PTSD-gene link found in NIU students after shootings

A study of college students' reactions to shootings on their Illinois campus gives fresh insight into how genes may influence the psychological impact of traumatic events.

The researchers found that symptoms similar to post-traumatic stress disorder were more common in Northern Illinois University students who had certain variations in a gene that regulates levels of serotonin, a brain chemical linked with mood that is the target of popular antidepressants.

The researchers say the results could someday lead to new treatments for PTSD, and also could help predict who will develop the condition, which could be useful for soldiers involved in combat.

Other variations in the same gene and in other genes have been linked with PTSD in previous research. But the new research was unique because it involved 204 undergraduate women who by coincidence were taking part in a campus study that measured stress before the shootings on Feb. 14, 2008 - so before-and-after information was available.

The shootings occurred in a crowded lecture hall on the NIU campus in DeKalb, about 65 miles west of Chicago. A former NIU student opened fire, killing five and wounding more than a dozen others before killing himself. Most study participants were on campus at the time.
Overall symptoms similar to PTSD were found in almost half the women in the weeks after the shootings, and in nearly all the participants who were in the hall. These symptoms included flashbacks, nightmares and extreme jumpiness.

Information on stress symptoms in the women that had been gathered before the shootings helped the researchers better assess what role their genetic makeup might have played in how they reacted to the violence, said Dr. Kerry Ressler, an Emory University researcher and the study's senior author.

The study was released Monday in the September edition of Archives of General Psychiatry.

"This kind of research is extremely important" and could eventually "provide clues to novel treatment," said Dr. John Krystal, psychiatry chairman at Yale University's medical school and director of clinical neurosciences at the Veterans Affairs National Center for PTSD. Krystal was not involved in the study.

The researchers analyzed genetic material in saliva samples women submitted after the shootings. The women also filled out questionnaires commonly used to assess PTSD and related symptoms, at two times after the shootings - two to four weeks afterward, and then an average of eight months afterward. By definition, PTSD persists for more than a month, but similar symptoms can develop soon after traumatic events.

The variations in the serotonin gene were found in 25 percent of the women studied. Overall, 52 percent of women with those variations developed early or later PTSD symptoms, versus 43 percent of women without the variations.

Among women who weren't in the lecture hall during the shootings, 42 percent had early symptoms and 8 percent had lingering symptoms months later. Only a handful of women studied were in the hall; far more of them had early and persistent symptoms.

Holly Orcutt, an NIU psychology professor who took part in the research, did a separate analysis of about 20 students who'd been in the lecture hall during the shootings. She found PTSD symptoms in 84 percent shortly after the shootings. By September 2010, only 11 percent still had symptoms, a decline that "speaks to the resilience" of the students, Orcutt said. That analysis doesn’t appear in Archives.

The university set up special counseling services after the shootings that are still available since many students on campus in 2008 remain enrolled at NIU, she said.

The hall where the shootings took place is being remodeled, and a memorial sculpture to the slain students has been set up nearby.

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