

## Persistent pain after stressful events may have a neurological basis

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A new study led by University of North Carolina School of Medicine researchers is the first to identify a genetic risk factor for persistent pain after traumatic events such as motor vehicle collision and sexual assault.

In addition, the study contributes further evidence that persistent pain after stressful events, including [motor vehicle collisions](#) and sexual assaults, has a specific [biological basis](#). A manuscript of the study was published online ahead of print by the journal *Pain* on April 29.

"Our study findings indicate that mechanisms influencing chronic pain development may be related to the [stress response](#), rather than any specific injury caused by the traumatic event," said Samuel McLean, MD, MPH, senior author of the study and assistant professor of anesthesiology. "In other words, our results suggest that in some individuals something goes wrong with the body's 'fight or flight' response or the body's recovery from this response, and [persistent pain](#) results."

The study assessed the role of the hypothalamic-pituitary adrenal (HPA) axis, a physiologic system of central importance to the body's response to [stressful events](#). The study evaluated whether the HPA axis influences musculoskeletal [pain severity](#) six weeks after motor vehicle collision (MVC) and [sexual assault](#). Its findings revealed that variation in the gene encoding for the protein FKBP5, which plays an important role in regulating the HPA axis response to stress, was associated with a 20 percent higher risk of moderate to severe neck pain six weeks after a

motor vehicle collision, as well as a greater extent of body pain. The same variant also predicted increased pain six weeks after sexual assault.

"Right now, if an someone comes to the emergency department after a car accident, we don't have any interventions to prevent chronic pain from developing," McLean said. Similarly, if a woman comes to the emergency department after sexual assault, we have medications to prevent pregnancy or sexually transmitted disease, but no treatments to prevent chronic pain. This is because we understand what causes pregnancy or infection, but we have no idea what the biologic mechanisms are that cause chronic pain. Chronic pain after these events is common and can cause great suffering, and there is an urgent need to understand what causes chronic pain so that we can start to develop interventions. This study is an important first step in developing this understanding."

"In addition, because we don't understand what causes these outcomes, individuals with chronic pain after traumatic events are often viewed with suspicion, as if they are making up their symptoms for financial gain or having a psychological reaction," McLean said. "An improved understanding of the biology helps with this stigma," McLean said.

Provided by University of North Carolina Health Care

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