Veterans with PTSD have an increased 'fight or flight' response

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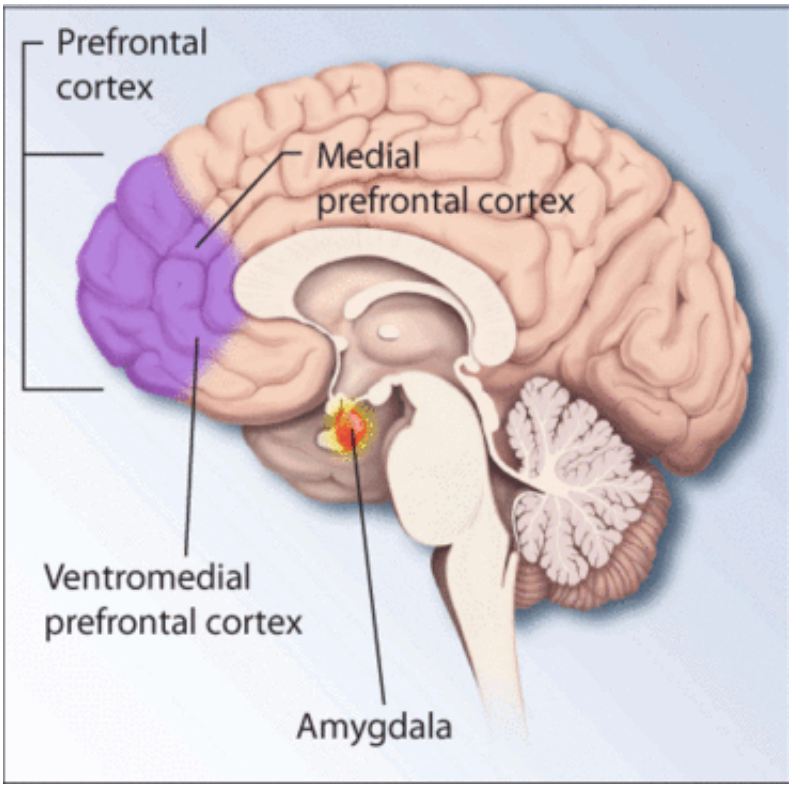

Regions of the brain associated with stress and posttraumatic stress disorder. Credit: National Institutes of Health

Young veterans with combat-related post-traumatic stress disorder (PTSD) have an increased 'fight or flight' response during mental stress, according to new findings published this week in the *Journal of Physiology*.

The team at Emory University School of Medicine, led by Dr Jeanie Park, believe that this contributes to the increased risk of high blood pressure and heart disease in PTSD patients.

PTSD is prevalent in both military and civilian populations. The lifetime prevalence of PTSD in US adults is 7.8% and around 14% in post-9/11 veterans. PTSD patients are known to have a higher risk for developing high blood pressure and cardiovascular disease.

The researchers also found that veterans with PTSD had higher adrenaline levels and less control of their heart rate in response to blood pressure changes. While previous studies have suggested that the sympathetic nervous system- the 'fight or flight' response- of veterans is overactive, this study was the first to measure this increased activity directly and provide a potential mechanism behind this response.

Dr Park and her team took these measurements while the participants experienced two types of mental stress. First-person war images and sounds shown through virtual reality goggles recreated mental stress related to PTSD. Mental arithmetic elicited mental stress un-related to PTSD.

They studied the physiology of post-9/11 veterans, 14 of whom had PTSD and 14 who did not. They measured blood pressure, performed an electrocardiogram (EKG), and recorded sympathetic nerve activity directly in real-time using electrodes placed inside a large nerve. This technique is called microneurography and is considered the gold-standard method for assessing sympathetic nervous system activity in humans.

Commenting on the study, Dr Park said:'To protect patients against high blood pressure and heart disease, we need to first understand how their physiology malfunctions. We can then identify potential treatments.'

'This study looked specifically at veterans with combat-related PTSD, so the findings do not necessarily apply to non-veterans with PTSD, nor to patients with non-combat-related PTSD,' she added.

More information: Jeanie Park et al, Baroreflex dysfunction and augmented sympathetic nerve responses during mental stress in veterans with posttraumatic stress disorder (PTSD), *The Journal of Physiology* (2017). DOI: 10.1113/JP274269