Exploring the burden of Ntwetwe virus – A novel orthobunyavirus associated with CNS infections – In Ugandan children

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Background: Ntwetwe virus is a novel orthobunyavirus which was recently discovered from the cerebrospinal fluid of a three-year-old Ugandan girl with a fatal CNS infection. Orthobunyaviruses are arthropod-borne viruses, are prevalent worldwide and can cause different types of disease, ranging from mild febrile illness to fatal CNS infections. It is expected that human exposure to Ntwetwe virus may be common because of its presumed vector (the Anopheles mosquito) and the high seroprevalence to its closest relative (Tataguine virus) in sub-Saharan Africa. Nonetheless, because of its recent discovery, attempts to further study this virus have not yet been performed. The objective of this study is to determine the prevalence of Ntwetwe virus infections in children in the region where the virus was first identified and describe the clinical characteristics of infected cases. Moreover, this study aims to determine whether and which mosquitoes transmit Ntwetwe virus. This information will provide us with the first insight into the burden of Ntwetwe virus infections which will be important for clinicians, policy makers and future research.

Methods and materials: We conducted a human case–control study on children presenting with mild febrile and severe neurologic symptoms – each linked to a healthy control – to Kiboga hospital during the dry and rainy season.

Results: Fifteen cases (14 mild and one severe) and five controls were included by mid October 2019. Further inclusion and testing is ongoing.

Conclusion: Results of this study will – for the first time – be presented at the ICID.

Circulation of Nipah virus at the human-Flying fox interface in Cambodia

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Background: Nipah virus (NiV) is an emerging pathogen that, unlike other priority pathogens identified by WHO, is endemic to Southeast Asia. It is transmitted through exposure to saliva, urine or excrement from *Pteropus* fruit bats or direct contact with intermediate animal hosts or human-to-human transmission. However, little is known about the circulation of NiV and its epidemiology in Cambodia.

Methods and materials: An integrated approach was undertaken at two flying fox roosts in Kandal and Battambang provinces to study bat ecology, NiV circulation in bat and human population and human practices and perceptions from 2013 to 2016.

Results: Our integrated study allowed us to generate extensive data on the different components of the complex socio-ecosystem of NiV. Flying fox population monitoring showed that mating, birthing and weaning periods occurred at the same periods each year: mating in November, birthing in April and weaning in June. A total of 20/3157 (0.63%) and 8/773 (1.03%) bat urine samples in Kandal and in Battambang were respectively confirmed positive for NiV by RT-PCR. Detection rate of NiV was higher during pregnancy and lactation phases between March and May. Pollen from flowers were identified in a majority of bat faecal samples from December to March while fruits were identified when NiV was detected in urine. GPS study showed that the maximum distance travelled per night ranged from 6.88–105 km. Most foraging locations were in residential areas and plantations. Sera collected from 164 people residing in Kandal and 254 people living in Battambang tested negative for NiV antibodies. Knowledge, attitude and practice survey reported some human practices could lead to exposure to NiV including eating partially eaten fruits, consumption of palm juice and hunting and consuming bats.

Conclusion: Our findings help provide recommendations to interrupt potential transmission routes and limit the risk of emergence through environmental and behaviour changes.

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