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In vivo models for rustrela virus (RusV) infection in potential reservoir and spill-over hosts

Inhalt

Rustrela virus (RusV; species *Rubivirus strelense*) is a recently discovered relative of the human rubella virus and causes fatal non-suppurative meningoencephalomyelitis in various domestic, wild and zoo animal species in Germany, Austria and Sweden. Based on its reportedly broad range of susceptible hosts, a zoonotic potential of RusV cannot be excluded. Apparently healthy yellow-necked field mice (*Apodemus flavicollis*) and wood mice (*Apodemus sylvaticus*) were identified as potential reservoir hosts.
Questions regarding the biology and epidemiology of RusV in reservoir and spill-over hosts remain elusive, such as course of infection, pathogenesis, and transmission routes. First attempts of virus isolation have failed and in vivo infection models have not been established.
Within the "RubiZoo" project, we therefore inoculated wood mice, representing potential reservoir hosts, and Lewis rats, potentially representing spill-over hosts, with brain homogenates originating from RusV-infected animals. Intracranial as well as combined intranasal/peroral inoculation resulted in infection with comparable kinetics in both species, whereas combined intramuscular/subcutaneous injection was less efficient. Viral loads were highest in the central nervous system but the virus spread also to peripheral organs, particularly adrenal gland and urinary bladder. Neither wood mice nor rats developed any clinical signs attributable to the infection until at least eight weeks post infection.

Keywords

rustrela virus, animal models, reservoir hosts, spill-over hosts

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