

Brain structure assists in immune response (Video)

January 28 2009

For the first time, a team of researchers at the University of Pennsylvania School of Veterinary Medicine have imaged in real time the body's immune response to a parasitic infection in the brain.

The findings provide unexpected insights into how immune cells are regulated in the brain and have implications for treatment of any inflammatory condition that affects the brain.

Toxoplasma, a common parasite of humans, is found in the brains of approximately 30 percent of the population. Yet, because the brain lacks its own lymphatic system for localized immune response and the blood brain barrier limits antibody entry, researchers have found it provides unique challenges for the immune system to control local infection. Therefore, little is known about the processes by which T cells access the central nervous system during toxoplasma infection or how the immune system keeps this parasite in check.

In this Penn study, researchers aimed to better understand how the immune system is able to control infection in the brain. Using recent advances in two-photon microscopy that allow the visualization of T-cell populations in the brain, Chris Hunter's lab focused on the visualization of effector CD8+ T cells during toxoplasmic encephalitis.

"We found, quite unexpectedly, that the movement of infiltrating T cells was closely associated with an infection-induced reticular system of fibers in the brain," lead author Emma Wilson said. "These structures

were not present in normal brain tissue."

"This observation suggests that in the brain, specialized structures are induced by inflammation that guide migration of T cells in this immune-privileged environment and allow them to perform a search-and-destroy type of mission required to find abnormal cells or microbes with the brain," Hunter, professor and chair of the Department of Pathobiology at Penn Vet, said.

Source: University of Pennsylvania

Citation: Brain structure assists in immune response (Video) (2009, January 28) retrieved 27 April 2024 from <https://phys.org/news/2009-01-brain-immune-response-video.html>

This document is subject to copyright. Apart from any fair dealing for the purpose of private study or research, no part may be reproduced without the written permission. The content is provided for information purposes only.