عنوان مقاله:

In vivo blockade of ۵HT۳ receptors in the infralimbic medial prefrontal cortex enhances fear extinction in a rat model of PTSD

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خلاصه مقاله:

Objective(s): Treatments that reverse deficits in fear extinction are promising for the management of post-traumatic stress disorder (PTSD). ۵-Hydroxytryptamine type ۳ (۵-HT۳) receptor is involved in the extinction of fear memories. The present work aims to investigate the role of ۵HT۳ receptors in the infralimbic part of the medial prefrontal cortex (IL-mPFC) in extinction of conditioned fear in the single prolonged stress (SPS) model of PTSD in rats.Materials and Methods: The effect of SPS administration was evaluated on the freezing behavior in contextual and cued fear conditioning models. After the behavioral tests, levels of ۵HT۳ transcription in IL-mPFC were also measured in the same animals using the real-time RT-PCR method. To evaluate the possible role of local ۵HT۳ receptors on fear extinction, conditioned freezing was evaluated in another cohort of animals that received local microinjections of ondansetron (a ۵HT۳ antagonist) and ondansetron plus a ۵HT۳ agonist (SR ۵۷۲۲۷A) after extinction sessions. Results: Our findings showed that exposure to SPS increased the freezing response in both contextual and cued fear models. We also found that SPS is associated with increased expression of ۵HT۳ receptors in the IL-mPFC region. Ondansetron enhanced the fear of extinction in these animals and the enhancement was blocked by the ۵HT۳ agonist, SR ۵۷۲۲۷A.Conclusion: It seems that up-regulation of ۵HT۳ receptors in IL-mPFC is an important factor in the neurobiology of PTSD and blockade of these receptors could be considered a potential treatment for this condition.

کلمات کلیدی:

Fear extinction, Infralimbic medial prefrontal cortex, PTSD, Single prolonged stress, ۵HT۳ receptor