



P 62 *Borrelia*-infected tick bite and human clinical outcome

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To date, 5 *Borrelia* species have been recorded in Sweden where some of them are known to be human pathogenic. There are few studies worldwide that have analyzed ticks removed from bitten persons. However, these investigations show that the *Borrelia* prevalence varies greatly (1–21%). This discrepancy might be explained by climate and ecosystem factors and the presence/density of reservoir-competent hosts as well as the *Borrelia* and tick species. In all these studies, the number of *Borrelia* cells was not quantified. The number of *Borrelia* cells in a tick may play a crucial role in the transmission between vector and host, as well as the *Borrelia* species.

We developed a sensitive real-time PCR to study the prevalence of *Borrelia* and to quantify the number of spirochetes in ticks that had fed on humans. In addition, we examined possible geographical differences in prevalence, and we also studied temporal and spatial distribution of *Borrelia* species in Sweden and on Åland. In parallel, blood samples from the tick-bitten persons were serologically analysed with ELISA to investigate if the individuals showed seroconversion.

We found that approximately 30% of the ticks that had fed on humans were positive for *Borrelia*. Seven *Borrelia* species were detected and *B. lusitaniae* and *B. spielmanii* were identified for the first time in Sweden. We found that adult ticks had a significantly higher number of *Borrelia* cells compared to nymphs. Adult ticks were also significantly more often *Borrelia*-positive compared to nymphs. Ticks that contained *B. afzelii* had significantly more spirochetes compared to the ticks that contained other *Borrelia* species.

7% of the individuals, bitten by a *Borrelia*-positive tick, showed seroconversion, and only one showed symptoms of Lyme borreliosis, suggesting that there is a low risk to be afflicted after a *Borrelia*-infected tick bite.