

Virus Protects Against Lupus

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DENVER — To the surprise of investigating researchers, an animal model of Epstein Barr virus protected lupus-prone mice against development of the autoimmune disease. Earlier work had suggested that EBV might promote the development of autoimmunity.

“We were completely surprised. So, we redid the experiments, and the results came out the same,” said Roberta Pelanda, PhD, immunologist at National Jewish Health and lead author on the paper appearing online in *The Proceedings of the National Academy of Sciences*. “We believe these findings could lead to therapeutic targets for lupus and other autoimmune diseases.”

Epstein Barr virus (EBV) infects most people in the United States by the time they are adults. It causes mononucleosis in about 35 to 50 percent of those infected. Acute symptoms usually pass within weeks, after which the virus goes into a dormant state within the body. The infection persists for a person’s entire life and can activate in some cases.

Although the virus infects the vast majority of adults, it is found in an even higher percentage of lupus patients, leading to the hypothesis that it may predispose people to autoimmune diseases.

EBV does not infect mice, but a related virus, gammaherpesvirus 68, does and has a similar pattern of infection and symptoms. So Dr. Pelanda and her colleagues infected a mouse model of lupus with the virus. One hundred percent of the lupus model mice develop lupus by about one year of age.

In those mice infected with the gammaherpesvirus 68, however, antibodies associated with lupus did not increase, and actually decreased significantly in female mice. In kidneys, a major site of tissue damage in lupus, viral infection reduced tissue damage from 80 percent to 20 percent. Other measures of lupus, including activation of lymphocytes and dendritic cells, was also reduced in lupus-prone mice infected with the gammaherpesvirus 68.

“The virus inhibits the development and progression of lupus on many levels, from cellular to humoral and organ,” said Dr. Pelanda. “For that reason, we believe it is affecting a basic mechanisms of autoimmunity.”

The researchers do not know how the gammaherpesvirus inhibits lupus, but have begun a systematic series of experiments to evaluate several potential.

National Jewish Health is the leading respiratory hospital in the nation. Founded 124 years ago as a nonprofit hospital, National Jewish Health today is the only facility in the world dedicated exclusively to groundbreaking medical research and treatment of patients with respiratory, cardiac, immune and related disorders. Patients and families come to National Jewish Health from around the world to receive cutting-edge, comprehensive, coordinated care. To learn more, visit the media resources page.

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