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Poster Presentation

CSF NGF/IL-6 Ratio: a Useful Marker for the Evaluation of Progesterone Efficacy in Traumatic Brain Injury

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Abstract

Introduction: Following our previous studies on the neuroprotective effects of progesterone and cytokines such as IL-6 (IL-6) is involved in the inflammatory response, to examine whether changes in IL-6 and Nerve grows factor(NGF) concentrations in CSF can responsible for the neuroprotective effects of progesterone after traumatic brain injury(TBI). **Materials and Methods:** Female ovariectomized rats were divided into 9 groups: intact (pro estrous and non-proestrous), sham, TBI and 4 groups treated by vehicle or different doses of progesterone, including: vehicle, LP (low dose of progesterone, 1.7 mg/kg), HP (high dose of progesterone, 8 mg/kg), IVC (implant vehicle capsules, 10-20 ng/ml) and IPC (Implant low dose of progesterone capsules, 10-20 ng/ml). In groups receiving hormone or vehicle, treatment was administered as a single dose of intraperitoneally 30 minutes or implant capsules 6 hours following a diffuse TBI that was induced by Marmarou's method. The levels of biomarkers in CSF were measured at 48 h after the TBI. **Results:** Both doses of progesterone reduced CSF levels of IL-6 compared with vehicle group ($p<0.05$, $p<0.001$, respectively), but the difference between CSF levels of NGF in progesterone and vehicle was not significant. After trauma, although the ratio of NGF to IL-6 significantly higher in the progesterone groups than in the vehicle group ($p<0.05$). The CSF level of IL-6 was reduced in IPC group, compared with IVC group ($p<0.05$), but the CSF level of NGF is increased ($p<0.05$). The NGF/IL-6 ratio in IPC group was 4.13 higher following administration of vehicle (1.16, $p<0.001$) levels, and the highest maximum NGF/IL-6 ratio is in the same group. **Conclusion:** Based on our findings, we conclude that individual measure these two indicators to evaluate the effects of drugs may be not useful, but CSF NGF/IL-6 ratio might be a better marker for determine the effectiveness of drugs.

Keywords: TBI, Progesterone, NGF, IL٦-, CSF NGF/IL٦- ratio

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