

The 1st International Neuroinflammation Congress and 1st Student Festival of Neurosience

Shefa Neuroscience Research Center, Tehran, Iran, 11-13 April, 2017

The Neuroscience Journal of Shefaye Khatam

Volume 5, No. 2, Suppl 2

Poster Presentation

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

Sara Shiraz Pour*, Mohammad Khaksari, Neda Salmani, Zahra Soltany, Alireza Raji

Neuroscience Research Center, and Physiology Department, Kerman University of Medical Sciences, Kerman, Iran

Published: 11 April, 2017

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 nonproestrous), 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, IL7-, CSF NGF/IL7- ratio

*Corresponding Author: Sara Shiraz pour

E-mail: khaksar38@yahoo.co.uk