Scientists uncover clues on inflammation in central nervous system

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Scientists at Barrow Neurological Institute have recently made discoveries about a type of cell that may limit inflammation in the central nervous system (CNS) – a finding that could have important implications in the treatment of brain disorders such as multiple sclerosis. The research, led by Barrow's Fu-Dong Shi, MD, PhD, was published in the August 2010 issue of The *Journal of Experimental Medicine*, and simultaneously highlighted in *Nature*.

Dr. Shi directs the Neuroimmunology Laboratory and Flow Cytometry Core Facility at Barrow. One of his research interests is natural killer (NK) cells, a type of immune cell that destroys tissue that has been infected by pathogens and malignant cells. While recent research has shed more light on the role of NK cells in other parts of the body, Dr. Shi's research is unveiling important discoveries about how NK cells work in the CNS.

In multiple sclerosis, the body's immune system attacks myelin, a protective sheath surrounding nerve cells in the brain and spinal cord. By studying a pre-clinical model of multiple sclerosis, the Barrow research revealed that enriching an affected area with NK cells improved disease symptoms, while blocking NK cells to the CNS made symptoms worse. The research indicates that NK cells – especially those that originate in the CNS, as opposed to NK cells from peripheral organs – play a critical role in controlling the magnitude of CNS inflammation and immune response.

"These studies provide novel insight into the biology of NK cells and might lead to the design of NK cell-based approaches for intervention in inflammatory and autoimmune disorders of the central nervous system," says Dr. Shi. "Our findings have important implications for understanding the efficacy of some drugs currently used in CNS diseases such as multiple sclerosis."

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