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P146-T | Effect of intranasal administration of mesenchymal stem cells on the approximate motor activity of rats after simulation of ischemic stroke

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The periventricular zone of the lateral ventricles, the hippocampus and the olfactory bulbs are at least three areas containing nerve stem cells in the brain of adult rodents. In physiological conditions the neuroblasts, generated by neural stem cells in these areas of the brain, migrate to areas of the brain, which required the intensive formation of new neural networks, for example, in process of memorizing. After a stroke, neuroblasts migrate to the area of neurodestruction. These findings are a compelling argument for further research to develop new treatments by enhancing endogenous neurogenesis in brain injury.

Therefore the aim of our study was to investigate the effect of intranasal mesenchymal stem cell (MSC) administration on the approximate motor activity of rats after modelling ischemic stroke. The ligation of common carotid arteries under anesthesia was performed in male rats of the Wistar line. Parameters of approximate motor activity of rats were evaluated before operation, 3 and 7 days after. There were two experimental series: with administration of MSC and without. There were not observed significant changes of the pattern of approximate-motor activity on the third and seventh days in second group of animals related to intact animals. Thus, the administration of MSC in the acute period after operation was accompanied by faster recovery of motor activity in experimental animals.

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P147-T | The role of ATP-sensitive potassium channels and nitric oxide in the brain stroke

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Activation of the K⁺ATP-channels is the main component of the response in the models of preconditioning. Its activation in the mitochondrial inner membrane is associated with the prevention of the mitochondrial calcium overload. The mitochondrial pool of calcium plays leading role in the development of the preconditioning. The role of the nitric oxide (NO) in the development of ischemic cell damage mechanisms is equally important. The nature of NO action depends on the intensity of its production, location and the state of the surrounding tissue.

The aim of this study was to investigate the relationship between K⁺ATP-channels and NO, as well as a comparison of the obtained data with the molecular mechanisms of mitochondria. We found that the expression of the mitochondrial K⁺ATP-channels was a two-fold decreased in the nervous tissue and the intensity of the S-nitrosylation and nitration of protein was decreased 24 hours after the ischemic preconditioning in the rats. Pharmacological preconditioning with K⁺ATP-channels activator diazoxide led to a 30% reduction in the concentration of free NO after the simulation of an ischemic stroke, after 9 and 72 hours. We suggested that obtained result linked with the restructuring of the tissue energy metabolism, namely the provision of catalytic sites in the mitochondria and the increased elimination of NO, which prevented the decrease in the cell sensitivity to oxygen during the subsequent period of severe ischemia.

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P148-T | Use of methylprednisolone in combination with polymer conjugates under local delivery conditions for spinal cord injury

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Many methods for treating spinal cord injuries come from the laboratories and are transferred to clinical trials. Many of them are applied as soon as possible after trauma with the hope of weakening secondary damage and maximum preservation of the nervous tissue. Therefore, at the moment of the science development there is an interest in using polymeric systems as systems for delivering drugs to the spinal cord with trauma. The contusion injury was applied at the Th8 level by the modified A. Allen technique. Epidural electrodes were chronically implanted into the studied segments and muscular responses were induced to stimulate the spinal cord. The responses of the examined muscles were recorded before the operation, immediately after the operation and every hour for 6 hours after a contusion injury. The results showed that the soleus and gastrocnemius muscle have similar changes in amplitude characteristics but the soleus is more sensitive to