Zoonoses

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Characterization of hepatitis E virus in wild Norway rats (*Rattus norvegicus*)

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Recently, a novel hepatitis E virus (HEV) was detected in Norway rats (*Rattus norvegicus*) from Hamburg. The ratHEV genome shows a high nucleotide sequence divergence to other mammalian as well as to avian and fish HEV strains. Here we describe the multiple detection of ratHEV RNA and HEV-specific antibodies in Norway rats from three additional cities in Germany. The complete genome analysis of two novel strains from Berlin and Stuttgart confirmed the association of ratHEV to Norway rats. Initial longitudinal data indicated a continuing existence of this virus in the rat populations from Berlin and Hamburg. The phylogenetic analysis of a short-sized segment of the open reading frame 1 confirmed a geographical clustering of the corresponding sequences. Serological investigations using recombinant ratHEV and genotype 3 capsid protein derivatives and corresponding monospecific antisera demonstrated strong antigenic differences. The high rate of animals showing exclusively ratHEV RNA or anti-ratHEV antibodies suggest a non-persistent infection in the Norway rat. An initial screening of forestry worker sera from Germany using novel ELISAs with recombinant capsid proteins of ratHEV and genotype 3 HEV revealed several ratHEV positive sera. Future studies have to prove the transmission routes of the virus in rat populations, its geographical distribution and zoonotic potential.

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