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Science Spotlight

New phagocyte plays role in autoimmune disease

According to researchers, hemophagocytes, a newly identified population of phagocytes, may have a direct impact on patients with a variety of autoimmune diseases.

Many acute inflammatory disorders and infections are associated with a reduction in the number of mature blood cells—termed cytopenias—including anemia and thrombocytopenia. However, the mechanisms leading to these disease manifestations are not well understood by the scientific and medical community. The ingestion of bacteria or other material by phagocytes in red blood cells, platelets and leukocytes can be a major contributor to acute cytopenias.

Knowing this, Betsy J. Barnes, PhD, professor and head of the Laboratory of Autoimmune and Cancer Research at the Feinstein Institute, along with collaborators at Benaroya Research Institute and University of Washington in Seattle, conceived that specialized phagocytes may develop in these inflammatory conditions in response to the signals of pattern recognition receptors, such as Toll-like receptors (TLR), which are known to trigger cytokine production. However, the role of TLR in specifying myeloid cell development remains poorly understood. The researchers hypothesized that TLR signaling may drive a unique cell in the body that is apparent at sites of infection and has a macrophage phenotype.

"Findings implicating an important role for the transcription factor interferon regulatory 5 (IRF5) in development of hemophagocytes may have direct impact on patients with a variety of autoimmune diseases," said Barnes.

Hemophagocytes are responsible for anemia associated with inflammation and infection, which shows that specialized phagocytes required for inflammation-induced cytopenias develop in situations of acute inflammation and possibly autoimmune diseases.

—Submitted by The Feinstein Institute for Medical Research