PTSD psychotherapy is enhanced with D-cycloserine

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Posttraumatic stress disorder (PTSD) is among the most common, distressing, and disabling medical consequences of combat or other extremely stressful life events. The first-line treatment for PTSD is exposure therapy, a type of behavioral therapy where patients confront their fears in a safe environment. Although it is an effective treatment, many patients still experience symptoms after treatment and there is a relatively high drop-out rate.

In an effort to improve existing treatments, a new study appearing in *Biological Psychiatry* this week has tested a novel hypothesis about the treatment of PTSD derived from prior work in animal models and other anxiety disorders. They examined whether the impact of psychotherapy could be enhanced by administering D-cycloserine (DCS), a drug that does not directly treat the symptoms of PTSD, but rather promotes neuroplasticity, i.e., makes brain circuits better able to remodel themselves in the context of experience.

To test this, researchers recruited individuals with PTSD, all of whom received up to 10 weekly sessions of exposure therapy. They were randomized to receive doses of either DCS or placebo before each session, but did not know which they were receiving. The severity of their symptoms was assessed before and after treatment.

All patients experienced a reduction in symptoms due to the exposure therapy, regardless of whether they had received DCS augmentation or placebo. However, DCS did enhance the effects of exposure therapy in a

specific subgroup of patients. Those who had more severe PTSD prior to treatment and needed longer treatment had a greater reduction in symptoms when they received DCS, compared to those who received placebo.

"Our study showed that some PTSD patients respond well and fast to exposure and for them, there seems no need to augment the therapy. In contrast, those patients with severe PTSD symptoms and who fail to respond to exposure sessions may benefit from augmentation with DCS," explained first author Dr. Rianne de Kleine. "It seems that DCS is beneficial for exactly those patients we aimed for: the more severe patients who do not respond to first-line treatment."

"This approach may have important implications for the treatment of PTSD. Two decades of brain research suggests that severe psychological stress causes atrophy of some of the fine connections in the brain and reductions in the volume of brain regions involved in emotion and memory. Thus, individuals with PTSD may have deficits in neuroplasticity that get in the way of effective treatment," commented Dr. John Krystal, Editor of Biological Psychiatry. "D-cycloserine may reduce this deficit in neuroplasticity and increase the response to psychotherapy, in this case a psychotherapy approach that involves exposing people to reminders and memories of the trauma."

The authors conclude that additional work is warranted to explore whether this combination can become an effective intervention to treat the symptoms of PTSD.

More information: The article is "A Randomized Placebo-Controlled Trial of D-Cycloserine to Enhance Exposure Therapy for Posttraumatic Stress Disorder" by Rianne A. de Kleine, Gert-Jan Hendriks, Wendy J.C. Kusters, Theo G. Broekman, and Agnes van Minnen (doi: 10.1016/j.biopsych.2012.02.033). The article appears in *Biological*

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