



Entrega de l'Abstract

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Títol de la recerca: Can exposure to chronic stress protects from negative consequences of an acute severe stressor?
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Abstract (màxim 500 paraules):

Rationale: Acute exposure to severe stressors resulted in major physiological and behavioral changes. Upon repeated exposure to the same (homotypic) stressor, some of the negative consequences are reduced, suggesting adaptation to this particular situation. This adaptation appears to be specific for the homotypic stressors as exposure to a novel (heterotypic) stressor resulted in normal or enhanced response. When chronically exposed to different types of unpredictable stressful situations (CUS), it is assumed that such exposure can exacerbate most of the negative consequences of an acute stressor, leading to physio- and psycho-pathological consequences. However, there is some evidence that chronic stress could protect from some of the negative consequences of an acute exposure to heterotypic stressors.

Objectives: To demonstrate the prior exposure to CUS may protect from some of the negative consequences of an acute exposure to a novel, severe, stressor such as immobilization (IMO). For comparison, the protection offered by repeated exposure to IMO was also studied.

Methods: Adult male SD rats were assigned to different stress procedure during the first part of the experiment (day 1 to 9): control group, that remained unstressed; chIMO group, rats daily exposed to 1 h of IMO; CUS, animals exposed to different conditions of duration and type of stressors (forced swim, restraint, foot-shock). On day 10, animals from the 3 groups were exposed to 1hour of IMO, whereas an additional control group remained unstressed. On the following day, different behaviors were evaluated in all animals, including activity in novel environments and the consumption of sweets solutions (saccharine), which evaluated reward mechanisms.

Results: Prior repeated exposure to IMO reduced the active attempt to escape from the board caused by the acute IMO, whereas prior exposure to CUS did not reduce such behavior. These data indicate that animals perfectly identify the stressor and that prior CUS did not cause helpless behavior. Chronic exposure to IMO reduced the hormonal (ACTH) response to the acute stressor, demonstrating adaptation of the hypothalamus-pituitary-adrenal (HPA) axis. Interestingly, CUS rats



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also showed a reduced ACTH response restricted to the post-IMO period, suggesting some degree of protection by prior CUS. A similar protective pattern of prior exposure to chronic IMO or CUS was observed regarding acute IMO-induced anhedonia. In contrast, chronic IMO only slightly protected from the hypo-activity in a novel environment caused by an acute IMO, whereas CUS was without effect.

Discussion: Our data confirm that repeated exposure to a particular stressor reduced some of the physiological and behavioral consequences of an acute exposure to the same stressor (adaptation) and that a prior history of CUS offers partial protection from some of the negative consequences of a novel acute stressor. Therefore, a prior history of chronic stress can offer resilience regarding unknown severe stressors, in contrast to the most accepted view that prior CUS enhances vulnerability to stress. It is possible that completely different consequences of CUS could be observed depending on the particular resilience/vulnerability of the population under study.