Risk of accelerated aging seen in PTSD patients with childhood trauma

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(Medical Xpress) -- Adults with post-traumatic stress disorder and a history of childhood trauma had significantly shorter telomere length than those with PTSD but without childhood trauma, in a study by researchers at the San Francisco VA Medical Center and the University of California, San Francisco.

Telomeres are DNA-protein complexes that cap the ends of chromosomes and protect them from damage and mutations. Short telomere length is associated with an increased risk of cancer, cardiovascular disease, and autoimmune and neurodegenerative diseases, as well as early death.

For the study, published in the online Articles in Press section of Biological Psychiatry, the authors collected DNA samples from 43 adults with PTSD and 47 matched participants without PTSD. Initial analysis showed that on average, the subjects with PTSD had shorter telomere length than those without.

“This was striking to us, because the subjects were relatively young, with an average age of 30, and in good physical health,” said lead author Aoife O’Donovan, PhD, a researcher in psychiatry at SFVAMC and UCSF. “Telomere length was significantly shorter than we might expect in such a group.”

The authors then looked at incidence of severe childhood trauma, including neglect, family violence, physical abuse, and sexual abuse.

They found that, among the subjects with PTSD, the more childhood trauma a subject had experienced, the higher the risk of shorter telomere length. “People who had multiple categories of childhood traumas had the shortest telomere length,” said O’Donovan.

In contrast, subjects with PTSD but without childhood trauma had telomere length equal to those of the matched healthy subjects.

The results are intriguing for a number of reasons, observed principal investigator Thomas Neylan, MD, director of the PTSD program at SFVAMC and a professor in residence of psychiatry at UCSF. “For one thing, this gives us a potential mechanism for why people with PTSD tend to have a greater disease burden and more problems with aging,” said Neylan. “It might be because of their telomere biology.”

In addition, he speculated, “we might be seeing the cumulative effect of PTSD on telomere length – in other words, the subjects with shorter telomere length may have PTSD dating from their childhood traumas, in addition to PTSD acquired in adulthood.”

According to O’Donovan, however, the major drawback of the study was that, because the subjects without PTSD did not in general have high levels of exposure to childhood traumas, the authors were “unable to tease apart the relative contributions of childhood trauma and adult PTSD to shorter telomere length.”

To investigate that question, they plan to conduct a study looking at telomere length in subjects with and without childhood trauma and with and without PTSD in adulthood.

“A major question is whether we can actually have an effect on telomere biology by treating PTSD,” said Neylan. “If we successfully treat PTSD, can we slow the rate of telomere shortening, and thereby decrease or at

least postpone the risk for some diseases of aging?"

Provided by University of California, San Francisco