.
- Collected ticks were pooled (20 nymphs and 10 adults per pool) and disrupted physically.
- RNA from each pool was extracted by means of Qiagen kit and the nested RT-PCR using two pairs of primers corresponding to the NS5 protein region was performed.

Results

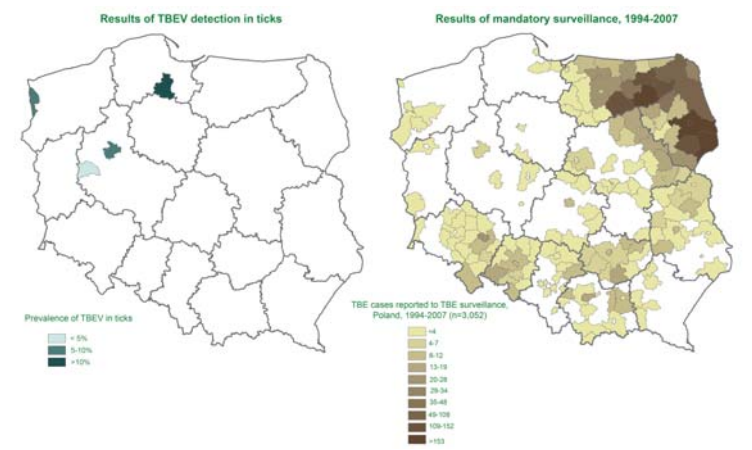
- A total of 2,583 questing *Ixodes ricinus* ticks collected were divided into 177 pools, of which 14 (7.9%) were positive for TBEV RNA.
- Positive ticks were found in 8 out of 14 sampling sites, in each of the studied districts (Table 1).

Table. Results of TBEV detection in ticks, by district

District	Voivodeship	No of ticks	No of pools (% positive)	No of sites with positive pools / No of sites examined (%)
Nowotomyski	Wielkopolskie	701	47 (4.3%)	2/3 (67%)
Obornicki	Wielkopolskie	674	45 (6.7%)	2/3 (67%)
Policki	Zachodniopomorskie	619	44 (9.1%)	1/3 (33%)
Starogardzki	Pomorskie	589	41 (12.2%)	3/5 (60%)
TOTAL		2583	177 (7.9%)	8/14 (57%)

- Out of 14 positive pools, 12 were collected during Spring, and 13 contained nymphal pools.
- The viral RNA was detected in regions considered as non-endemic, based on routine TBE surveillance system (Fig. 2)

Figure 2. Geographical localization and results of tick sampling in four districts (2008), and TBE cases registered by routine surveillance (1994-2007)



Conclusions

- Standardized tick collection is a useful method for ascertaining TBEV local circulation.
- The present results confirm the existence of high risk TBE foci in regions considered as free of disease.
- Education addressed to physicians and patients is necessary to increase awareness of tick-borne infections and ways of personal protection.