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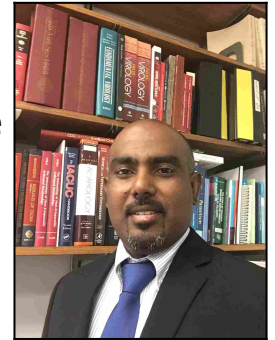
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Powassan Virus: An Emerging Tick-Borne Virus of Public Health Concern in North America

Saravanan Thangamani is an Associate Professor in the Department of Pathology at the University of Texas Medical Branch (UTMB) at Galveston. Dr. Thangamani's research focuses on understanding the role of tick feeding and tick salivary factors in the establishment of Powassan virus. His long-term goal is to develop novel strategies to control tick-borne virus transmission. To this end, he is employing cutting edge techniques to unravel the functional role of salivary factors (proteins and microRNAs) in facilitating Powassan virus transmission. Understanding the function(s) of these molecules, and how it interacts with the host immune system is vital to development of novel disease transmission control strategies. Recently, Dr. Thangamani has initiated research to understand the effect of Powassan virus co-infection on Lyme disease transmission.

Conference Lecture Summary

Powassan virus (POWV, Flaviviridae) is the only North American member of the tick-borne encephalitis serogroup of flaviviruses. It is transmitted to small- and medium-sized

mammals by *Ixodes scapularis*, *Ixodes cookei*, and several other *Ixodes* tick species. Humans become infected with POWV during spillover transmission from the natural transmission cycles. In humans, POWV is the causative agent of a severe neuroinvasive illness with 50% of survivors displaying long-term neurological sequelae. POWV was recognized as a human pathogen in 1958 when a young boy died of severe encephalitis in Powassan, Ontario, and POWV was isolated from the brain autopsy of this case. Two distinct genetic lineages of POWV are now recognized: POWV (lineage I) and deer tick virus (lineage II). Since the index case in 1958, over 100 human cases of POWV have been reported, with an apparent rise in disease incidence in the past 16 years. This recent increase in cases may represent a true emergence of POWV in regions where the tick vector species are prevalent, or it could represent an increase in POWV surveillance and diagnosis. In the past 5 years, both basic and applied research for POWV disease has intensified, including phylogenetic studies, field surveillance, case studies, and animal model development. This talk will provide an overview of POWV, including the epidemiology, transmission, clinical disease, and diagnosis of POWV infection. Future priorities and challenges with regard to the disease are will also be emphasized.