Researchers Identify Genetic Risk Factors for PTSD

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Bethesda, Md. - In the largest study of DNA samples from service members with Post-Traumatic Stress Disorder (PTSD), researchers have identified genetic mutations that may be associated with an increased risk factor for PTSD. This new study, published May 11 in JAMA Psychiatry, provides insight into this prevalent, public health concern.

PTSD is a mental illness linked to exposure to a traumatic event, such as combat or an act of violence. The U.S. Department of Veterans Affairs estimates 11 to 20 percent of veterans who served in the Afghanistan and Iraq conflicts are suffering from PTSD, and the percentage of Vietnam War veterans with PTSD is even higher.

Researchers from the Uniformed Services University of the Health Sciences (USU), in Bethesda, MD., the University of California, San Diego, Harvard Medical School, the University of Michigan, and the Veterans Affairs San Diego Healthcare System, sought to analyze genes associated with lifetime PTSD risk among Army personnel. They analyzed DNA samples from more than 13,000 consenting Soldiers who participated in the Army Study to Assess Risk and Resilience in Service members (Army STARRS).
The researchers conducted genome-wide associated studies (GWAS) in two cohorts to identify DNA markers associated with PTSD. The first GWAS was performed on more than 3,100 diagnosed cases of PTSD and more than 4,600 trauma-exposed controls from the New Soldier Study, which included a sample of about 57,000 new Soldiers entering Basic Combat Training at each of the three basic Army training installations.

The second GWAS was performed on more than 940 diagnosed cases and more than 4,900 trauma-exposed controls from the Pre/Post Deployment Study, which included about 10,000 Soldiers in three Combat Brigade Teams from 2012 to 2014. They compared lifetime PTSD cases, as defined by the Diagnostic Service Manual-IV, to trauma-exposed controls without lifetime PTSD.

They found two notable genetic variants. In DNA samples of African American Soldiers with PTSD, they found a gene (ANKRD55) on chromosome 5. In prior research, this gene has been found to be associated with various autoimmune and inflammatory disorders, such as multiple sclerosis, type 2 diabetes, celiac disease, and rheumatoid arthritis. The other genetic variant, in European-American samples, was found on chromosome 19.

Additionally, the researchers did not find significant genetic correlations between PTSD and six mental disorders and nine immune-related disorders, according to the study's co-principal investigator, Dr. Robert Ursano, chair of USU's Department of Psychiatry. They did find significant evidence, though, of genetic factors that influence multiple traits for PTSD and rheumatoid arthritis, and to a lesser extent, psoriasis.

"Further research will be needed to replicate the genome-wide significant association we found with the gene ANKRD55 and clarify the nature of the genetic overlap observed between PTSD and rheumatoid arthritis and psoriasis," Ursano said.

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About the Uniformed Services University of the Health Sciences

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