

Summary

The aim of this thesis was to assess the occurrence of two tick-borne bacteria, *Borrelia burgdorferi* sensu lato and *Anaplasma phagocytophilum*, in ticks, wild and domestic animals in the Czech Republic. In ticks, similar prevalence of both bacteria was observed. In rodents, the majority of infections were caused by *B. afzelii* while the infection with *B. burgdorferi* s. s. was also quite frequent. Infection with *B. burgdorferi* s. l. was more common in bank voles than in wood or yellow-necked mice. The prevalence of anti-*Borrelia* antibodies was higher in wood or yellow-necked mice than in bank voles. *A. phagocytophilum* was in a higher percentage of cases in the deer family and hares as compared to foxes and boars. We observed a similar prevalence of anaplasmosis in all domestic animals tested. We demonstrated that symptomatic dogs had a higher chance to be infected with *A. phagocytophilum* than asymptomatic dogs. Our findings suggest that the exposure to *B. burgdorferi* s. l. and *A. phagocytophilum* is common in vectors, reservoirs and hosts in the Czech Republic.

Molecular and serological techniques for detection of these pathogens are also described in this thesis, including conventional PCR, nested PCR, real-time PCR with DNA quantification and melting curve analysis, RFLP analysis of the 5S-23S rDNA intergenic spacer and direct sequencing of the 16S rDNA. We

found that real-time PCR is a very fast method but it cannot distinguish within the group of *Borrelia* genospecies and that of *A. phagocytophilum* variants.

Finally, clinical signs and diagnostic findings for three examples cases of *Borrelia* infection in dogs are presented. We showed that borrelial infection must be considered not only in cases with febrile and orthopaedic signs but also for many other clinical syndromes.