FENS Regional Meeting

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National Neuroscience Society of Romania

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Abstract Book

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Thursday, July 11, 2019

13:45-15:00

Room Atlantic 1
Room Atlantic 2

POSTER SESSION 2

P278

MONONUCLEAR PHAGOCYTE SYSTEM IN TRAUMATIC BRAIN INJURY

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Traumatic brain injury triggers neuroinflammatory response mediated by distinct populations of myeloid cells, including central nervous system (CNS) resident macrophages - microglia. Depending on the time upon insult this response may either contribute to restorative effects or hinder CNS repair.

Therefore, the focus of this study was on determining temporal course in gene expression profiles of markers specific to the mononuclear phagocyte system (MPS).

We have used the model of cortical stab injury which was performed on 3-months-old male Wistar rats. All animals were divided into 3 experimental groups: control, sham and lesion group and sacrificed at 1, 2, 3 and 7 days post-injury. After brain isolation, mRNA was extracted from cortical pieces around the center of lesion (the same tissue part was used for sham and control groups). The gene expression was analyzed by real-time PCR.

The mRNA levels of Itgam, Aif-1, Cd68 and Cx3Cr1, which are surface markers of MPS, were increased in first two days after brain injury, and then all, except Cd68, showed declining trend compared to control group. Furthermore, we analyzed expression of Arg-1, Il-6 and Tnf-alpha genes, which could be indicators of pro- or anti-inflammatory milieu. All of them increased significantly in the first two days post-injury, and then returned to control level, with the most prominent changes detected in Arg-1 mRNA level.

This study indicates enhanced MPS response in the acute phase after cortical stab injury. Further studies are required to determine which populations of CNS myeloid cells predominate in specific time point upon injury.