P008-T | Systemic development of non-specific inflammation after spinal cord injury

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Spinal cord injury (SCI) causes a pathophysiological processes, such as a local ischemia and inflammation. In the focus of inflammation, the main function of polymorphonuclear leukocytes is the phagocytosis of dying cells. The active oxygen radicals generated by neutrophils and other phagocytic cells are an important protective mechanism of inflammatory processes that underlie nonspecific immunity. The aim of the work was to study of the phagocytic activity of polymorphonuclear leukocytes of peripheral blood in rats with SCI using local hypothermia as a neuroprotective effect. The non-linear laboratory rats were divided into two groups. The SCI was performing at the level of Th8-9 by the A. Allen's method. The first group did not receive the further treatment; the second group received procedure of local hypothermia for 20 minutes after SCI. The blood sampling was collected prior to SCI and on 1, 7, 14, 21, 30 days after SCI from the caudal vein. The blood smears were stained by method of Romanovsky – Giemsa, the counting of leukocytes was made by the "meander method". The activation of the inflammatory reaction in the early stages of SCI was characterized by a decrease in a number of the neutrophils in the first group ($31{\cdot}2 \pm 2{\cdot}746\%$, $P < 0{\cdot}05$) as compared with intact animals ($40 \pm 1{\cdot}8$). A reliable change in a number of basophils and eosinophils in both groups was not found. A significant increase of neutrophils in the second group was observed on the 7th, 14th and 30th days compared with the first group. In the acute phase of SCI it was not found the differences in a number of neutrophils after hypothermia treatment, which provides a theoretical basis for using of local hypothermia as a neuroprotective therapy for ischemia and inflammation in the early stages of SCI.

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P010-T | Peripheral phagocyte characteristics as markers of systemic inflammation in rats with different stages of Parkinson's disease

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Background: Local inflammation caused by activated microglia is implicated in the pathogenesis of Parkinson's disease (PD). Progression of this neurodegenerative disease is characterized by the development of systemic inflammation with the involvement of phagocytes from different locations. The aim of our study was to evaluate metabolic and phenotypic markers of different phagocyte populations in rats with 6-OHDA-induced PD with mild and severe stages of disease.

Material and methods: Parkinson-like neurodegenerative lesion was induced in Wistar rats by a single unilateral stereotaxic injection of 6-Hydroxydopamine (6-OHDA) into the striatum. Apomorphine-induced rotation test was used to assay the extent of neuronal loss. Flow cytometry was used to analyze ROS production, phagocytosis activity as well as expression of CD14, CD80/86 and CD206 by microglia, circulation and peritoneal phagocytes in rats. Arginase activity and NO production by resident microglia and peritoneal macrophages were examined in colorimetric tests.

Results: At the 29th day after 6-OHDA injection, microglia from rats with PD showed proinflammatory metabolic shift that was more pronounced in rats with severe stage of disease (with 100% loss of substantia nigra dopaminergic neurons). Sharply decreased phagocytosis activity along with increased ROS and NO production by brain phagocytes were detected in PD rats. Phenotypic profile of microglial cell was characterized by decreased expression of CD14 and CD80/86 along with high CD206 expression. Both mild and severe stages of PD were associated with pro-inflammatory activation of circulating phagocytes. Progression of the neuronal damage led to progressive monocytosis and proinflammatory activation of peritoneal macrophages.

Conclusions: Correlation between stage-dependent changes of microglia metabolism and peripheral phagocytes activity allow us to regard metabolic indices of circulating immune cells as perspective sensitive markers for early diagnostics of PD and effective monitoring of inflammatory process in brain.

P011-T | Development of a fluorescence-based osteoclast fusion assay

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Background: Osteoclasts are phagocytic cells capable of degrading bone tissue. They develop from myeloid progenitors via biochemical differentiation followed by