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Reduced heart rate variability may indicate greater vulnerability to PTSD

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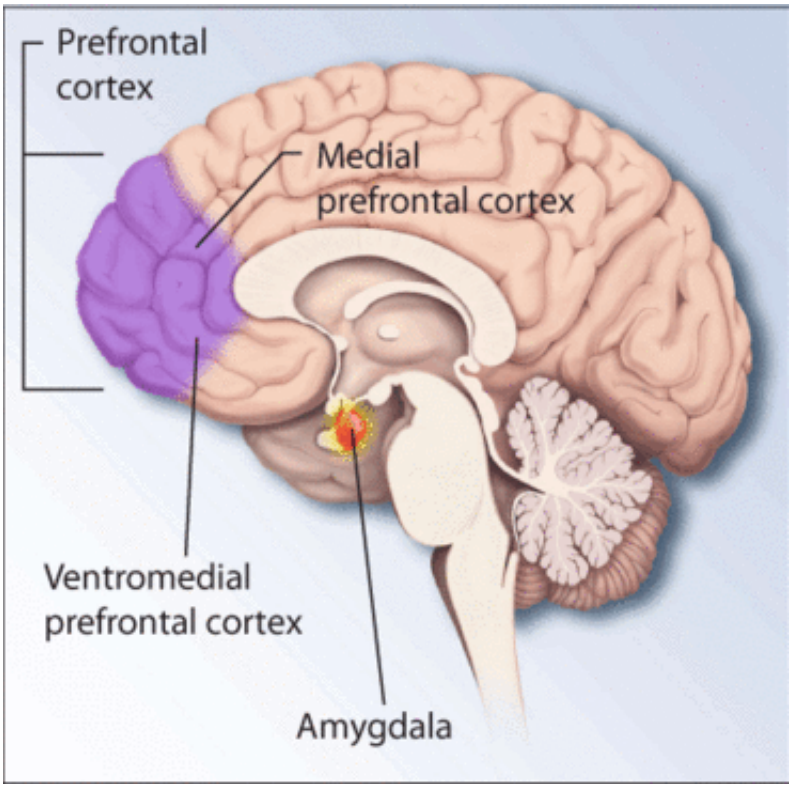

Regions of the brain associated with stress and posttraumatic stress disorder. Credit: National Institutes of Health

A prospective longitudinal study of U.S. Marines suggests that reduced heart rate variability - the changing time interval between heartbeats - may be a contributing risk factor for post-traumatic stress disorder (PTSD). The findings are reported in the September 9 online issue of

JAMA Psychiatry by researchers at the University of California, San Diego School of Medicine and Veterans Affairs San Diego Healthcare System.

Even at rest, the normal rhythm of the heart fluctuates, reflecting influences and changes in other parts of the body. Generally speaking, the greater the heart rate variability or HRV, the better. Conversely, reduced HRV suggests poorer functioning of regulatory systems in the body and has been cited as an indicator or predictor for a number of conditions, such as fetal distress, heart disease, depression, asthma, diabetic neuropathy and disorders of the autonomic nervous system, which controls bodily functions not consciously directed, such as heartbeat, breathing and digestion.

HRV has been associated with PTSD, a mental health condition linked to a number of maladies, including anger, insomnia, substance abuse and chronic depression. PTSD is particularly associated with persons deployed to war. For example, the lifetime prevalence in Vietnam-era combat veterans is 19 percent. For veterans of Iraq and Afghanistan, it is 13 to 15 percent. In the general U.S. population, the PTSD prevalence rate is 8 percent.

Researchers investigated whether reduced HRV before combat deployment conferred increased risk of a PTSD diagnosis after deployment. From July 2008 to October 2013, they assessed two large cohorts of active-duty Marines one to two months before combat deployment and again four to six months after their return. After accounting for deployment-related combat exposure, the researchers found that U.S. Marines with reduced HRV prior to deployment displayed increased vulnerability to PTSD upon return.

"The evidence is initial and modest," said Arpi Minassian, PhD, clinical professor of psychiatry at UC San Diego School of Medicine and first

author of the study. "It suggests that an altered state of the autonomic nervous system may contribute to vulnerability and resilience to PTSD, along with known risk factors, such as combat exposure and preexisting stress and trauma symptoms."

The researchers said that if the findings are buttressed by future studies, it may suggest new opportunities for preventing PTSD by addressing the biology of the autonomic nervous system.

Provided by University of California - San Diego

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