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МАТЕРИАЛЫ КОНФЕРЕНЦИИ И ШКОЛЫ

POSSIBILITIES OF USE OF MEMANTINE FOR THE CORRECTION OF BEHAVIORAL DISORDERS, CAUSED BY LPS TREATMENT IN EARLY LIFE

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According to the neurodevelopmental hypothesis of the forming of psychopathology infectious diseases that take place during critical periods of early ontogenesis can cause neuropsychic disorders in adult life. The injection of bacterial lipopolysaccharide (LPS) is the experimental model of bacterial diseases. Early postnatal LPS exposure leads to long-lasting behavioral impairments. It is assumed that they may be related to the dysfunction of brain glutamatergic system activity. The aim of this research was the analysis of the behavior of animals treated by LPS in combination with NMDA glutamate receptor antagonist memantine.

Methods. The pups of male Wistar rats were used for the experiments. The rats were administered LPS (50 μg/kg), LPS and memantine (5 mg/kg), or saline on P14, 16 and 18. The behavior was investigated in adult (3-month) rats using the Open field test, Elevated plus maze, Y-maze, Porsolt forced swim test, and Fear conditioning tests.

Results. The adult rats treated by LPS during the third week of life showed increased exploratory behavior in the Open field test (the traveled distance and time of holes examination were elevated). At the same time, exploratory activity in the Elevated plus maze (the time for looking out of closed arms) decreased. Administration of memantine together with LPS prevented these changes. LPS administration also elevated anxiety in the Open field test (the time of grooming) and increased depressive behavior in the Porsolt forced swim test (the time of immobilization). Memantine neutralized the development of these emotional disturbances. However, the administration of memantine did not prevent LPS-induced memory impairment in the Fear conditioning test.

Conclusions. The administration of memantine partially neutralized the negative consequences of LPS administration at an early age.

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