PTSD: The serotonin system influences vulnerability and treatment

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There is a great deal of interest in factors that contribute to the vulnerability to developing post-traumatic stress disorder, or PTSD. One factor that appears to contribute to the heritable vulnerability to PTSD is a variation in the gene that codes for the serotonin transporter, also known as the serotonin uptake site.

Having a shorter version of the serotonin transporter gene appears to increase one's risk for depression and PTSD after exposure to extremely stressful situations. This same gene variant increases the activation of an emotion control center in the brain, the amygdala.
More recently, scientists began focusing on factors contributing to resilience to the impact of stress exposure. Could the same gene that contributes to the vulnerability to PTSD be implicated in the recovery from PTSD?

In their new study appearing in *Biological Psychiatry*, Dr. Richard Bryant and colleagues assessed whether serotonin transporter genotype predicted a change in patients' PTSD severity following treatment. Specifically, patients with PTSD were classified according to their genotype, and they received eight weeks of cognitive behavior therapy. Approximately one-third of patients do not respond to this treatment, and this study has now demonstrated that there may be a genetic basis for not responding to this therapy.

Dr. Bryant explained: "Patients with PTSD who carried the short allele of the serotonin transporter gene promoter responded more poorly to

treatment than other PTSD patients. This study highlights that the serotonin system is implicated in responding to cognitive behavior therapy."

The recent focus on personalized medicine has emphasized the impact of variation in genes that influence the responses to medications. This study supports the reasoning that genetic variation would also influence the response to psychotherapeutic or rehabilitative treatments.

Dr. John Krystal, Editor of Biological Psychiatry, noted, "While this study identifies a potential predictor of poor treatment response, it also may help to identify groups of individuals who respond relatively favorably to treatment. It is interesting this 'good outcome' group is a group that is also more resilient, i.e., less likely to develop PTSD or depression, after stress."

Although further research is necessary, this initial finding indicates that PTSD treatments may need to be modified to accommodate patients' genetic profiles.

More information: The article, "Preliminary Evidence of the Short Allele of the Serotonin Transporter Gene Predicting Poor Response to Cognitive Behavior Therapy in Posttraumatic Stress Disorder", appears in Biological Psychiatry, Volume 67, Issue 12 (June 15, 2010), published by Elsevier.

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