

Scientists identify new gene linked to PTSD

August 7 2012

Investigators at Boston University School of Medicine (BUSM) and Veterans Affairs (VA) Boston Healthcare System have identified a new gene linked to post-traumatic stress disorder (PTSD). The findings, published online in *Molecular Psychiatry*, indicate that a gene known to play a role in protecting brain cells from the damaging effects of stress may also be involved in the development of PTSD.

The article reports the first positive results of a genome-wide association study (GWAS) of PTSD and suggests that variations in the retinoid-related orphan receptor alpha (RORA) gene are linked to the development of PTSD.

Mark W. Miller, PhD, associate professor at BUSM and a clinical research psychologist in the National Center for PTSD at VA Boston Healthcare System was the study's principal investigator. Mark Logue, PhD, research assistant professor at BUSM and Boston University School of Public Health and Clinton Baldwin, PhD, professor at BUSM, were co-first authors of the paper.

PTSD is a psychiatric disorder defined by serious changes in cognitive, emotional, behavioral and psychological functioning that can occur in response to a psychologically traumatic event. Previous studies have estimated that approximately eight percent of the U.S. population will develop PTSD in their lifetime. That number is significantly greater among combat veterans where as many as one out of five suffer symptoms of the disorder.

Previous GWAS studies have linked the RORA gene to other psychiatric conditions, including attention-deficit hyperactivity disorder, [bipolar disorder](#), autism and depression.

"Like PTSD, all of these conditions have been linked to alterations in brain functioning, so it is particularly interesting that one of the primary functions of RORA is to protect [brain cells](#) from the damaging effects of oxidative stress, hypoxia and inflammation," said Miller.

Participants in the study were approximately 500 male and [female veterans](#) and their intimate partners, all of whom had experienced trauma and approximately half of whom had PTSD. The majority of the veterans had been exposed to trauma related to their military experience whereas their [intimate partners](#) had experienced trauma related to other experiences, such as sexual or physical assault, serious accidents, or the sudden death of a loved one. Each participant was interviewed by a trained clinician, and DNA was extracted from samples of their blood.

The DNA analysis examined approximately 1.5 million genetic markers for signs of association with PTSD and revealed a highly significant association with a variant (rs8042149) in the RORA gene. The researchers then looked for evidence of replication using data from the Detroit Neighborhood Health Study where they also found a significant, though weaker, association between RORA and PTSD.

"These results suggest that individuals with the RORA risk variant are more likely to develop PTSD following trauma exposure and point to a new avenue for research on how the brain responds to trauma," said Miller.

Provided by Boston University Medical Center

Citation: Scientists identify new gene linked to PTSD (2012, August 7) retrieved 25 April 2024 from <https://medicalxpress.com/news/2012-08-scientists-gene-linked-ptsd.html>

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