Hantaviruses in the natural host and in “spillover”-infected animals

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Hantaviruses are pathogens that are carried and transmitted to humans by rodents. Puumala virus (PUUV) is one of the most important hantaviruses in Europe with the bank vole (*Myodes glareolus*) being its reservoir. PUUV infection of humans results in a mild to moderate form of hemorrhagic fever with renal syndrome. The target cells of hantaviruses are poorly characterized either in the natural reservoir or in “spillover”-infected animals.
Since 2005 rodents were trapped in the district Osnabrück (OS), Lower Saxony, an endemic region for PUUV. The animal carcasses were dissected according to standard protocols and tested for hantavirus-RNA by reverse transcription-PCR (RT-PCR), using lung tissue, and for serum antibodies by indirect IgG-ELISA. Furthermore, a *cytochrome b*-PCR and sequence-based classification of evolutionary lineages was done for all bank voles.
During spring and autumn of 2015 and 2016 a total of 197 rodents, including 101 bank voles, 73 yellow-necked mice (*Apodemus flavicollis*) and 23 wood mice (*Apodemus sylvaticus*) were trapped. The results show the continuous presence of PUUV in the bank vole populations with a higher prevalence in spring than in autumn. The PUUV seroprevalence ranged between 11 and 48% in bank voles, between 6 and 20% in yellow-necked mice and between 0 and 12% in wood mice. PUUV-RNA was detected exclusively in bank voles; the RNA prevalence ranged between 0 and 44%. Single “spillover”-infections in yellow-necked mice and wood mice were indicated by exclusive detection of PUUV-reactive antibodies. According to the *cytochrome b* sequences all bank voles belong to the Western evolutionary lineage.

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