

Women may be at increased health risk due to PTSD

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(Medical Xpress) -- Research has shown that women are at greater risk of post-traumatic stress disorder (PTSD) than men. Now, scientists based at the UCSF-affiliated San Francisco Veterans Affairs Medical Center (SFVAMC) have found that women with the condition might be more likely to experience faster aging at the cellular level and increased risk for diseases of aging than men with PTSD.

The preliminary findings, if borne out by further research, may have implications, the researchers said, for preventing and treating women with [PTSD](#) in the general population and in the military, where women are serving in increasing numbers and coming under fire more often than in the past.

The findings were reported by Aoife O'Donovan , PhD, a postdoctoral fellow at UCSF and the SFVAMC-based Northern California Institute for Research and Education (NCIRE), at the "Women Warriors" session of the "Brain at War" 2012 conference in San Francisco on June 21.

Trauma, Stress and Aging Lessons May Be Applicable to All

Currently, women are not allowed to serve in combat units in the U.S. military. However, in practice women have been working alongside military battalions for years, serving as medics, mechanics and radio operators, among other roles. In these positions, they can be vulnerable to attack. The Pentagon only began formally allowing women to undertake these jobs on a permanent basis earlier this year. The result of

this shift is that women are increasingly at risk for frequent exposure to physical and psychological trauma.

If women and men do indeed tend to have different biological responses to trauma and PTSD, the researchers said, treating and preventing PTSD and associated maladies in the two sexes might best be accomplished with different approaches.

Women are serving in Afghanistan “at a higher percentage than we have seen before, and in positions where they are at risk of attack,” Gen. Peter Chiarelli, who retired as Vice Chief of Staff of the U.S. Army earlier this year, said at a “Brain at War” press briefing. He now is CEO of One Mind for Research, a non-profit organization based in Northern California that seeks cures for brain disorders. Given the nature of the conflict in Afghanistan, Chiarelli said: “Everyone in this fight is more likely to be in harm’s way.”

PTSD and Rapid Biological Aging

O’Donovan, through NCIRE, studies stress, inflammation and the shortening within cells of protective strands of DNA known as telomeres. Short strands of telomeres are considered a marker of aging. She did not start out to investigate sex differences in stress responses, she said, but in a study she reported at the “Brain at War” conference, conducted with UCSF psychiatrist Thomas Neylan, MD, director of the PTSD Research Program at SFVAMC, she found them.

In a study first reported in 2011 in *Brain, Behavior and Immunity*, the researchers screened cells of the immune system to see which genes were activated in men and women with and without PTSD. Immune activation was greater on average in the 10 women in the study with PTSD compared to the eight women without PTSD. However, the 24 men with PTSD did not exhibit differences in immune activation in

comparison to the 25 men without PTSD.

In addition, one pro-inflammatory cell-signaling pathway was more active, and one anti-inflammatory cell-signaling pathway was less active in both male and female PTSD patients. Surprisingly, a third pathway, thought to be involved in controlling inflammation, was ramped up in men with PTSD, but dampened down in women with PTSD.

For now these findings are “preliminary and provocative, but not conclusive,” O’Donovan said. “However, they have led us to question if there are specific mechanisms by which men but not women might be more protected from inflammation in PTSD.”

Telomeres, Inflammation, Hormones and Diseases of Aging

O’Donovan and UCSF colleagues reported other studies at the conference, as well. In one, they found a link between inflammation and higher lifetime exposure to trauma among heart disease patients. In others, they found that trauma exposure, PTSD and heightened perception of threat, or hypervigilance, were associated with shorter telomeres. Both short telomere length and chronic inflammation have been associated with increased risk for chronic diseases of aging.

“Our latest findings suggest that PTSD increases risk for disorders that have an inflammatory basis, and that this [risk](#) is greatest of all in [women](#) with PTSD,” O’Donovan said.

O’Donovan is particularly interested in further exploring the roles that male and female hormones play in regulating biological responses to traumatic stress and the ways that different kinds of traumatic experiences might influence responses.

Provided by University of California, San Francisco

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