Early results link PTSD, compromised immune systems

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(Medical Xpress) -- Preliminary results of a study show a link between post-traumatic stress disorder (PTSD) and compromised immune system in war veterans diagnosed with PTSD.

The study, conducted by researchers at the University of South Carolina School of Medicine and Arnold School of Public Health and the Dorn VA Medical Center, shows that PTSD patients have increased levels of inflammation, caused by an increase in certain types of cells that regulate the immune functions.

The results are significant because they could lead to novel methods for diagnosis and treatment of PTSD, said Dr. Prakash Nagarkatti, associate dean and Carolina Distinguished Professor at the USC medical school, who is the lead researcher in this study.

The findings also are the basis for a new, $1.72 million grant from the National Institutes of Health to Nagarkatti and his team of researchers, who will intensify their research on the pathological basis of immune dysfunction in war veterans with PTSD.

“PTSD is a psychiatric condition with long-lasting symptoms that can occur after exposure to extremely stressful life events,” Nagarkatti said. “Patients with PTSD are six times more at risk of committing suicide, and the annual loss of productivity in the United States is estimated to be approximately $3 billion.”

Nagarkatti said that about 30 percent of Vietnam War veterans developed PTSD during, or at some point after, the Vietnam War, and more than 35 percent of returned Iraq and Afghanistan veterans have received mental health diagnoses, the most prevalent being PTSD. However, the precise physiological mechanisms that lead to the development of PTSD are not clear.

Investigators will test the basis for immune dysfunction in war veterans with PTSD. The researchers will test the hypothesis that traumatic events experienced by PTSD patients may trigger changes in cells in the immune system.

“Because the immune system and the nervous system interact closely with each other, dysregulation in one can severely affect the other, leading to the onset of clinical disorders associated with PTSD,” Nagarkatti said.

Specifically, the team is studying the role of epigenetics, an expanding field that examines changes that occur in cells outside the genes and the impact that these changes have on physiological changes previously believed to be controlled directly by genes.

“Epigenetics is a growing area of research,” Nagarkatti said. “Researchers have believed that behavior was influenced by changes in genes. Now they are exploring whether these changes occur outside the genes and are influenced by external factors such as diet, exposure to toxins and traumatic events. Our preliminary research indicates that this is the case.”

Preliminary studies carried out in Nagarkatti’s laboratory showed that PTSD patients had altered immune profile with higher proportion of T cells, which are white blood cells that trigger inflammation. The increased number of T cells correlated with alterations in small

molecules outside the genes, called micro RNAs, that control various functions of genes. These molecules also were significantly altered in PTSD patients when compared to normal individuals.

Provided by University of South Carolina