The protective efficacy of Zika polyclonal antibodies against lethal Zika virus infection in Ifnar1-/- mouse model

Shantha Kodihalli[1], Ayo Yila Simon[1], Emilie Branch[2], Hongyu Qiu[1] and **Sujan Shresta[2]**
[1]Emergent BioSolutions, Canada
[2]La Jolla Institute for Allergy & Immunology, USA

Zika virus (ZIKV) infection during pregnancy has become a global public health concern due to its ability to cause severe congenital infections. There are no licensed vaccines or therapeutics available for ZIKV infections. To address this need, a human polyclonal Zika Immune Globulin product (ZIKV-IG) is being developed for prophylaxis of ZIKV infection in at-risk populations, including women of childbearing potential and pregnant women. To evaluate the efficacy, groups of Ifnar1-/- mice were infected with lethal doses ZIKV (FSS13025 strain) and treated with various doses of ZIKV-IG. Mice were monitored daily for body weights, clinical signs, and mortality for 21 days. In another separate study, the dose-ranging effect of ZIKV-IG on the viral load in target tissues was analyzed on days 3 and 7 using qRT-PCR and focus forming assay. ZIKV-IG administered after lethal infection provided a significant survival benefit in a dose-dependent manner. Mice treated with higher doses of ZIKV-IG (10, 50 mg/kg) provided a statistically significant survival of 87.5 to 100% in comparison to 0% in PBS controls. A similar response was observed in the viral load analyses with the highest dose providing significant reductions in target tissues including the brain, kidney, liver, sciatic nerve, serum and spleen. The 2.0 mg/kg and 0.5 mg/kg (lower dose levels) did not confer any reasonable protection in terms of survival or reduction in viral load. The efficacy of ZIKV-IG has been successfully demonstrated in a well-characterized model of Zika disease. Results of these studies demonstrate that ZIKV-IG given at 50 mg/kg in a post-exposure setting significantly enhanced survival over control. Additionally, the treatment prevented virus dissemination into target tissues. These results clearly demonstrate the potential of ZIKV-IG for post-exposure prophylaxis of human ZIKV infections.

Biography

Shantha Kodihalli has completed her PhD at University of Minnesota and Postdoctoral studies at St. Jude Children's Research Hospital, Memphis, TN USA. She is the Director of Preclinical Research at Emergent Bio Solutions. She has over 19 years of experience in the development of therapeutics for infectious diseases. She has been at Emergent for 15 years and has extensive experience in developing, managing, and executing non-clinical studies involving select agents for product development under the "Animal Rule". She has published more than 20 papers in peer-reviewed journals.

skodihalli@ebsi.com

Notes: