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Hepatitis E virus in shrews –a novel zoonotic risk?

Inhalt

Paslahepevirus balayani (hepatitis E virus, HEV) is the most relevant human-pathogenic hepevirus, but zoonotic infections with ratHEV (species *Rocahepevirus rattii*) have been reported recently. A novel hepevirus, provisionally termed shrewHEV, was identified in *Crocidura russula* (greater white-toothed shrews, GWTS) that is phylogenetically more closely related to HEV than ratHEV. We investigated its prevalence in Germany and its infectivity in various cell lines.

222 GWTS collected in Germany between 2002 and 2022 were screened for shrewHEV RNA by RT-qPCR. ShrewHEV RNA sequences were determined and phylogenetically analysed. Liver homogenates of ten positive shrews were inoculated onto shrew-derived fibroblast-like cells and three HEV- and ratHEV-permissive human liver cell lines. Cells and supernatants were characterized by immunofluorescence assay, sequencing and density gradient centrifugation. Finally, we assessed the antiviral activity of ribavirin (RBV) and sofosbuvir (SOF) against shrewHEV.

ShrewHEV RNA was detected in 16/222 GWTS. Five of 10 liver-derived strains replicated in human liver cell lines, but none in shrew cells. Density gradient centrifugation demonstrated quasi-enveloped particles. Both RBV and SOF showed antiviral activity against shrewHEV in vitro. ShrewHEV was detected in 7.2% of GWTS across its distribution range. The virus replicated efficiently in human-derived liver cells indicating the necessity of further studies on its zoonotic potential.

Keywords

Shrews, hepatitis E, isolation, zoonotic

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No, I am not a Junior Scientist.

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