



Journal of Health Disparities Research and Practice
Volume 9, Special Edition 1, Summer 2016, pp. 121-122
© 2011 Center for Health Disparities Research
School of Community Health Sciences
University of Nevada, Las Vegas

The Role of IFN- α/β in Host Antiviral Response to T3D Mammalian Orthoreovirus

Kaitlyn Alvord
Kelli Boyd, DVM, PhD, DACVP, Vanderbilt University
Allen Wu, MD, Vanderbilt University
Terence Dermody, MD, Vanderbilt University
Coordinating Center: University of Nevada Las Vegas

ABSTRACT

The antiviral activity of Type 1 Interferon (IFN) has been extensively studied and recognized, especially in regards to Hepatitis and HIV; however the IFN antiviral activity has not been specifically analyzed in reoviral infection.

In this study, a mouse model of reoviral encephalitis was used to determine the role of Type 1 Interferon (IFN) in host antiviral activity. Six mice deficient in IFN- α/β receptor (IFNAR) function were inoculated with Type 3 Dearing (T3D) mammalian orthoreovirus intracranially at 15 days of age and showed signs of clinical illness, lethargy, hunched posture, and dull hair coat at day 7 post infection. Mice were humanely euthanized and tissues were harvested for histologic evaluation on days 8 and 9 post infection. Pathologic lesions including meningoencephalitis, hydrocephalus, rhinitis, hepatitis, interstitial pneumonia and marked lymphoid depletion were identified on routine histologic exam. Further investigation utilizing immunohistochemistry (IHC) for Reovirus, CD3 cells, B220 cells, and F4/80 was performed on the affected tissues. Reovirus was detected in the brain, liver and lung. In the brain there was a robust T-cell (CD3) and macrophage (F4/80) response. In the spleen Caspase-3 immunohistochemistry confirmed marked apoptosis in the lymphoid tissue. Pathologic lesions were not present in the gastrointestinal tract, heart, or kidneys.

This study shows that IFNAR deficient mice are susceptible to reovirus infection at post natal day 15 with morbidity and mortality due to reovirus induced meningoencephalitis, hepatitis, and interstitial pneumonia.

Key words: Type 1 Interferon, mammalian orthoreovirus, antiviral response, IFN- α/β

122 The Role of IFN- α/β in Host Antiviral Response to T3D Mammalian Orthoreovirus
Alvord et al.

ACKNOWLEDGEMENTS

The STEP-UP HS program is supported by the National Institute of Diabetes and Digestive and Kidney Diseases of the National Institutes of Health, Grant number: 1R25DK098067-01