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Isolation of Chandipura virus from sandflies and detection of neutralizing antibodies in humans, Kenya

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Chandipura virus (CHPV) is a sandfly-borne vesiculovirus, family Rhabdoviridae, causing outbreaks of febrile illness and severe neuroinvasive disease. Children can develop an acute encephalitis syndrome (AES) with a case fatality rate of 55-78%. Several outbreaks of CHPV have been reported in India. In 2024, India experienced a large outbreak with 245 cases of AES including 82 deaths. No human infections have been reported outside India, but CHPV has been found in a hedgehog from Nigeria and in sandflies from Senegal and recently from Kenya.

We isolated CHPV from sandflies collected in Kenya in 2019. The complete genomes of the two isolates showed 93-99% pairwise nucleotide identities to strains from Kenya, and 76-80% to those from India and West Africa. Comparative in-vitro phenotypic analyses of Kenyan, Indian, and Nigerian CHPV isolates in sandfly-, mosquito-, and human-derived cell lines, as well as in neuronal cells showed no impairment in genome replication rates and infectious virion production of the Kenyan isolate. Infection of mice with the Kenyan CHPV isolate resulted in rapid onset of neurologic disease and death with significantly higher viral loads in the brain than in other organs. CHPV neutralizing antibodies were detected in 19.4% (196/1.013) human sera collected from three counties in Kenya.

Our data provide evidence that CHPV is widespread in Kenya and infects humans. Testing for CHPV should be considered in patients with neuroinvasive disease in Kenya.

Keywords

Chandipura virus, arbovirus, viral encephalitis, sandflies, humans, Kenya

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No, I am not a Junior Scientist.

Authors: Dr SLOTHOUWER, Inga (Institute of Virologie Charité Berlin); Mr ROTICH, Gilbert (International Centre of Insect Physiology and Ecology, Nairobi, Kenya); Prof. JUNGLEN, Sandra (Institute of Virologie Charité Berlin)

Co-authors: Ms KOPP, Anne (Institute of Virologie Charité Berlin); Mr HIEKE, Christian (Institute of Virologie Charité Berlin); Ms VOIGT, Katrin (Institute of Virologie Charité Berlin); Prof. SANG, Rosemary (International Centre of Insect Physiology and Ecology, Nairobi, Kenya); Dr TCHOUASSI, David P (International Centre of Insect Physiology and Ecology, Nairobi, Kenya)

Presenter: Dr SLOTHOUWER, Inga (Institute of Virologie Charité Berlin)

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