INVESTIGATION OF SMALL RODENTS AS RESERVOIRS HOSTS OF BORRELIA BURGDORFERI SENSU LATO IN LITHUANIA AND NORWAY

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The aim of present study was investigate the role of small rodents as potential reservoirs hosts of Bo*rrelia* bu*r*gdo*rferi se*nsu *lat*o, the causative agent of Lyme disease, in Lithuania and Norway. A total of 136 rodents belonging to nine species were live-trapped during July-September in 2005 from three different locations in Lithuania and four locations in Norway with different landscape in order to determine if such rodents were naturally infected with B. bu*r*gdo*rferi s. l.* or harboured infected ticks. All ticks, ear and urinary bladder tissues samples were taken from each rodent for detection of B. bu*r*gdo*rferi s.l.* DNA by PCR. PCR was performed using the oligonucleotide primers: FL6 (5' TTC AGG GTC TCA AGC GTC TTG GAC T 3') and FL7 (5' GCA TTT TCA ATT TTA GCA AGT GAT G-3') in conserved regions of the f*la* gene of B.bu*r*gdo*rferi s.l.*. In Lithuania, the most trapped rodents were C*letri*ono*mys* g*lareol*u*s*, Apod*em*u*s* f*lavicollis* and A. *agrari*u*s*, in Norway - A. *sylvati*cu*s*. These data coincident with data in Europe where the most frequently trapped rodents were A. *sylvati*cu*s* and C. g*lareol*u*s* The highest species diversity of trapped rodents – eight species – recorded in Lithuania. In Norway were trapped five different species of rodent. In Lithuania among the 86 rodents, 14 hosted *I. ric*inu*s* ticks (almost exclusively larvae, only *Microtus arvalis* was found infested by nymph as well). In Norway from 50 captured rodents, 30 hosted *I. ric*inu*s* larvae and nymphs. The mean number of ticks per host was greater on A. *sylvati*cu*s* than on other captured species in both countries. In Norway the mean number of tick per host on C. g*lareol*u*s* was 2,5, in Lithuania – 0,25. *M. agrestis* wasn't found infested by *I. ric*inu*s* in Lithuania, but in Norway the mean number of ticks per host on this species was 5. In Lithuania, although captured rodents were found infected with B. bu*r*gdo*rferi s.l*, the harboured ticks were not infected with B.bu*r*gdo*rferi*. In Norway, 3 specimens of rodents – C. g*lareol*u*s*, *M. agrestis* and Sc*iur*u*s* vu*lgaris* were found to harbour infected ticks. On one specimen of C. g*lareol*u*s* were found 2 infected nymphs and S. vu*lgaris* was infested with 2 positive nymphs and 7 positive larvae. However S.vu*lgaris* and C.g*lareol*u*s* wasn't positive for B. bu*r*gdo*rferi*. Two infected larval ticks were found on *M. agrestis* that was positive by ear biopsy. Infection of B.bu*r*gdo*rferi* in rodents varied between species and sampling sites in both countries. We also compared urinary bladder and ear biopsy samples for determining prevalence of B.bu*r*gdo*rferi*. Among 136 analysed rodents 10 was positive according PCR results for ears and bladders, 22 was positive only for ears, one rodent was positive only for bladders. Our study in Lithuania provides supporting for the role of small rodents such as A.f*lavicollis*, C. g*lareol*u*s* and *M. arvalis* as reservoir hosts of B. bu*r*gdo*rferi.* Combining the results for rodents, that is, borrelia infection in ears and urinary bladder samples for

Lithuania we found that the prevalence of infection was higher in *M. arvalis* (57%; 8 of 14) than in A. f*lavicollis* (42%; 7 of 19), in C. g*lareolus* (25%; 5 of 20) and in A. *agrarius* (11%; 2 of 19). In Norway borrelia infection in rodent was found in two locations with prevalence of infection 9,5% and 7,1%. Only two from five captured species was found infected with B.bu*rgdorferi* (A.*sylvaticus* and *M.agrestis*). The prevalence of infection in A. *sylvaticus* was 4,8% (2 of 42). According previous studies reservoir potential of rodent population is variable among individual species and depends on the ecological situation in the particular location and the season. Also was found that immunity to B.bu*rgdorferi* in reservoir hosts is an important regulatory factor in the horizontal transmission of. B. bu*rgdorferi* in nature.