

PRENATAL STRESS INDUCED DEPRESSION-LIKE BEHAVIOR AND ITS IMPACTS ON PGLUR1 EXPRESSION

X. Zhang^{1,2}, X. Zhao¹, G. Tang³, L. Guan¹, D. Wang³, H. Sun¹, Z. Zhu^{1,3}

¹Pharmacology, ²Physiology, Xi'an Jiaotong University, ³Zoology, Northwest University, Xi'an, China

Introduction: Epidemiological studies have convinced that prenatal stress (PS) might cause offspring depression.

Objectives and aims: Our previous research work certified that PS can increase the glutamate level of hippocampus of rat offspring, which inspired us to explore the pathogenesis of depression by focusing on the glutamatergic system.

Methods: Pregnant rats were randomly assigned to control group (CON), mid prenatal stress group (MPS) and late prenatal stress group (LPS). The pregnant rats of MPS and LPS were exposed to restraint stress on days 7-13, 14-20 of pregnancy three times for 45 min respectively. Tail suspension test (TST) was performed to examine the depression-like behavior and Western-blot was used to test phosphorylated GluR1 (pGluR1) of AMPAR expression in the hippocampus, striatum and frontal cortex of one-month-old rat offspring.

Results: For both male and female offspring, the time of immobility of TST in LPS (156 ± 11 , 155 ± 12) and MPS (173 ± 15 , 155 ± 12) was significantly longer ($P < 0.05$) than CON (118 ± 8 , 113 ± 12), the latency in MPS (18 ± 3 , 24 ± 3) was significantly shorter ($P < 0.05$) than CON (30 ± 5 , 58 ± 11). The pGluR1 expression in hippocampus and frontal cortex in LPS (1.77 ± 0.45 , 1.00 ± 0.09) and MPS (1.65 ± 0.51 , 1.05 ± 0.18) were significantly lower ($P < 0.05$) than CON (3.72 ± 0.86 , 2.05 ± 0.34) in male rat offspring.

Conclusion: It is suggested that the PS may induce depression-like behavior in rat offspring, and glutamate receptors subunit pGluR1 might be involved in the etiology of depression.

(The research is supported by National Natural Science Foundation of China, No: 30970952, 18110059).