

Perspectives of the Cells Therapy in the Treatment of Drug Abuse

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Objectives: We have shown earlier that mice with active and passive behavioral types differed also in immune status and behavioral parameters could be regulated by the transplantation of immune cells with definite functional characteristics. Opiates are known to affect both – immune response and behavior. So, we investigated behavior and immune changes occurring during the formation of chronic morphine dependence in mice with opposite behavioral types and explored the possibility of their correction by the transplantation of immune cells from healthy donors.

Methods: mice with active and passive behaviors were undergoing chronic morphine exposure with abrupt withdrawal and intravenous transplantation of immune cells from syngeneic healthy donors with definite behavior status. The behavior and immune changes during these processes were estimated.

Results: chronic morphine exposure leads to diverse behavioral changes in mice with different behavior status. Abstinence from morphine manifested by typical behavior parameters of withdrawal syndrome in mice, induced more than 50% suppression in the humoral immune response, inhibition of splenocytes proliferative activity, especially in mice with passive behavior and specific changes in spleen and brain cytokines synthesis. The transplantation of normal unfractionated or macrophage - enriched spleen cells with definite functional characteristics restored above-mentioned immune and behavior disorders.

Conclusion: behavior and immune changes following chronic morphine exposure depended on the initial behavior status of animals; the immune cells transplantation may correct both immune and behavior disorders in mice with morphine dependence, so it could be considered as a possible biological method in the treatment of drug abuse.