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Poster Presentation

Effect of Insulin-Like Growth Factor 2 (IGF2) as a Microglia-Derived Anti-inflammatory Cytokine on Improving Memory Impairment Following Hippocampal Intracerebral Hemorrhage in Rat

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Abstract

Insulin-like growth factor 2 (IGF2) as a microglia-derived anti-inflammatory cytokine has a pivotal activity in memory consolidation. However, there is limited evidence on brain cell-originated IGF2 expression, regulation and function in pathological condition and neuro-inflammation. Hence, the present study was conducted to investigate the effect of IGF2 on improving the memory impairment in a rat model of hippocampal intracerebral hemorrhage. 24 male Sprague Dawley rats randomly assigned into three groups. To establish a rat model of intracerebral hemorrhage, 100 µl of blood autologous was injected into the left hippocampus. The animals received intrahippocampally the IGF2 upon 30 minutes after injecting the blood, followed by testing for behavioral parameters, including neurological deficit score, passive avoidance test, wire hanging test and novel object recognition at two weeks after the injection, then hippocampus volume was estimated using the Cavalieri method. The result indicated that retention and recall capability improved, was IGF2 injected into hippocampus compare with control group ($P < 0.05$). Also, neurological deficit score significantly increased following IGF2 injection ($P < 0.05$), but there was no significant difference in locomotor deficits measured by wire hanging test between groups. Moreover, hippocampal volume increased ($P < 0.01$) and infract volume decreased ($P < 0.01$) in IGF2 group compared to the control group. Our results showed that the IGF2 injected into the hippocampus promoted learning and memory and also IGF2 as a microglia-derived anti-inflammatory had a positive influence on infract volume resulted from brain secondary damage and neuroinflammation after ICH.

Keywords: Hippocampus, IGF2, Neuro-Inflammation, Memory

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