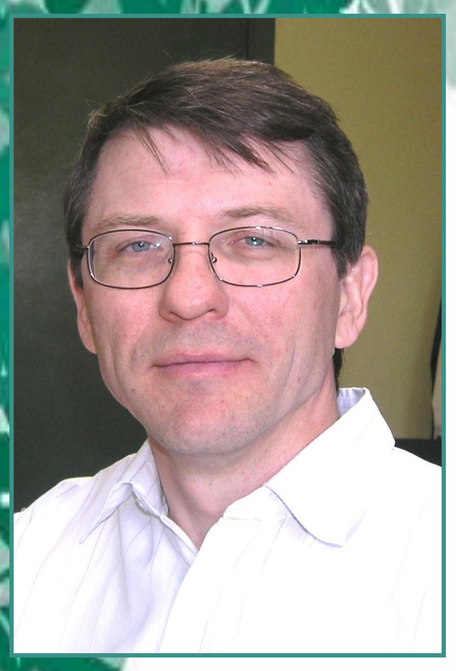

Prevalence of TBE virus in ticks – a bad predictor of infection rates in humans and animals

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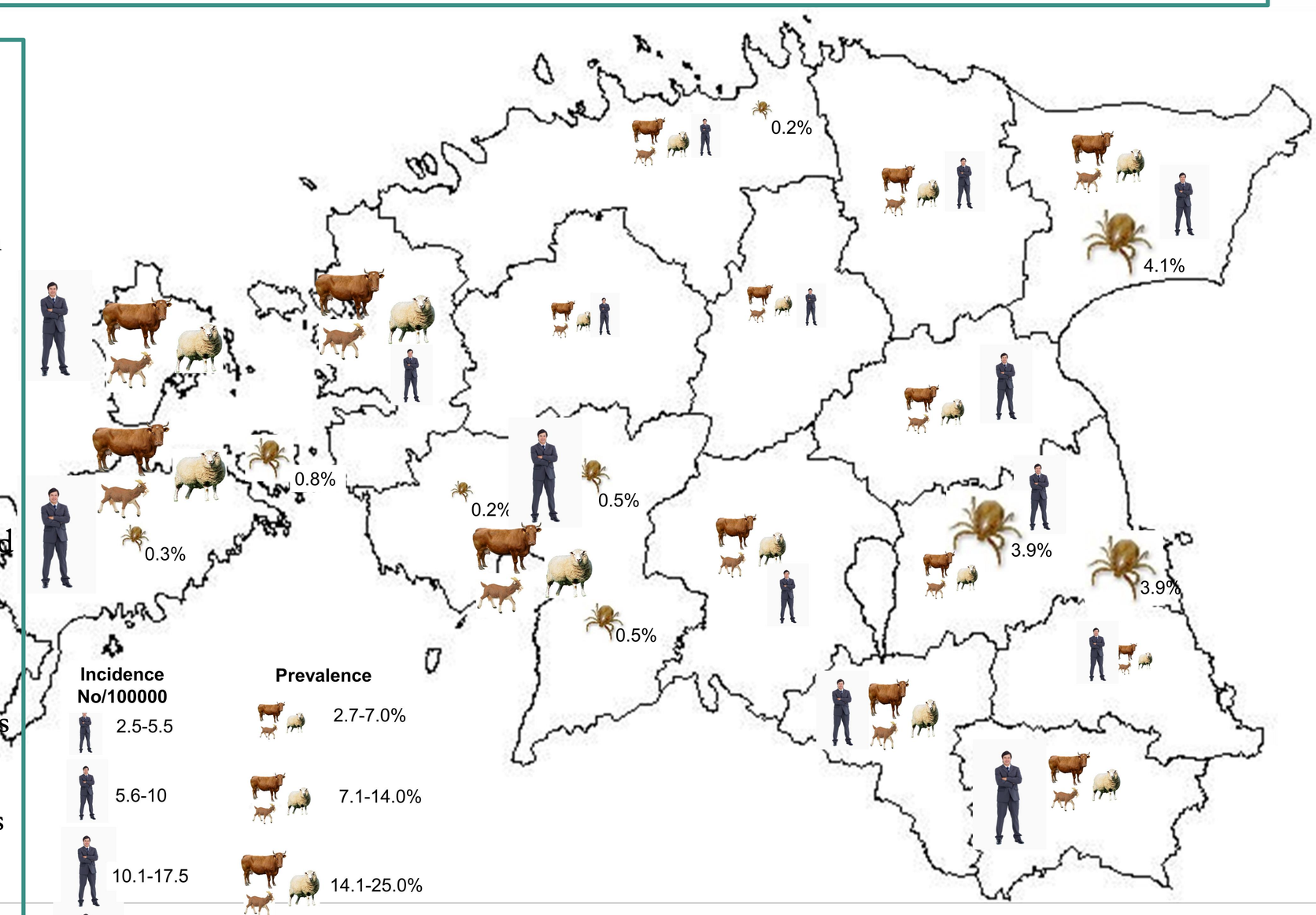
Background

- **Tick born encephalitis virus (TBEV)** is an endemic in *Ixodes* ticks in Estonia infecting multiple wild and domestic mammalian species.
- The incidence of the disease in humans in Estonia is one of the highest in Europe ranging from 12 to 27 cases per 100000 inhabitants in recent 5 years. The variation between different regions of the country is remarkable ranging from 2 cases to more than 150 per 100000 inhabitants.
- It has been suggested, that infection in domestic animals reflects the risk of the infection for humans. The same might be the case for ticks itself
- In a present study the information on prevalence of TBEV in Estonian ticks, the incidence data on human TBE and the results of a serological survey in domestic ruminants are compiled to estimate how the prevalence of the virus in ticks is related to human disease incidence and infection in animals

Results

- The **prevalence of TBEV in ticks** in different sampling points was ranging from 0.2-4.1% being significantly higher in Eastern counties (see on the map)
- The yearly incidence of **human TBE** was highest in Western islands and South-Western county (26.4-56.8 cases/100000)
- In Eastern counties the yearly incidence rate exceeded the median and ranged from 10.9-17.9 cases/100000
- In **domestic ruminants** the prevalence of TBEV antibodies was highest in Western counties including the islands ranging from 25,5%-58,3%
- In Eastern counties the prevalence was low or moderate
- The incidence rate in humans and prevalence of the TBEV antibodies in ruminants are highly correlated (correlation coefficient 0,84)



Conclusions

- The prevalence of TBEV in ticks seams not to be the defining risk factor for human and animal infections.
- The risk factors for infection in humans and animals are likely similar if not identical
- Domestic ruminants may serve as sentinels to estimate the human TBE risks

Material and methods

- 3287 ticks were collected from the vegetation in 9 locations situated in 5 counties and analysed for the presence of TBEV by PCR amplification of the partial E and NS3 genes
- Human TBE incidence data are originating from the official register of National Health Board
- 2437 cattle incl 738 beef cattle; 2210 sheep and 149 goats originating from different counties of the country were tested for presence of TBEV antibodies using the EIA TBEV Ig test kit (TestLine Clinical Diagnostics)

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