عنوان مقاله:

The Effect of Prenatal Exposure to Restraint Stress on Hippocampal Granule Neurons of Adult Rat Offspring

محل انتشار:

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خلاصه مقاله:

Objective(s) It is well known that prenatal stresses (PS) induce a variety of neurobiological and behavioral alterations, some of them involving the hippocampal formation. This study aimed to determine whether restraint stress influences the neuronal volume and number of granule cells in the hippocampus of adult rat offspring. Materials and Methods Ten Wistar pregnant rats were randomly divided: stressed and control groups. Pregnant dams in the stressed group were placed in a Plexiglas restraint tube for ۱ hr daily from days ۱۵-۲۱ of gestation. Neuroendocrinological consequences of prenatal stress exposure were evaluated in the male offspring on postnatal day ۶۰. The total numbers and the individual volume of granule cells in the hippocampus were also estimated with the optical fractionator and the rotator methods, respectively. Results Prenatally stressed rats exhibited prolonged elevation in plasma glucocorticoid levels following acute exposure to restraint stress. Data also indicated that there is a decrease in neuronal volume of hippocampal granule cells in prenatally stressed compared with their controls (۶۲۵±۶۴.۱ μm۳ vs. ۷۴۱±۸۰.۶ μm۳). There was no significant difference in the total number of granule cells between prenatally stressed and control animals. Conclusion The present study indicated that exposure of pregnant female during last week of pregnancy leads to a decline in neuronal size in hippocampus of adult male rats without neuronal loss. The present results may provide a basis for the understanding of the reported disturbances in behavior and learning of PS offspring.

کلمات کلیدی:

Dentate gyrus, Hippocampus, Neuron, Number, Prenatal stress, Volume