MedicalXpress

Team identifies potential cause for lupus

July 14 2017

Leading rheumatologist and Feinstein Institute for Medical Research Professor Betty Diamond, MD, may have identified a protein as a cause for the adverse reaction of the immune system in patients suffering from lupus. A better understanding of how the immune system becomes overactive will help lead to more effective treatments for lupus and potentially other autoimmune diseases. These findings were published in *Nature Immunology*.

Lupus is an autoimmune disease that causes the immune system to lose the ability to differentiate between foreign agents and healthy tissue. It becomes hyperactive and attacks healthy tissue, causing inflammation and damage to joints, skin, and internal organs. Previous studies have shown that a polymorphism or variation in the gene PRDM1 is a risk factor for lupus. PRDM1 enacts the production of a protein called Blimp-1. In this study, Dr. Diamond and her team were looking to examine how Blimp-1 regulates the immune system.

"A healthy immune system is able to identify organisms that are not normally in the body and activate cells like T-Cells to attack them," said Dr. Diamond. "In the case of patients with an autoimmune disease like lupus, the immune system has started to identify healthy cells as something to target. Our study found that a low level of or no Blimp-1 protein in a particular cell type led to an increase in the protein CTSS which caused the immune system to identify healthy cells as something to attack - particularly in females."

In an animal model, Dr. Diamond's team was able to show that females

with reduced production of Blimp-1 caused an increase in CTSS, a protein that helps the immune system see microbes, or a microorganisms that causes disease. This resulted in an immune system which attacked healthy cells. Male animals with the reduced production of Blimp-1 showed no change in their immune system. Though more study is required to confirm that the risk gene PRDM1 could lead to a hyperactive immune system in human females, this is a significant discovery to better understanding the causes and potential treatments for lupus.

More information: Sun Jung Kim et al. Increased cathepsin S in Prdm1−/− dendritic cells alters the TFH cell repertoire and contributes to lupus, *Nature Immunology* (2017). DOI: 10.1038/ni.3793

Provided by Northwell Health