Defects in T cells make West Nile virus more deadly in older adults

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(PhysOrg.com) -- West Nile virus is more deadly in older adults due to defects in T cells, according to a study conducted by researchers from the UA College of Medicine.

The study results were reported in a recent issue of the Journal of Experimental Medicine. The article, "Key role of T cell defects in age-related vulnerability to West Nile virus," is available on the journal's Web site.

There currently is no approved vaccine or treatment against West Nile virus, or WNV, which, like many other viruses and bacteria, is more deadly in people over age 65. WNV infection causes a life-threatening meningoencephalitis (inflammation of the brain and surrounding membranes) that becomes increasingly more prevalent over the age of 50, and is 40 to 50 times more prevalent in people over the age of 70, compared with adults under the age of 40.

"Up until now, it was not clear whether this was caused by loss of control over the virus upon its entry into the organism, loss or weakening of the barriers that prevent entry of viruses into the brain or lack of control of the virus once it enters the brain," said principal investigator Dr. Janko Nikolich-Zugich, chairman of the Department of Immunobiology and co-director of the Arizona Center on Aging at the UA College of Medicine. "Moreover, it was not clear which cells and molecules may be affected so as to allow unimpeded spread of the virus."

The researchers identified the type of cell - T cells - and the molecular defects that prevent older adults from clearing the virus. T cells (a type of white blood cell that plays a role in the immune system's response to virus-infected or malignant cells) are key defenders against WNV.

"We discovered that older brains have fewer T cells and they aren't properly armed to eliminate the virus," said Nikolich-Zugich. "These discoveries will allow us to devise and test treatments and vaccines to improve the protection of older adults against this virus."

Nikolich-Zugich also is the Elizabeth Bowman Professor in Medical Research and professor of medicine at the UA College of Medicine; a professor of nutritional sciences; and a member of the BIO5 Institute.

Provided by University of Arizona (news : web)