STRESS EFFECT ON THE ADULT RATS STRESS RESISTANCE IN CRITICAL PERIODS OF THEIR DEVELOPMENT

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Relevance: Stress in critical periods of growth disrupts the behavior developing and reduces the body stress resistance [1]. However, a number of studies indicate a possible increase in adaptive behavior caused by a combination of stress at an early age [2]. It is necessary to study the combination of stressful conditions that determine increased adaptation mechanism to future stresses.

Objectives: To study the stress combination effect in the prenatal and adolescent periods and the antidepressants administration on the tonic pain response, the level of depressive-like behavior and the hormonal response in adult rats.

Materials and methods: To assess the effect of prenatal stress and repeated administration of fluoxetine or buspirone to pregnant females (Wistar rats) on the inflammatory pain response, a formalin test was performed. The offspring of these rats were subjected to stress during the adolescent period, and in adulthood the level of depressive behavior in the forced swimming test was studied, as well as corticosterone levels before and after the test.

Results: Prenatal stress increased pain responses organized at the spinal and supraspinal levels of the central nervous system. Fluoxetine and buspirone reversed the harmful effects of prenatal stress. Stress at the adolescent age leveled the prenatal stress effect on the pain response of the supraspinal level in adult rats, neutralizing this effect of fluoxetine and buspirone. At the spinal level stress did not change the pain response, so the drugs continued to show antinociceptive effects. Levels of depression in prenatally unstressed and prenatally stressed rats differed depending on the gender. However sexual dimorphism in rats with adolescent stress was not observed. In adult control females and females with prenatal effects, stress at the adolescent age increased the level of corticosterone in the blood plasma after forced swimming compared to the basal level of the hormone. There were no significant differences in these parametres between rats with prenatal effects.

Conclusion: The stress combination in critical periods of development forms a phenotype with increased stress resistance, which is found in the pain response organized at the supraspinal level in adults.

References

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