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Learned helplessness sensitizes hippocampal norepinephrine to mild restress.

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Source

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Abstract

A proportion of rats exposed to inescapable tailshock stress displayed a performance deficit, termed learned helplessness, in a subsequent shuttlebox avoidance task. The technique of in vivo microdialysis was used to determine hippocampal norepinephrine levels in learned helpless, nonhelpless and nonprestressed control rats. Similar basal norepinephrine levels were detected in samples between rat groups. Following an exposure to a milder form of inescapable shock, an increase in norepinephrine output was detected in learned helpless rats, which was significantly greater than nonhelpless, nonprestressed, or control animals. Thus, inescapable stress appears to sensitize the hippocampus to increase norepinephrine release in response to a subsequent smaller stressor. This hypersensitivity might underlie the avoidance impairment of learned helplessness. Therefore, the possibility exists that similar neurochemical changes may also be responsible for some of the symptoms of human posttraumatic stress disorder (PTSD), such as the poor coping associated with seemingly mild stress.

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